Visual Impact Report

Harmony Moab Khotsong Solar PV Facility
Basic Assessment
July 2022

VISUAL IMPACT REPORT

Harmony Moab Khotsong Solar PV Facility, Free State

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ACRONYMS, ABBREVIATIONS AND GLOSSARY

Acronyms & Abbreviations	
BAR	Basic Assessment Report
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GYLA	Graham Young Landscape Architect
SACLAP	South African Council for the Landscape Architectural Profession
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
Glossary	
Aesthetic Value	Aesthetic value is the emotional response derived from the experience of the environment with its natural and cultural attributes. The response can be either to visual or non-visual elements and can embrace sound, smell and any other factor having a strong impact on human thoughts, feelings, and attitudes (Ramsay, 1993). Thus, aesthetic value encompasses more than the seen view, visual quality, or scenery, and includes atmosphere, landscape character and sense of place (Schapper, 1993).
Aesthetically significant place	A formally designated place visited by recreationists and others for the express purpose of enjoying its beauty. For example, tens of thousands ofpeople visit Table Mountain on an annual basis. They come from around the country and even from around the world. By these measurements,one can make the case that Table Mountain (a designated National Park) is an aesthetic resource of national significance. Similarly, a resource thatis visited by large numbers who come from across the region probably has regional significance. A place visited primarily by people whose place of origin is local is generally of local significance. Unvisited places either have no significance or are "no trespass" places. (After New York, Department of Environment 2000).
Aesthetic impact	Aesthetic impact occurs when there is a detrimental effect on the perceived beauty of a place or structure. Mere visibility, even startling visibility of a Project proposal, should not be a threshold for decision making. Instead, a Project, by its visibility, must clearly interfere with or reduce (i.e., visual impact) the public's enjoyment and/or appreciation of the appearance of a valued resource e.g., cooling tower blocks a view from a National Park overlook (after New York, Department of Environment 2000).
Cumulative Effects	The summation of effects that result from changes caused by a development in conjunction with the other past, present, or reasonably foreseeable actions.
Glare	The sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss in visual performance and visibility. *See* Glint. (USDI 2013:314)
Glint	A momentary flash of light resulting from a spatially localized reflection of sunlight. *See* Glare. (USDI 2013:314)
Landscape Character	The individual elements that make up the landscape, including prominent or eye-catching features such as hills, valleys, woods, trees, water bodies, buildings, and roads. They are generally quantifiable and can be easily described.
Landscape Impact	Landscape effects derive from changes in the physical landscape, whichmay give rise to changes in its character and how this is experienced (Institute of Environmental Assessment & The Landscape Institute 1996).

Study area	For the purposes of this report this Project the study area refers to the proposed Project footprint / Project site as well as the 'zone of potential influence' (the area defined as the radius about the centre point of the Project beyond which the visual impact of the most visible features will be insignificant) which is a 5,0km radius surrounding the proposed Project footprint / site.
Project Footprint / Site	For the purposes of this report the Project *site* / *footprint* refers to theactual layout of the Project as described.
Sense of Place (geniusloci)	Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. *A genius locus literally means* 'spirit of the place'.
Sensitive Receptors	Sensitivity of visual receptors (viewers) to a proposed development.
Viewshed analysis	The two-dimensional spatial pattern created by an analysis that defines areas, which contain all possible observation sites from which an object would be visible. The basic assumption for preparing a viewshed analysis is that the observer eye height is 1,8m above ground level.
Visibility	The area from which Project components would potentially be visible.Visibility depends upon general topography, aspect, tree cover or other visual obstruction, elevation, and distance.
Visual Exposure	Visibility and visual intrusion qualified with a distance rating to indicate the degree of intrusion and visual acuity, which is also influenced by weatherand light conditions.
Visual Impact	Visual effects relate to the changes that arise in the composition of available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visualamenity.
Visual Intrusion	The nature of intrusion of an object on the visual quality of the environment resulting in its compatibility (absorbed into the landscape elements) or discord (contrasts with the landscape elements) with the landscape and surrounding land uses.
Visual absorption capacity	Visual absorption capacity is defined as the landscape's ability to absorb physical changes without transformation in its visual character and quality. The landscape's ability to absorb change ranges from low- capacity areas, in which the location of an activity is likely to cause visual change in the character of the area, to high-capacity areas, in which the visual impact of development will be minimal (Amir & Gidalizon 1990).
Worst-case Scenario	Principle applied where the environmental effects may vary, for example, seasonally or collectively to ensure the most severe potential effect isassessed.
Zone of Potential Visual Influence	By determining the zone of potential visual influence, it is possible to identify the extent of potential visibility and views which could be affected by the proposed development. Its maximum extent is the radius around an object beyond which the visual impact of its most visible features will be insignificant primarily due to distance.

EXECUTIVE SUMMARY

Project Site and Study Area

(PV) generation, aiding their transition to a more sustainable and environmentally friendly energy mix.

The development of a solar photovoltaic (PV) facility with a generating capacity of up to 100MW is proposed north of the Harmony Gold Moab operations, approximately ~10km north of the town of Vierfontein within the Moqhaka Local Municipality, Fezile Dabi District Municipality, Free State Province. The solar PV development will be known as Harmony Moab Khotsong Solar PV Facility.

The PV development area includes twelve (12) farm portions, all owned by the Mine. These include:

- Farm Anglo 593;
- Farm Hoekplaats 598;
- Farm Mispah 274;
- Remaining Extent of Farm Pretorius Kraal 53;
- Remaining Extent of Farm Doornkom Wes 446;
- Farm Chrystalkop 69; and
- Portions 1, 2, 3, 4, 5, and the Remaining Extent of the Farm Zuiping 394.

The generation is intended for own use by the Mine, reducing the Mine's reliance on Eskom. The preferred site for the project is on properties which are owned by the Mine and are available for the proposed project and is therefore deemed technically feasible for such development to take place.

A project site considered to be technically suitable for the development of the solar PV facility, with an extent of approximately 1400ha, was identified. A development area of ~900ha was demarcated within this project site and allows an adequate footprint for the installation of a solar PV facility with a contracted capacity of up to 100MW, while allowing for the avoidance of environmental site sensitivities.

The full extent of the project site is to be evaluated in the Basic Assessment process to identify environmental sensitivities. Site-specific studies and assessments will be undertaken through the BA process in order to delineate areas of potential sensitivity within the identified study area and grid connection corridor/s. Once constraining factors have been determined, the layout of the solar PV facilities and the grid connection solution can be planned to minimise social and environmental impacts.

The infrastructure associated with the 100MW solar PV facility will include:

- PV modules and mounting structures
- Access roads, internal roads and fencing around the development area
- Temporary and permanent laydown areas
- Administrative building, control room, workshop, storage building, guard house, auxiliary buildings and structures, water supply infrastructure, weather station
- Peripheral boundary wall & fencing
- Inverters, transformers and up to 5 on-site facility substations and switching substations
- Cabling between the project components, to be laid underground where practical
- Grid connection infrastructure to be connected to the existing:
  - Vaalreefs Eleven Substation via a ~2km power line (located south-east of the facility);
  - Southvaal Plant Substation via a ~0.5km power line (located north-west of the facility); and
  - Southvaal Substation via a ~4km power line (located north of the facility).

The site is accessible via the R76 south of the project site.

As of 2019, the Industrial sector was the leading electricity consumer in South Africa, with up to 56% of the total consumption (Ratshomo 2019). Mining and quarrying accounted for 10% of the industrial consumption (Chamber of Mines of South Africa, 2017). The successful development of the renewable energy project will enable Harmony Gold to make a valuable and meaningful contribution towards growing the green economy within the Free State Province and South Africa. This will assist the Free State in creating green jobs and reducing Green House Gas emissions, while reducing the energy demand on the Eskom national grid.

Approach to Study

The VIA is determined according to the nature, extent, duration, intensity or magnitude, probability, and significance of the potential visual impacts, and will propose management actions and/or monitoring programs and may include recommendations related to the proposed Solar PV Facility.

The visual impact is determined for the highest impact-operating scenario (worst-case scenario) and varying climatic conditions (i.e., different seasons, weather conditions, etc.) are not considered.

The VIA considers potential cumulative visual impacts, or alternatively the potential to concentrate visual exposure/impact within the region.

The determination of the potential visual impacts is undertaken in terms of nature, extent, duration, magnitude, probability and significance of the construction and operation of the proposed infrastructure.

Anticipated issues related to the potential visual impact of the proposed development include the following:

- The visibility of the facility to, and potential visual impact on, observers travelling along the major local roads traversing south and west of the proposed facility.
- The visibility of the facility to, and visual impact on, the larger built-up centres or populated places (the towns of Bronville, Verginia and Meloding) as well as the homesteads (farm residences) located within close proximity of the site.
- Potential cumulative visual impacts (or alternately, consolidation of visual impacts) with specific reference to the existing power line infrastructure adjacent to the proposed development area.
- The potential visual impact of the construction of ancillary infrastructure (i.e., the substation at the facility, associated power line and access roads) on observers in close proximity of the facility.
- The potential visual impact of operational, safety and security lighting of the facility at night on observers residing in proximity of the facility.
- The visual absorption capacity of natural or planted vegetation (if applicable).
- Potential visual impacts associated with the construction phase.
- The potential to mitigate visual impacts and inform the design process.

It is envisaged that the issues listed above may constitute a visual impact at a local scale.

Conclusion

Visual impacts will be caused by activities associated with the Harmony Moab Khotsong PV Facility Project. The significance of visual impact is based on the worst-case scenario. This scenario assumes that all facilities along with the associated grid infrastructure and sub-stations would be constructed at the same time. At the time of writing there was no evidence to the contrary. This assumption is also based on the nature of the visual impact and the fact that receptors would experience all facilities in the same visual envelope from their respective locations or as they travel along adjacent roads.

Impacts on views are the highest when viewers are identified as being sensitive to change in the landscape, and their views are focused on and dominated by the change. The visual impact of the Project will cause changes in the landscape that are noticeable to viewers experiencing the study area from the R73, Boundary Road, local roads to the west and south of the site, and homesteads also in this general area.

Visual impacts that would potentially result from Project activities are likely to be moderately adverse, long-term, and will most likely cause loss of landscape and visual resources. If mitigation is undertaken as recommended, it is concluded that the significance of anticipated visual impacts will remain at acceptable levels. As such, the facility and the proposed ancillary infrastructure would be considered to be acceptable from a visual perspective.

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1. INTRODUCTION

1.1. Project Overview and Background

Eco-Thunder Consulting was commissioned by Savannah Environmental (Pty) Ltd to carry out a Visual Impact Assessment (VIA) of the proposed Harmony Moab Khotsong Solar PV Facility, the Solar PV facilities are based ~10km North of the town of Vierfontein, Free State Province.

The VIA focuses on the potential impact of the physical aspects of the proposed developments (i.e., form, scale, and bulk), and their potential impact within the local landscape and receptor context.

1.2. Project site and study area

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1.3. Objective of the Specialist Study

The main aim of the study is to document the baseline and to ensure that the visual/aesthetic consequences of the proposed Project are understood. The report therefore aims to identify scenic resources, and visually sensitive areas or receptors. It also aims to identify key concerns or issues relating to potential visual impacts arising from the Project, and which must be addressed in the assessment phase.

1.4. Terms and Reference

A specialist study is required to establish the visual baseline and to identify and potential visual impacts arising from the proposed development based on the general requirements for a comprehensive VIA. The following terms of reference were established:

- Data collected allows for a description and characterization of the receiving environment.
- Describe the landscape character, quality and assess the visual resource of the study area.
- Describe the visual characteristics of the components of the Project.
- Identify issues that must be addressed in the impact assessment phase.
- Propose mitigation options to reduce the potential impact of the Project.

1.5. Specialist Details

Eco-Thunder Consulting (ETC) is a 100% woman-owned, private company that specializes in a range of specialist studies, such as Visual Impact Assessments socio-economic research, economic development planning, development programme design and implementation as well as community trust management.

Eco-Thunder Consulting is registered with ECSA and landscape architects with interest and experience in landscape architecture, urban design, and environmental planning. The company has carried out visual impact assessments throughout Africa and specialize in project optimization in the environmental space. Aspects of this work also include landscape characterization studies, end-use studies for quarries, and computer modelling and visualization.

Based in Johannesburg, South Africa, Eco-Thunder has established itself as an expert on the conditions, needs and assets of communities that are linked to independent power generation facilities.

ETC also implements development programmes in energy communities, which ensures a comprehensive understanding of the how to drive positive social impact.

1.6. Level of Confidence

Level of confidence[1] is determined as a function of:

- The information available, and understanding of the study area by the practitioner:
  - 3: A high level of information is available of the study area and a thorough knowledge base could be established during site visits, surveys etc. The study area was readily accessible.
  - 2: A moderate level of information is available of the study area and a moderate knowledge base could be established during site visits, surveys etc. Accessibility to the study area was acceptable for the level

[1] Adapted from Oberholzer (2005).

of assessment.
    - 1: Limited information is available of the study area and a poor knowledge base could be established during site visits and/or surveys, or no site visit and/or surveys were carried out.

- The information available, understanding of the study area and experience of this type of project by the practitioner:
    - 3: A high level of information and knowledge is available of the project and the visual impact assessor is well experienced in this type of project and level of assessment.
    - 2: A moderate level of information and knowledge is available of the project and/or the visual impact assessor is moderately experienced in this type of project and level of assessment.
    - 1: Limited information and knowledge is available of the project and/or the visual impact assessor has a low experience level in this type of project and level of assessment.

The level of confidence for this assessment is determined to be **9** and indicates that the author's confidence in the accuracy of the findings is high:

- The information available, and understanding of the study area by the practitioner is rated as **3** and
- The information available, understanding and experience of this type of project by the practitioner is rated as **3**.

1.7. Assumptions, Uncertainties, and Limitations

The following assumptions and limitations have been made in the study:

- The assessment has been based on the requirements of the Western Cape Guidelines.
- Whilst the majority of homesteads and housing areas were visited during the site visit in order to confirm their nature and likely visibility of the development, it was not possible to visit all homesteads and housing areas.
- The description of project components is limited to what has been supplied to the author before the date of completion of this report.
- The Project report uses the concept of 'worst case scenario' to identify issues and rate visual impacts. This scenario assumes that all facilities along with the associated grid infrastructure and sub-stations would be constructed at the same time. At the time of writing there was no evidence to the contrary. This assumption is also based on the nature of visual impact and the fact that receptors would experience all facilities with in the same visual envelope from their respective locations or as they travel along adjacent roads.
- The assessment of cumulative impacts is partly based on information provided by the DFFE Website This source provides detail of all other renewable energy applications and has been used to indicate other possible solar energy sites within 30km of the application site.

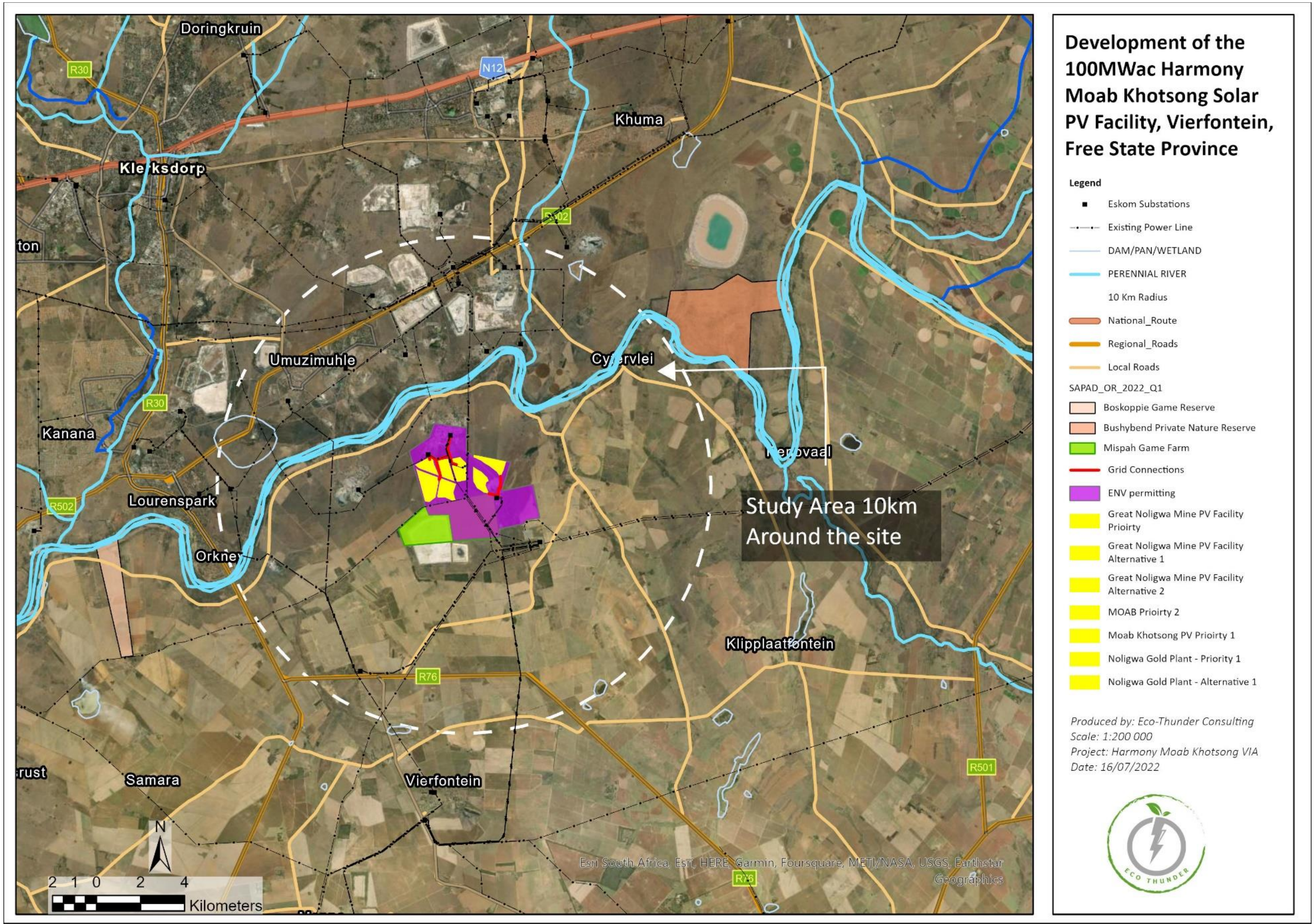

Figure 1: Proposed Development location map.

2. LEGAL REQUIREMENTS AND GUIDELINES

This report adheres to the following legal requirements and guideline documents.

2.1. National Legislation and Guidelines

National Environmental Management Act (Act 107 of 1998), EIA Regulations

The specialist report is in accordance with the specification on conducting specialist studies as per Government Gazette (GN) R 982 of the National Environmental Management Act (NEMA) Act 107 of 1998. The mitigation measures as stipulated in the specialist report can be used as part of the Environmental Management Programme (EMPr) and will be in support of the Environmental Impact Assessment (EIA) and Appendix 6 of the EIA Regulations 2014, as amended on 7 April 2017.

Specialist Screening Protocols are also required by the 2014 EIA Regulations. These were taken into consideration for each of the five projects. However, the Landscape (Solar) Theme Sensitivity was referenced as there is no specific 'visual' protocol.

Western Cape Department of Environmental Affairs & Development Planning: Guideline for Involving Visual and Aesthetic Specialists in EIA Processes Edition 1 (CSIR, 2005)

Although the guidelines were specifically compiled for the Province of the Western Cape[4], they provide guidance that is appropriate for any EIA process. The Guideline document also seeks to clarify instances when a visual specialist should get involved in the EIA process.

[4] The Western Cape Guidelines are the only official guidelines for visual impact assessment reports in South Africa and can be regarded as best practice throughout the country.

3. APPROACH AND METHODOLOGY

3.1. Approach

The effects of the development on a landscape resource and visual amenity are complex since it is determined through a combination of quantitative and qualitative evaluations. When assessing visual impact, the worst-case scenario is considered. Landscape and visual assessments are separate, although linked, procedures. The landscape, its analysis, and the assessment of impacts on the landscape all contribute to the baseline for visual impact assessment studies. The assessment of the potential impact on the landscape is carried out as an impact on an environmental resource, i.e., the physical landscape. Visual impacts, on the other hand, are assessed as one of the interrelated effects on people (i.e., the viewers and the impact of an introduced object into a view or scene).

The study was undertaken using Geographical Information Systems (GIS) software as a tool to generate viewshed analyses and to apply relevant spatial criteria to the proposed infrastructure. A detailed Digital Terrain Model (DTM) for the study area was created from topographical data provided by the Japan Aerospace Exploration Agency (JAXA), Earth Observation Research Centre, in the form of the ALOS Global Digital Surface Model "ALOS World 3D - 30m" (AW3D30) elevation model.

The scope of work for this report includes:

- Identify potentially sensitive visual receptors within the receiving environment.
- Determine the Visual Absorption Capacity of the landscape.
- Determine Visual Distance/Observer Proximity to the facility.
- Determine Viewer Incidence/Viewer Perception.
- Determine Significance of identified impacts.
- Propose mitigation to reduce or alleviate potential adverse visual impacts (to be structured as an EMPr).
- Assess the glint and glare of the PV panels
- Conclude with an Impact Statement of Significance and a project recommendation.

Visual Impact Assessment (VIA)

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It is envisaged that the issues listed above may constitute a visual impact at a local scale.

3.1.1. Significance of Visual Impact

A combined quantitative and qualitative methodology, as supplied by the Environmental Practitioner, was used to describe the significance of impacts. Significance of impact is rated as *consequence* of impact multiplied by the *probability* of the impact occurring. Consequence is determined using intensity, spatial scale, and duration criteria. A summary of each of the qualitative descriptions along with the equivalent quantitative rating scale is given in Annexure C.

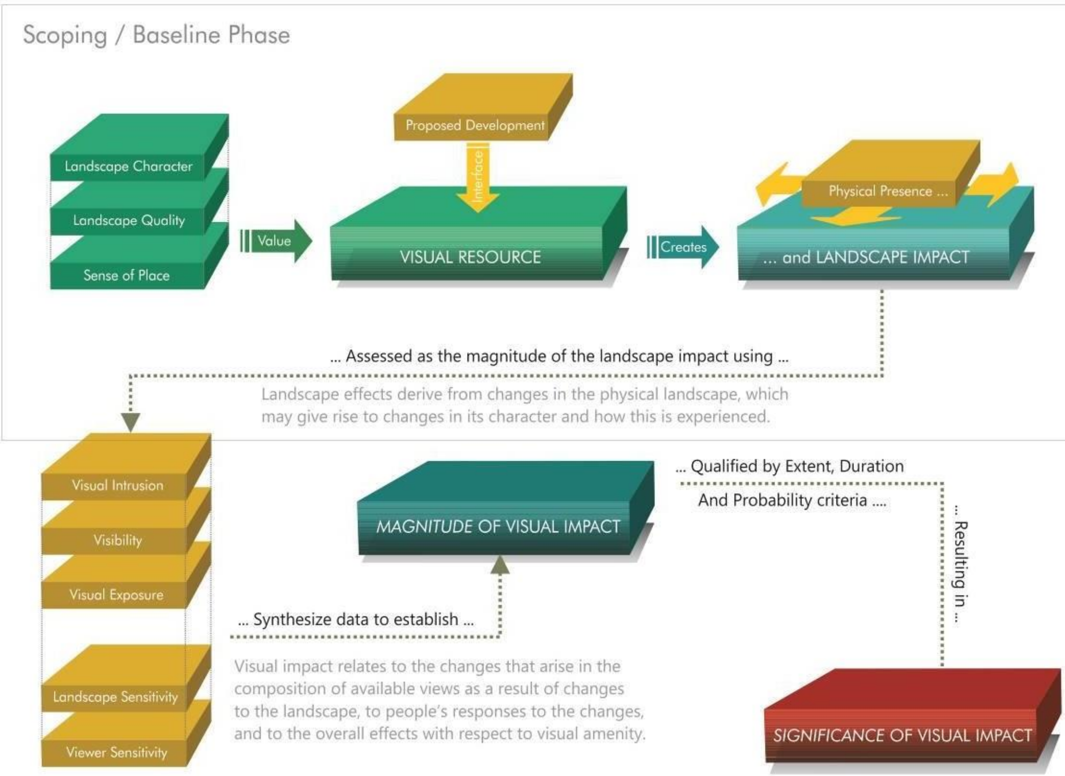

Figure 2: VIA Process

3.2. Methodology

The following method was used:

- Site visit: A field survey was undertaken so the extent of the receiving environment could be documented and adequately described. The climate conditions were mostly sunny with some cloud cover.
- Project components: The physical characteristics of the Project components were described and illustrated based on information supplied by Savannah Environmental.
- General landscape characterization: The visual resource (i.e., receiving environment) was mapped using the field survey, Google Earth imagery, and Mucina and Rutherford's (2006) reference book, The Vegetation of South Africa, Lesotho, and Swaziland. The description of the landscape focused on the nature of the land rather than the response of a viewer (refer to Appendix A).
- The character of the landscape was described and rated in terms of its aesthetic appeal using recognized contemporary research in perceptual psychology as the basis, and its sensitivity as a landscape receptor.

- The sense of place of the study area was described as to its uniqueness and distinctiveness. The primary informant of these qualities was the spatial form and character of the natural landscape together with the cultural transformations associated with the historic/current use of the land.
- The creation of viewshed analyses from the proposed Project site in order to determine the visual exposure and the topography's potential to absorb the potential visual impact. The viewshed analyses consider the dimensions of the proposed structures and activities
- The potential impact on the visual environment of the proposed Projects were identified; and rated according to Savannah's significance rating criteria.
- Measures to mitigate the negative impacts of the proposed Project were recommended.

4. DESCRIPTION OF THE PROJECT

4.1. Project Facilities

(PV) generation, aiding their transition to a more sustainable and environmentally friendly energy mix.

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4.2. Project Phases and Activities

Activities to be undertaken during each of the phases are described in the following sections:

4.2.1. Site Preparation Phase

This phase would include the clearance of vegetation, installation of perimeter fencing and levelling of the site and preliminary earthworks. Thereafter the Project site will be marked out, a construction camp set up and the access road to the site is constructed. The clearance of vegetation is not anticipated to be site wide and will depend on the detailed layout of the proposed Project.

4.2.2. Construction Phase

The construction phase of the proposed Project will be initiated following the completion of the site preparation activities. The construction phase will include the following:

- Excavation of cable trenches;
- Ramming or drilling of the mounting structure frames;
- Installation of the PV modules onto the frames;
- Installation of measuring equipment;
- Laying of cables between the module rows to the inverter stations;
- Optionally laying of gravel or aggregate from nearby quarries placed in the rows between the PV panel array for enhanced reflection onto the panels, assisting in vegetation control and drainage;
- Construction of foundations for the inverter stations and installation of the inverters;
- Construction of operations and maintenance buildings;
- Undertaking of rehabilitation on cleared areas where required;
- Testing and commissioning; and
- Removal of equipment and disassembly of construction camp.

The construction phase of the proposed Project will be for a period of up to 12 – 18 months.

4.2.3. Operational Phase

The proposed Project will be operated on a 24 hour, 7 days a week basis. The operation phase of the proposed Project will comprise the following activities:

- Regular cleaning of the PV modules by trained personnel;
- Vegetation management under and around the PV modules and within the transmission line servitude to allow maintenance and operation at full capacity;
- Office management and maintenance of operations and maintenance of buildings;
- Supervision of the solar PV facility operations; and
- Site security monitoring.

4.2.4. Decommissioning Phase

The proposed Project is expected to operate for at least 25years. Once the solar PV facility reaches the end of its life, the facility and the grid connection infrastructure will be decommissioned or continue to operate following the issuance of a new Power Purchase Agreement (PPA) by Eskom. If decommissioned, all components will be removed, and the site rehabilitated. Where possible all materials will be recycled, otherwise they will be disposed of in accordance with local regulations and international best practice.

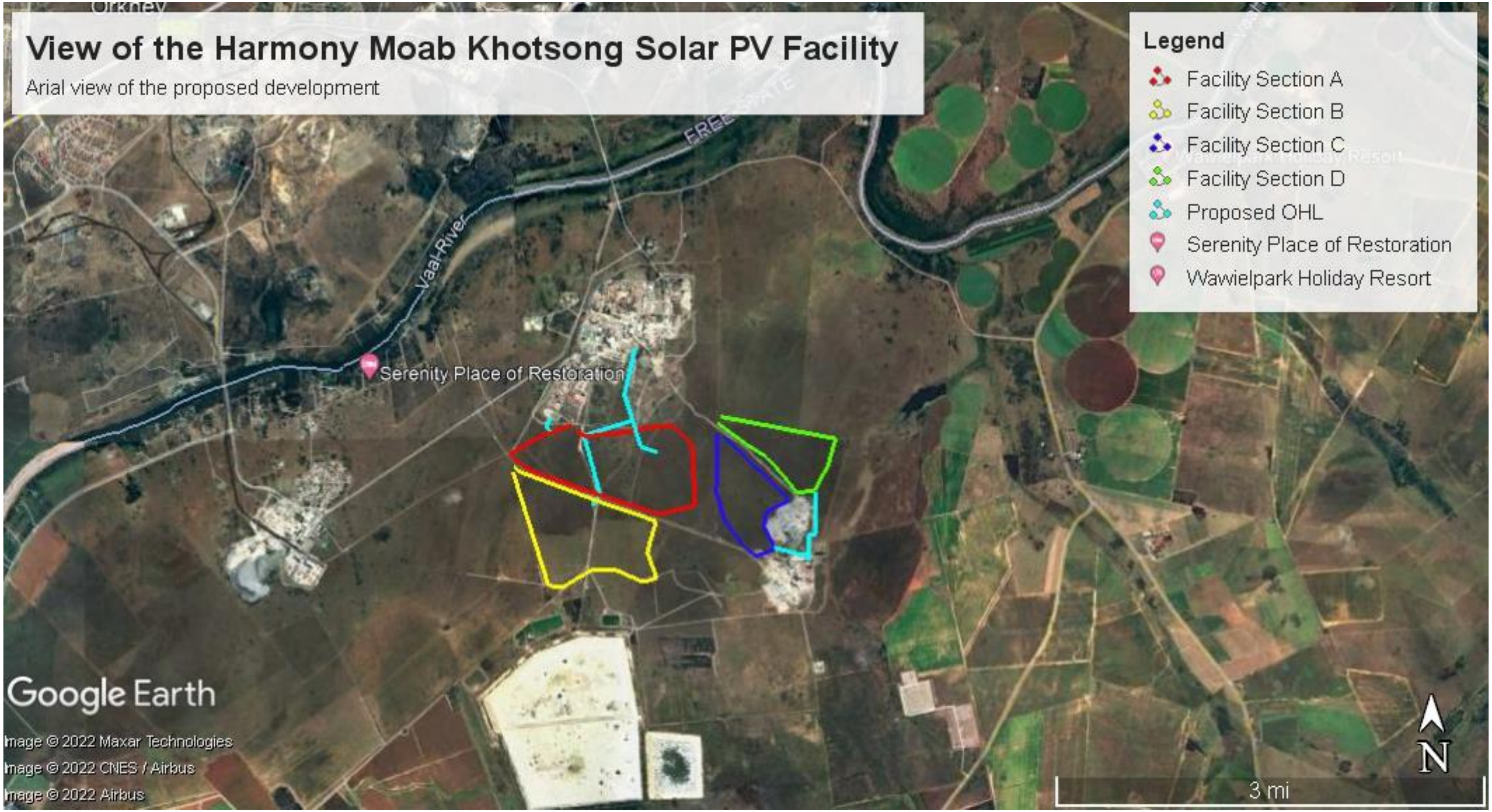

Figure 3: Facility layout map

5. ENVIROMENTAL SETTING

5.1. Landscape Character

The proposed 100MW Moab Khotsong Solar Energy Facility (SEF) is located on Farm Anglo 593, portion 593; Farm Hoekplaats 598, portion 598; Mispah 274, portion 274; Zaaiplaats 1/190, portion 1/190; Doornkom Wes 446, RE of portion 446; Chrystalkop 69, portion 69; and Zuiping 394, remaining extent of portion 394, portion 1/394, 3/394, 4/394 and 5/394. The development is located near Harmony Moab mining operations approximately ~10km north of the town of Vierfontein within the Moqhaka Local Municipality, and within the Fezile Dabi District Municipality, Free State Province.

The proposed development is located in the Free State Province in the central interior of South-Africa. The town of Viljoenskroon is located approximately 32km southeast and Orkney is located approximately 6.5km northwest of the proposed development (it has to be noted that Viljoenskroon is a small mining town). The project entails the generation of up to 100MW electrical power through the operation of photovoltaic (PV) panels. The total development footprint of the project will approximately be 450 hectares (including supporting infrastructure on site).

The farms are located in a grain farming agricultural region, but on soils of limited depth that are unsuitable for crop production. There is almost no cultivation on the land type on which the site is located. Maize production occurs on different, suitable soils of a different land type to the south of the site. The development site is used only for grazing of cattle. Mining occurs in the surrounding area.

The climate is strongly seasonal and semi below. arid, with an average rainfall volume of 565 mm/annum, falling between October and May. The summers are hot and wet, with summer temperatures ranging typically between 1430°C. The winters are cold and dry, wintertime temperatures ranging typically between with 1 to 19°C. An average of 34 frost days occurs each winter. The soils are perpetually moisture stressed, with mean annual evaporation of 2,407 mm, resulting in 78% of days where the soils lose more moisture than they receive from precipitation.

The main visual receptors in the area are industrial developments, the mining sector and to agricultural developments preferred route. The nearest towns in relation to the proposed development site are Orkney, Klerksdorp, Stilfontein, Viljoenskroon and Potchefstroom. The site is located approximately 2.7km south of the Vaal River, which also serves as the provincial boarder separating the Free State and the North West Province. Most of the site is located within the Vaal River Mining Area, the site is accessible via the Vermaasdrift road originating from the R76 south of the project site, and via the Stokkiesdraai road originating from the R30 west of the project site.

The Moqhaka Local Municipality incorporates Kroonstad, Renovaal, Steynsrus, Vierfontein and Viljoenskroon with a combined population of 160 532 people. The general tendency of migration from rural to urban areas is also occurring in the area, as is the case in the rest of the Free State Province. In comparison to the other municipalities within the Fezile Dabi District, it appears as if Moqhaka is significantly less urbanised. The main economic sectors in the municipality are agriculture, commercial transport, business services and mining.

The topography of the study area is described as slightly undulating plains with an even (flat) slopes. The proposed development site itself is located at an average elevation of 1 310m above sea level and has an even slope to the north. The preferred site is located at an above mean sea level (amsl) of approximately 1308m at the highest elevation and at an amsl of 1296m at the lowest elevation.

5.2. Land Use

The proposed development is located in close proximity to the Vaal River. Most of the site is located within the Vaal River Mining Area, a degraded grassland transformed by mining. The preferred site is located at an above mean sea level (amsl) of approximately 1308m at the highest elevation and at an amsl of 1296m at the lowest elevation.
The observers in a 5km radius include:

- Eskom power line infrastructure.
- Vaal Reefs Eleven Substation.

- Harmony Moab Mine.
- Tailings dams.
- Water Processing Plant.
- Other mining operations.
- Various homesteads on farms and smallholdings
- R502 road
- Vermaasdrift road
- Stokkiesdraai road
- Vaal River.
- Wawielpark Holiday Resort.

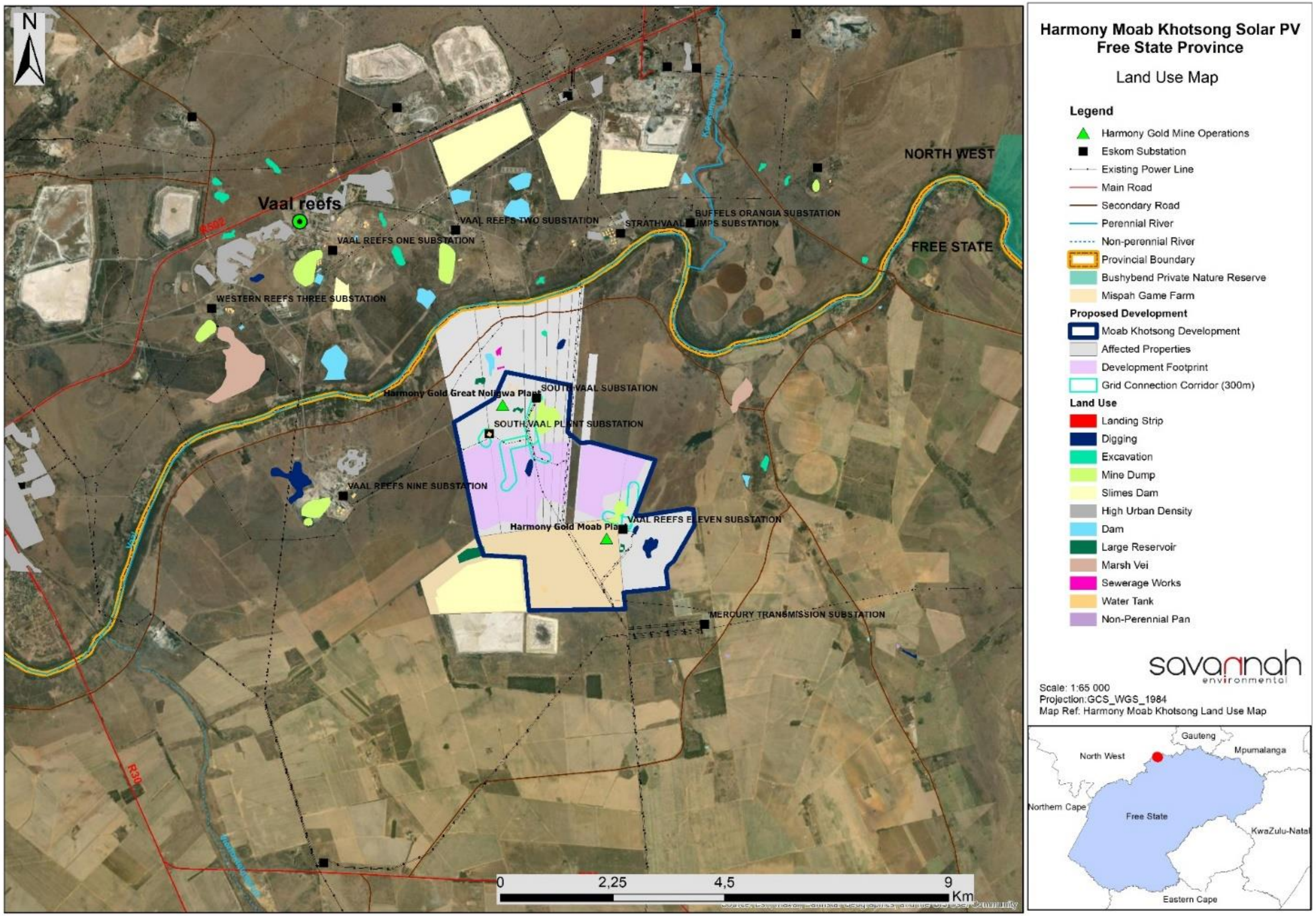

Figure 4: Proposed Development location map.

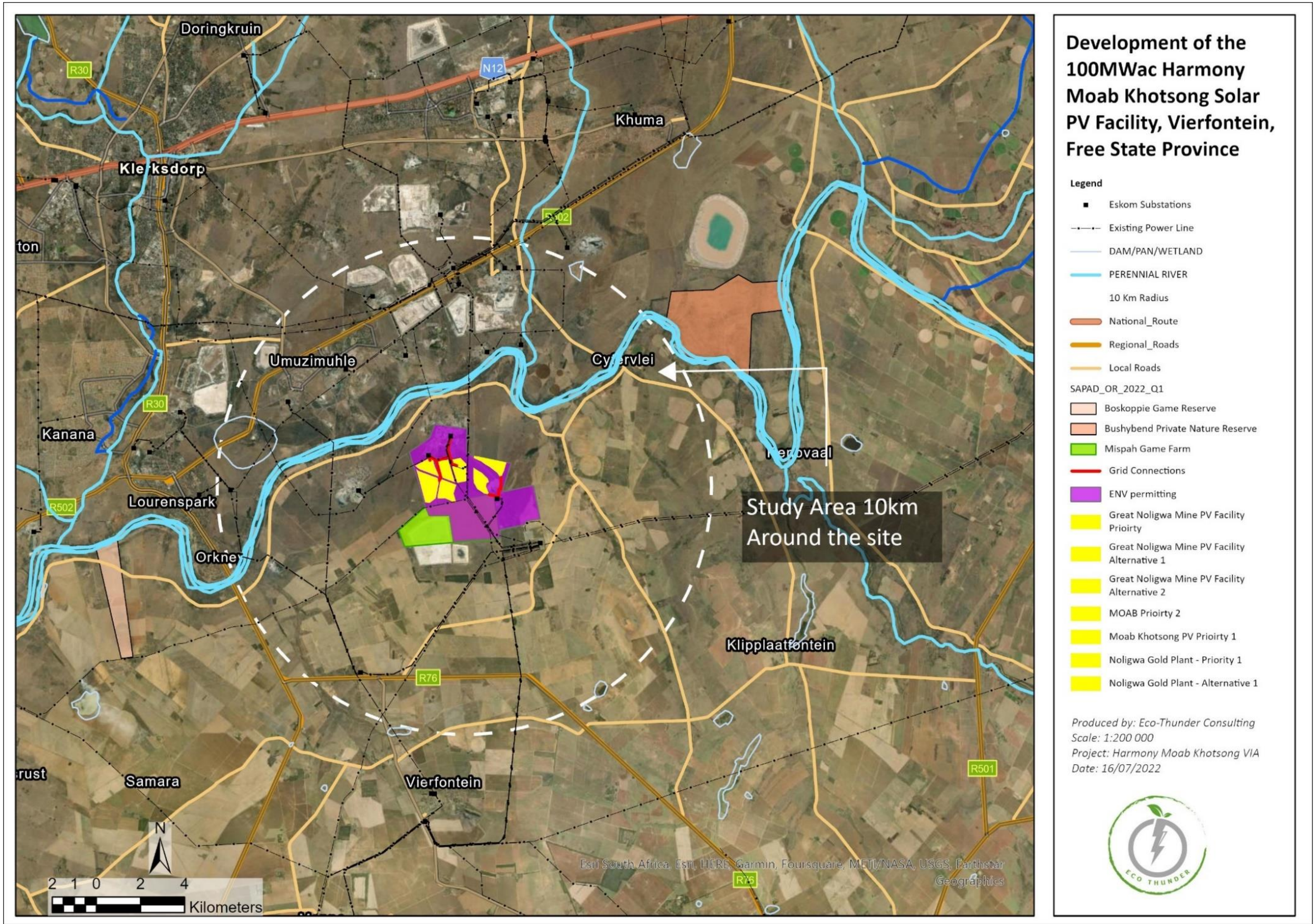

Figure 5: Proposed Development location map which indicates the zone of visibility

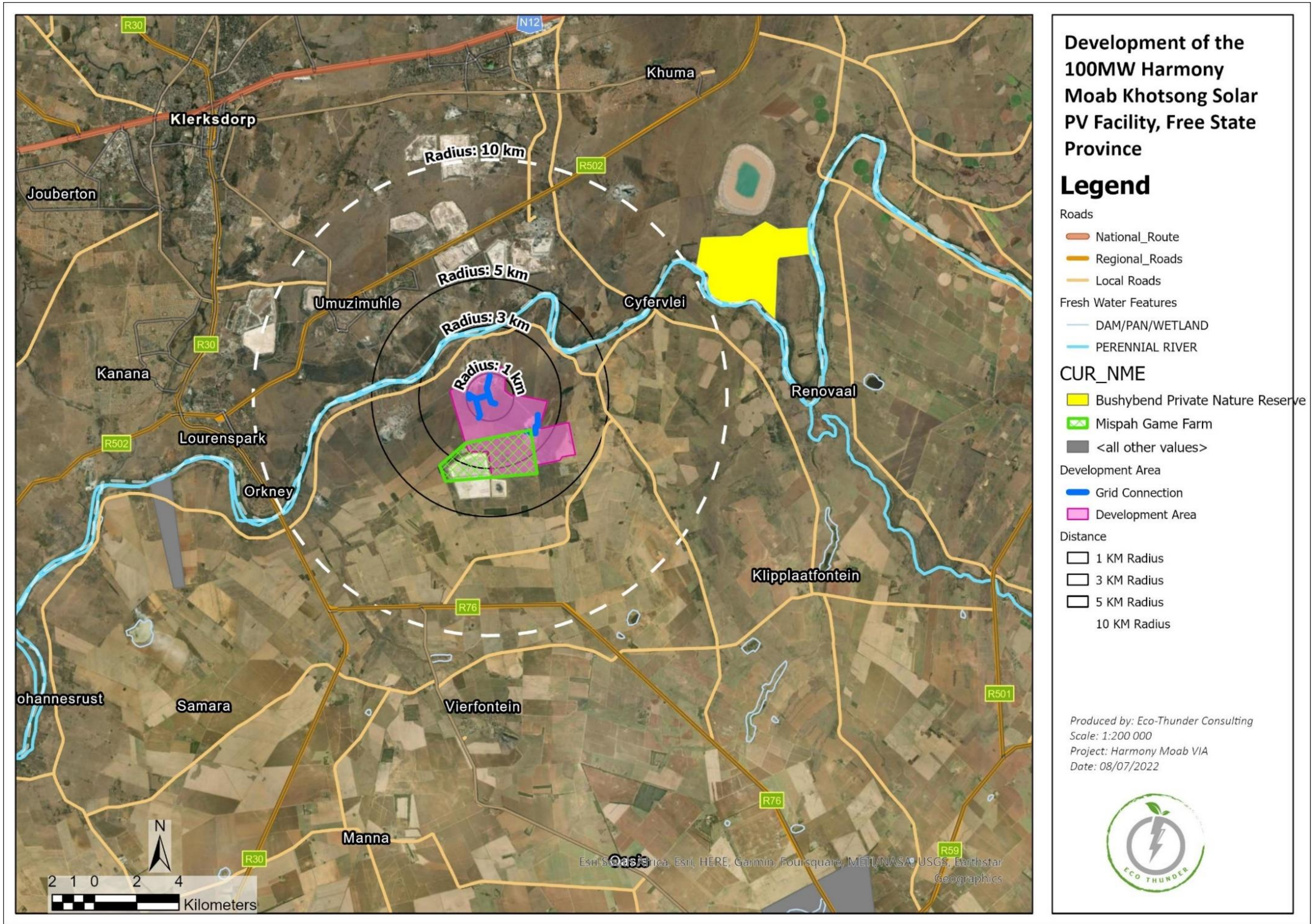

Figure 6: Proposed Development showing sensitive natural features

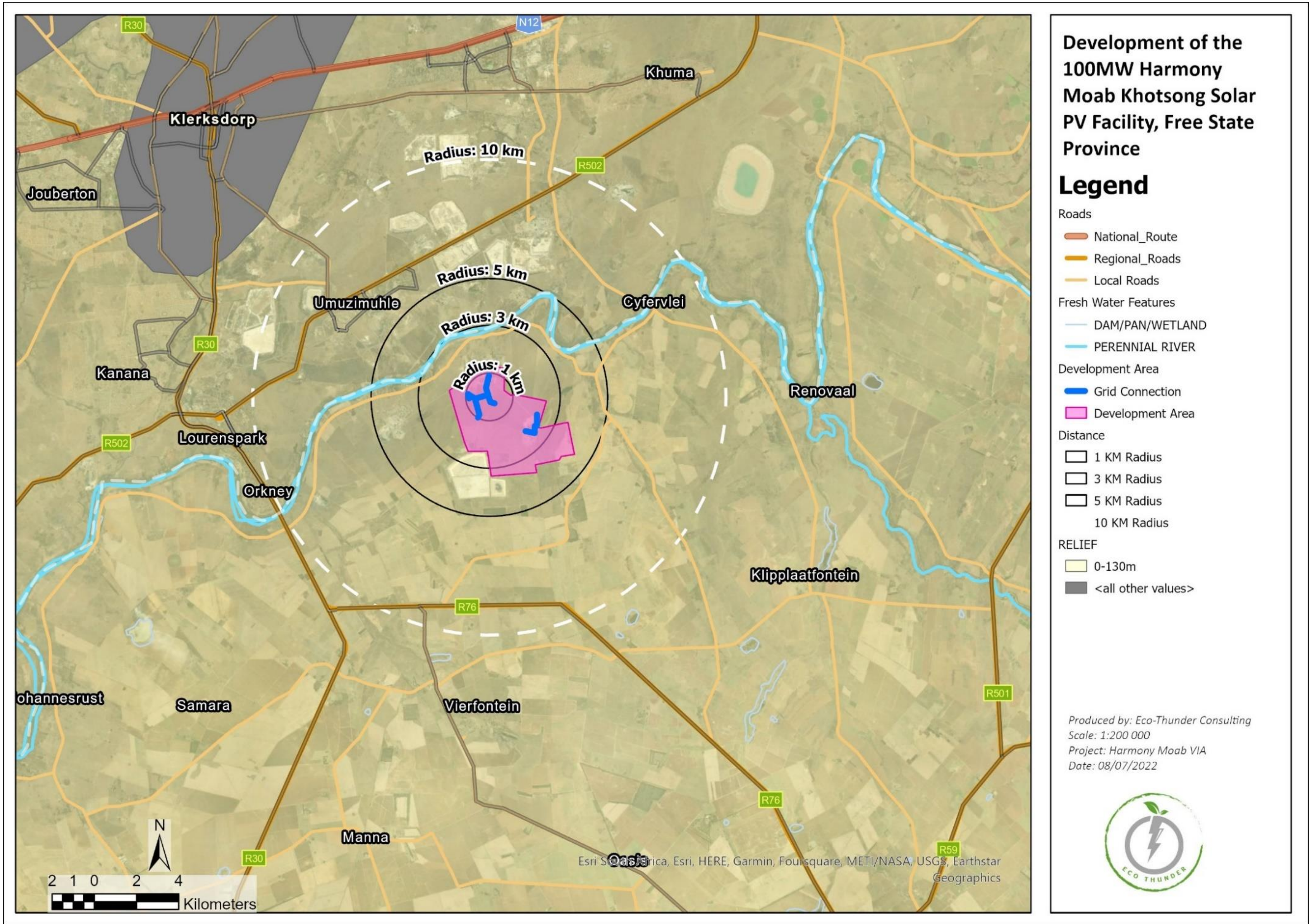

Figure 7: Proposed Development topographic map with view shed

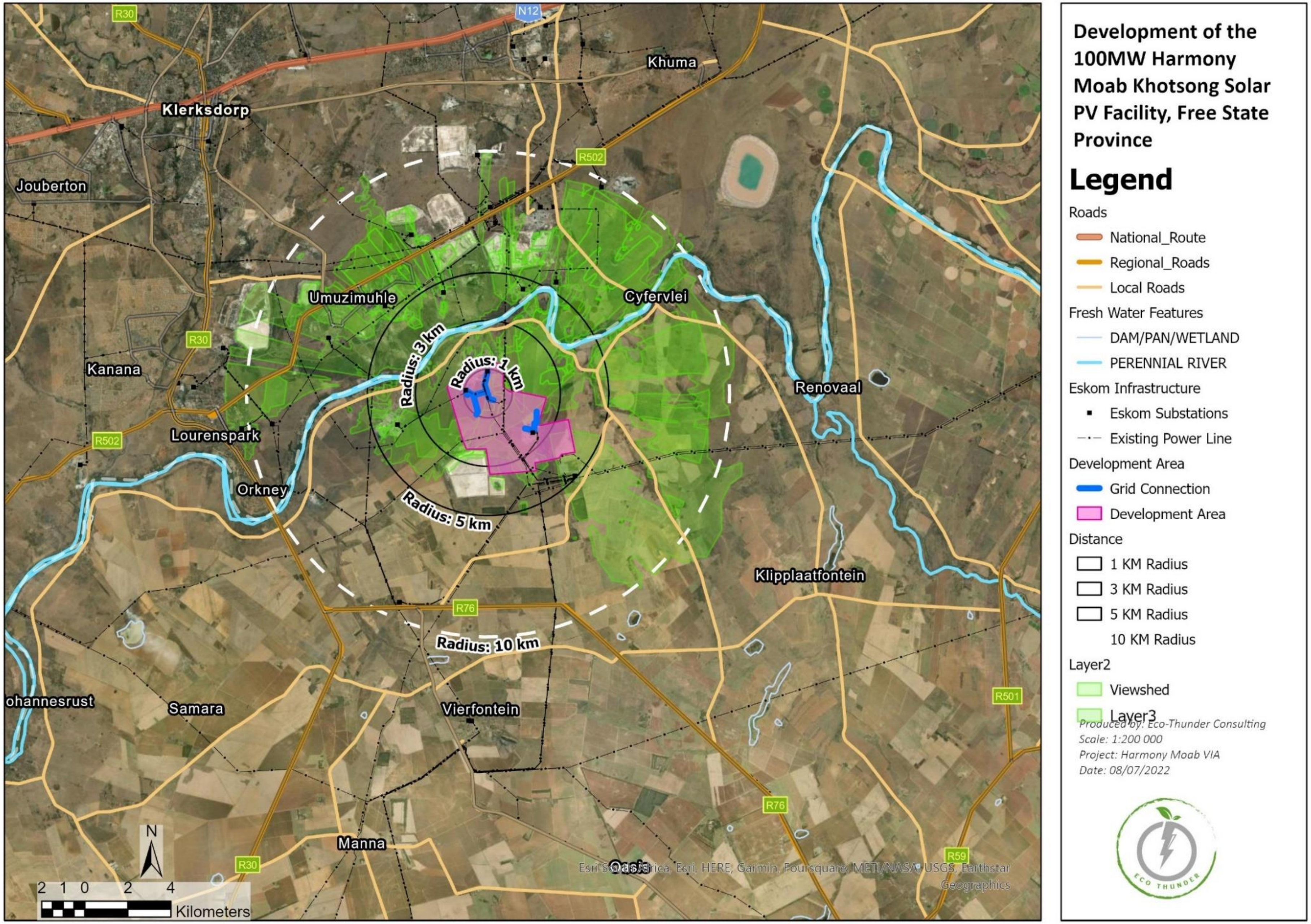

Figure 8: Viewshed analysis of the proposed development

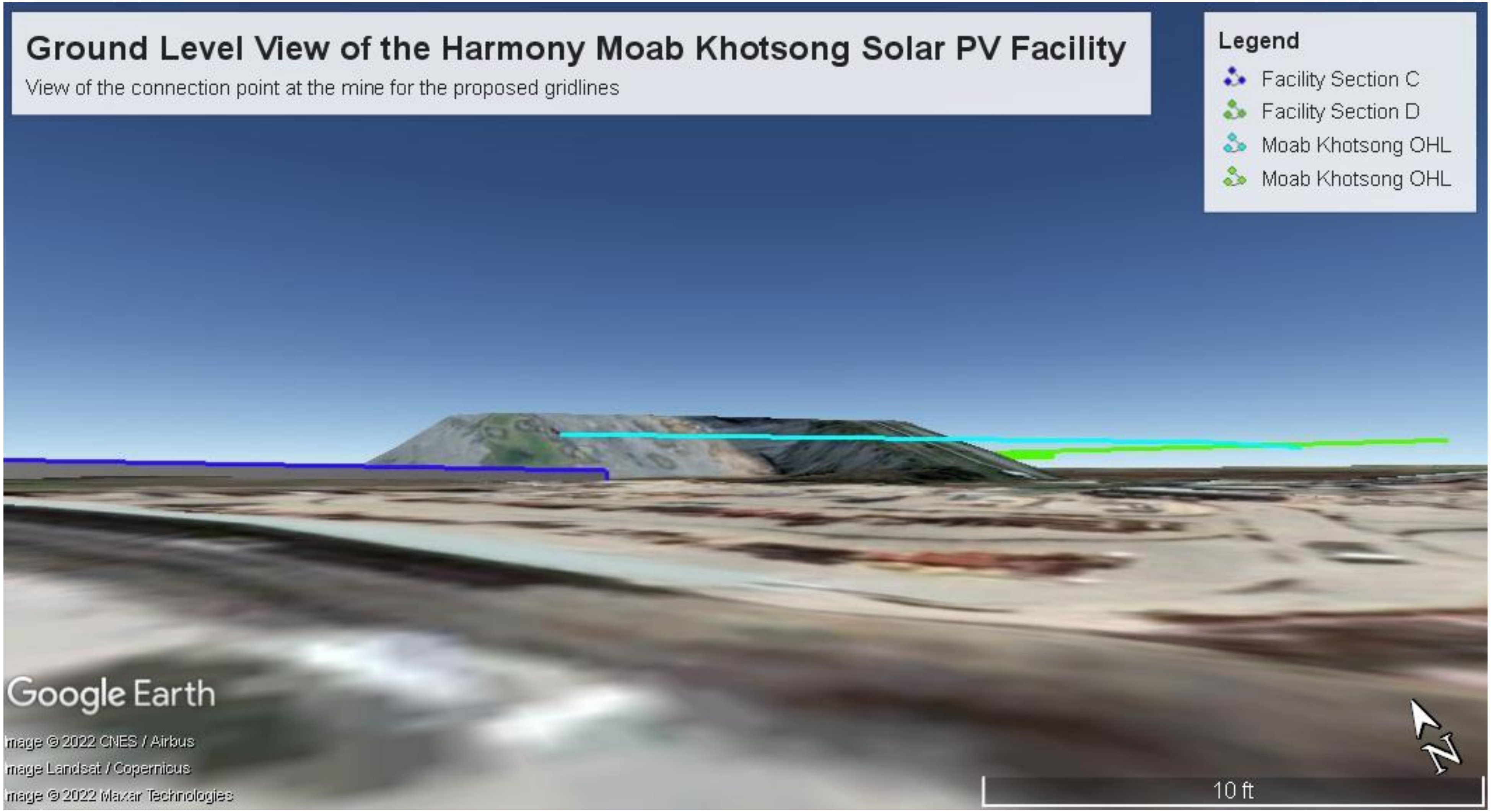

Figure 9: Ground level view of the proposed development

Figure 10: Ground view of development facing the road

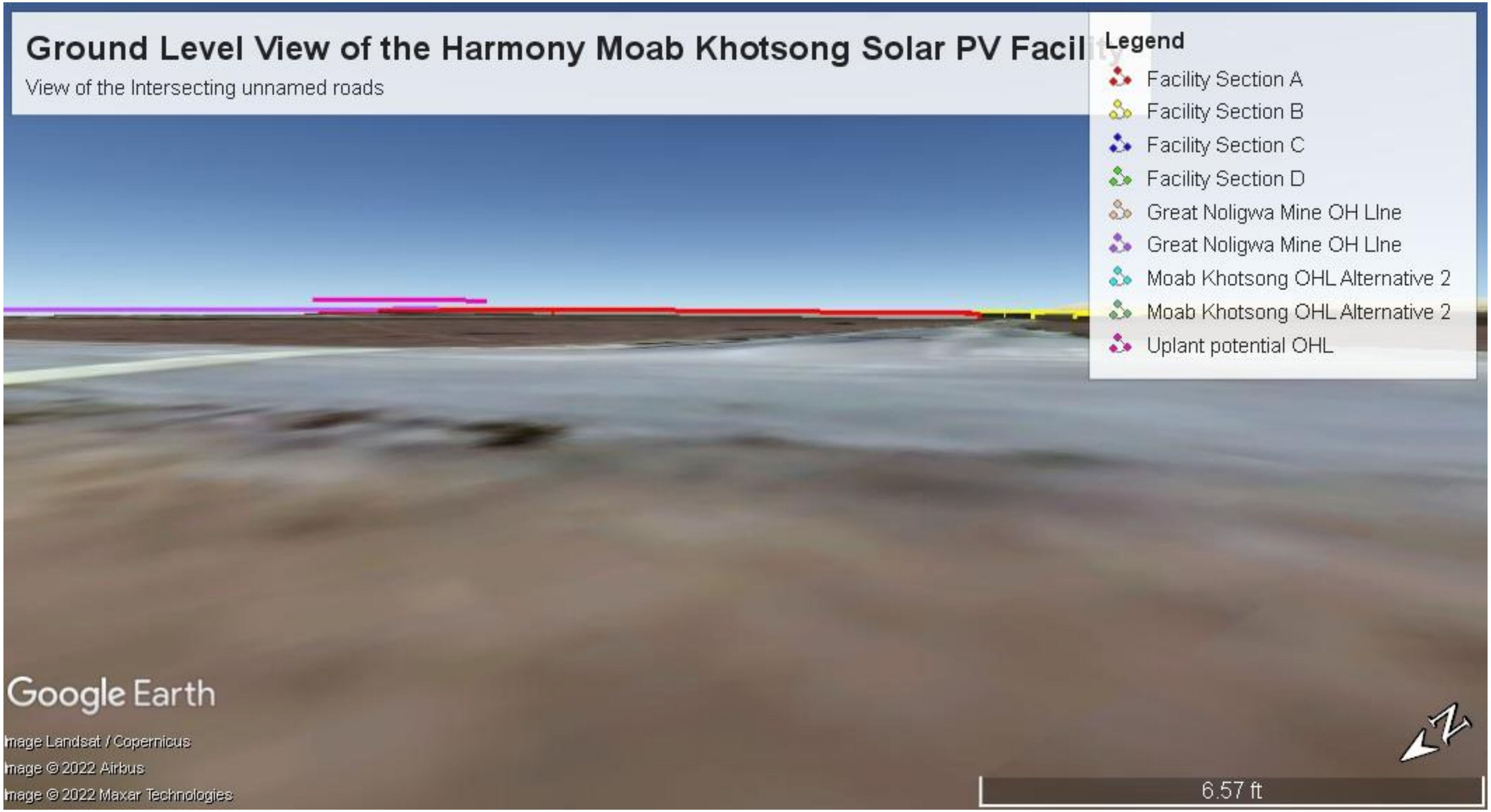

Figure 11: Proposed Development ground view showing intersecting roads

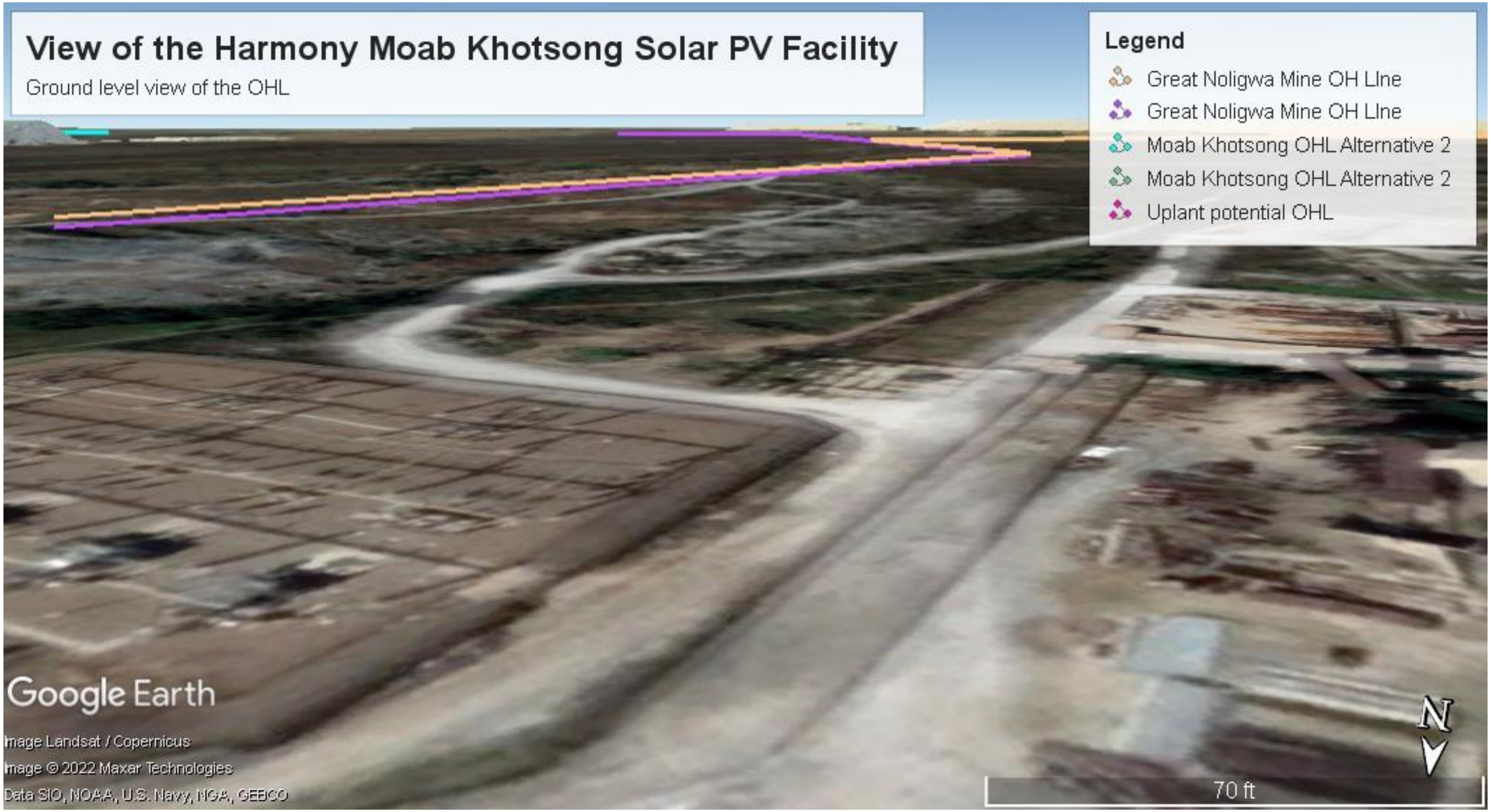

Figure 12: Proposed development ground view showing proposed gridline development

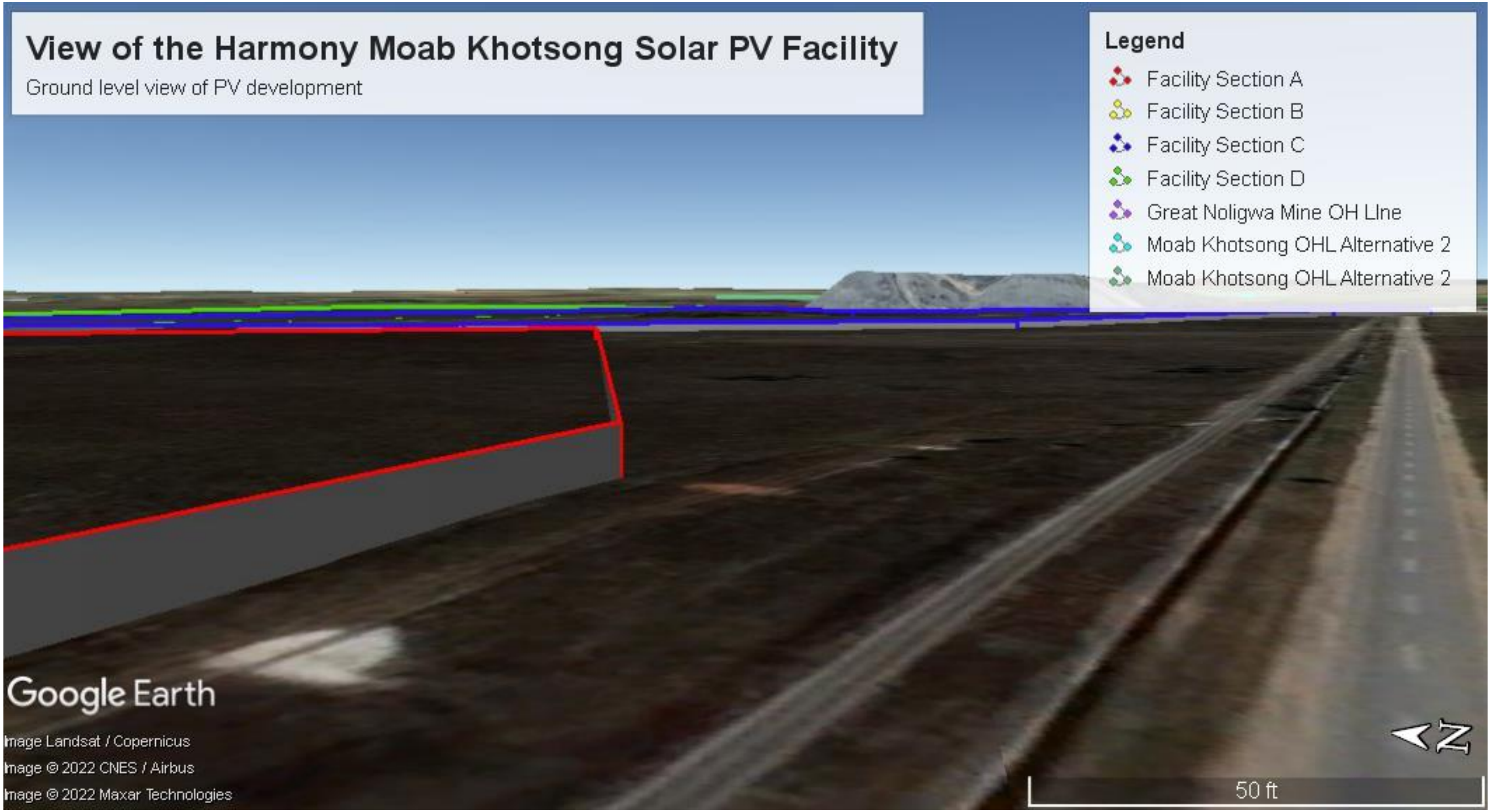

Figure 13: Proposed Development ground level view of the PV facility

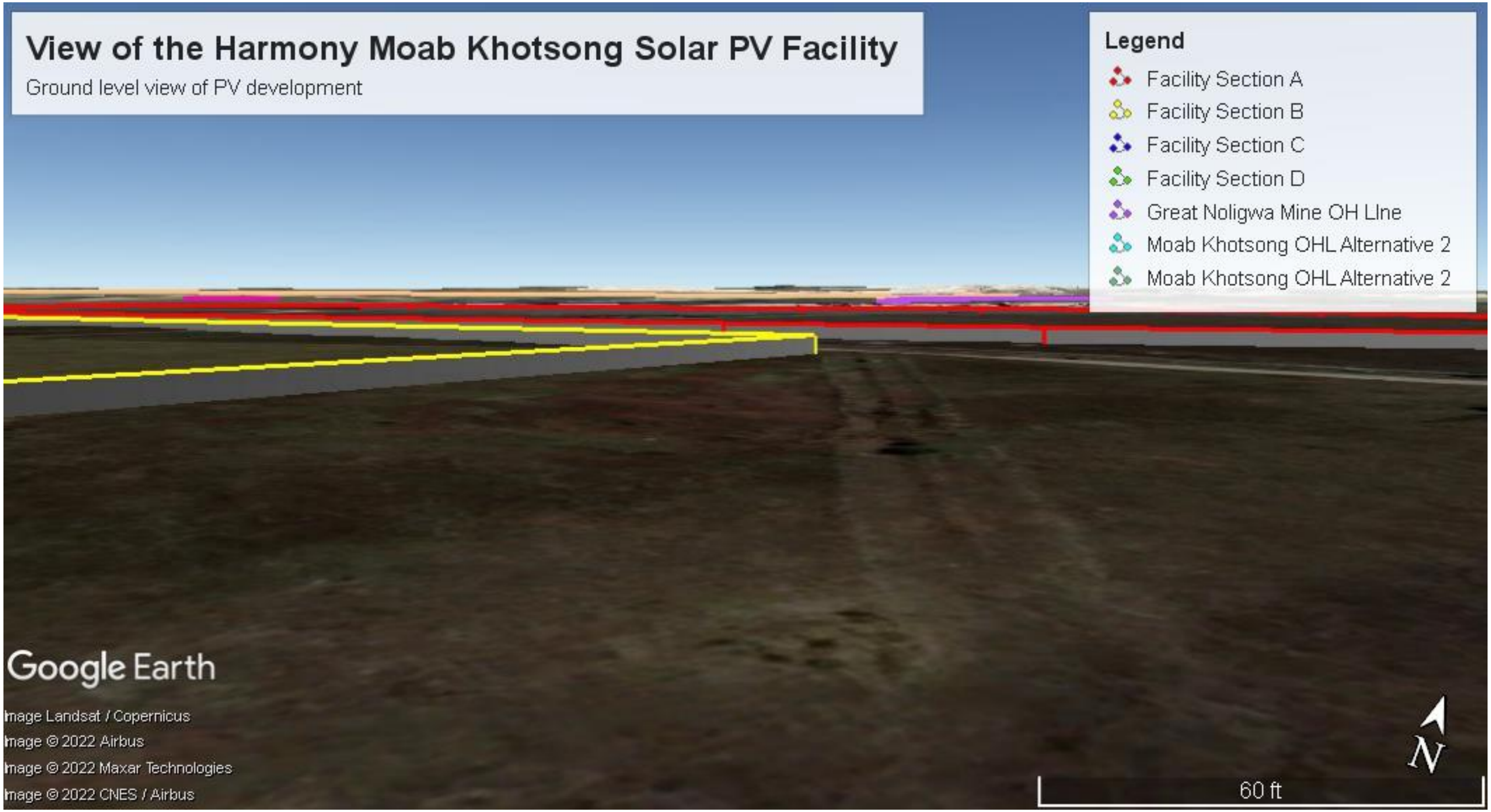

Figure 14: Proposed Development additional view ground level

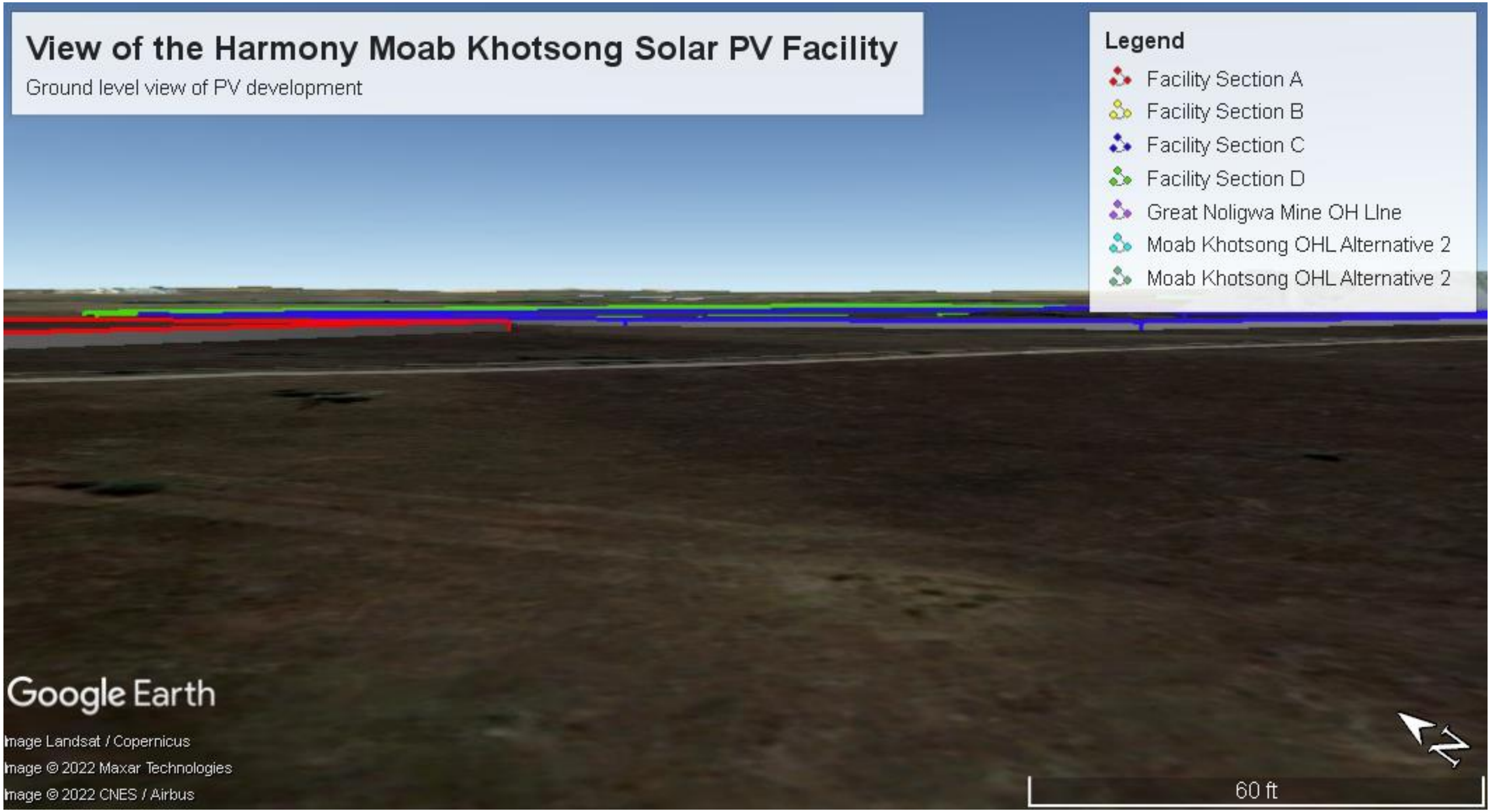

Figure 15: Proposed Development of pv development ground view

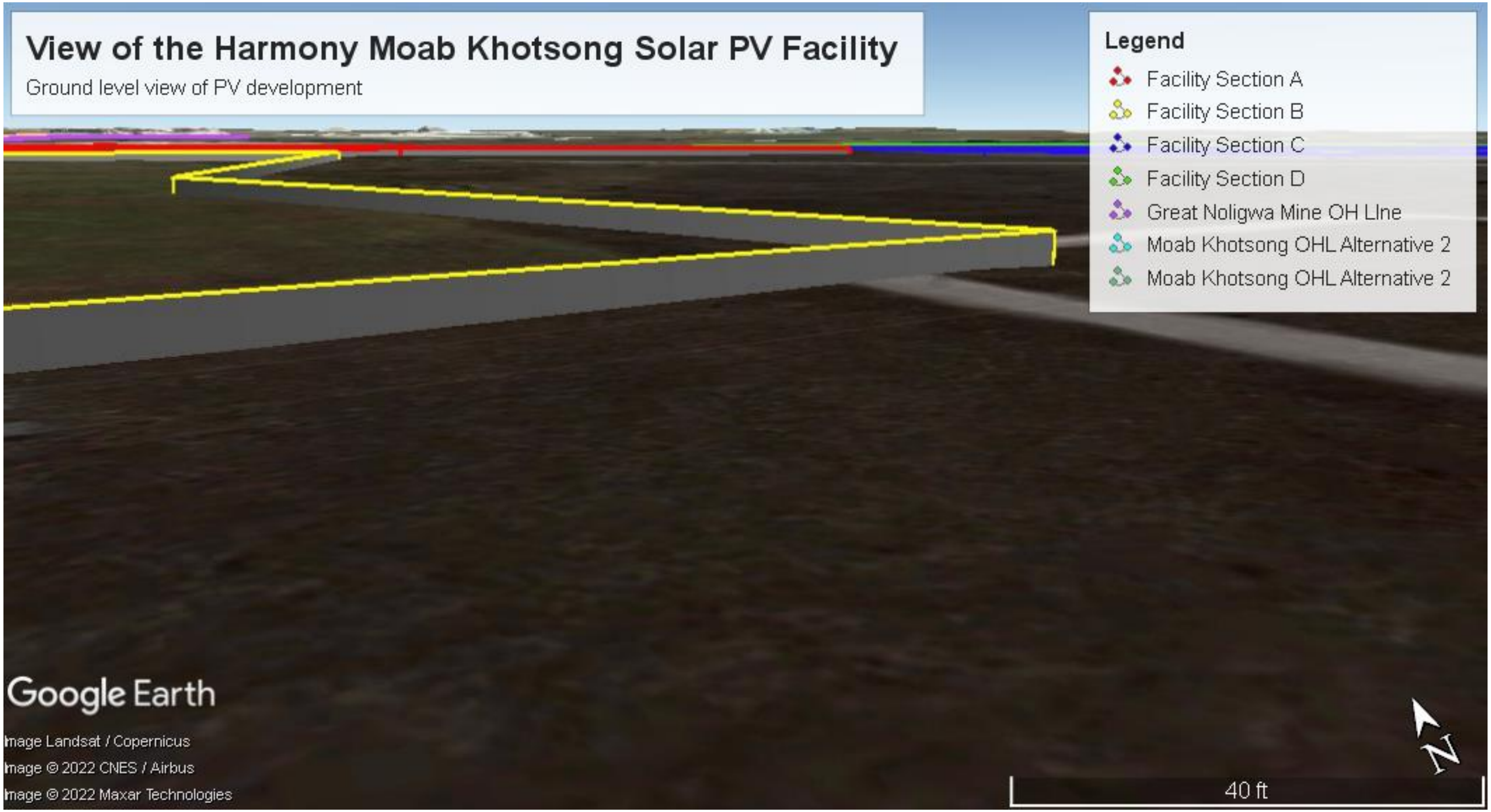

Figure 16: Proposed Development additional views of the ground view layouts

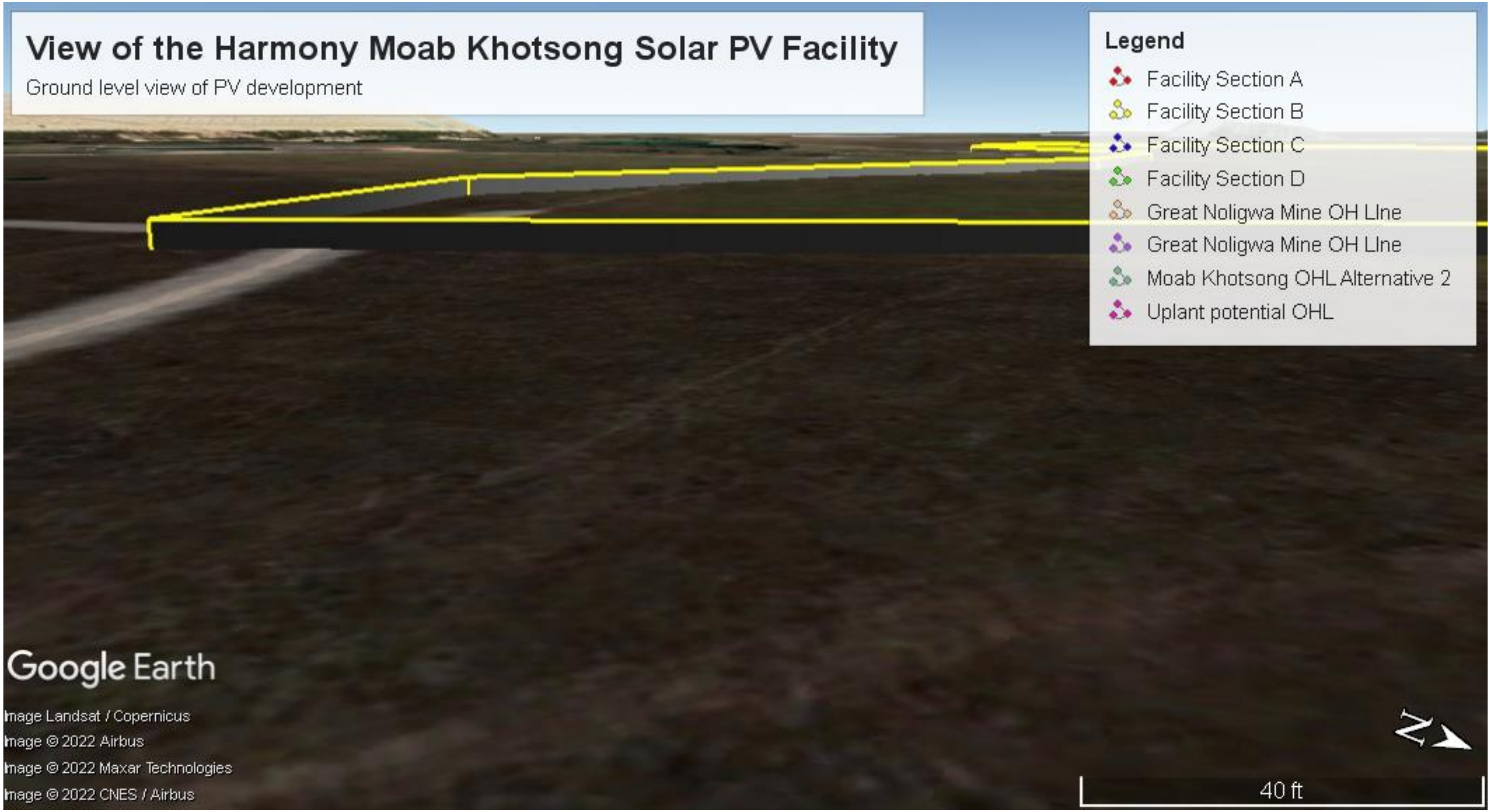

Figure 17: Proposed Development view of section B

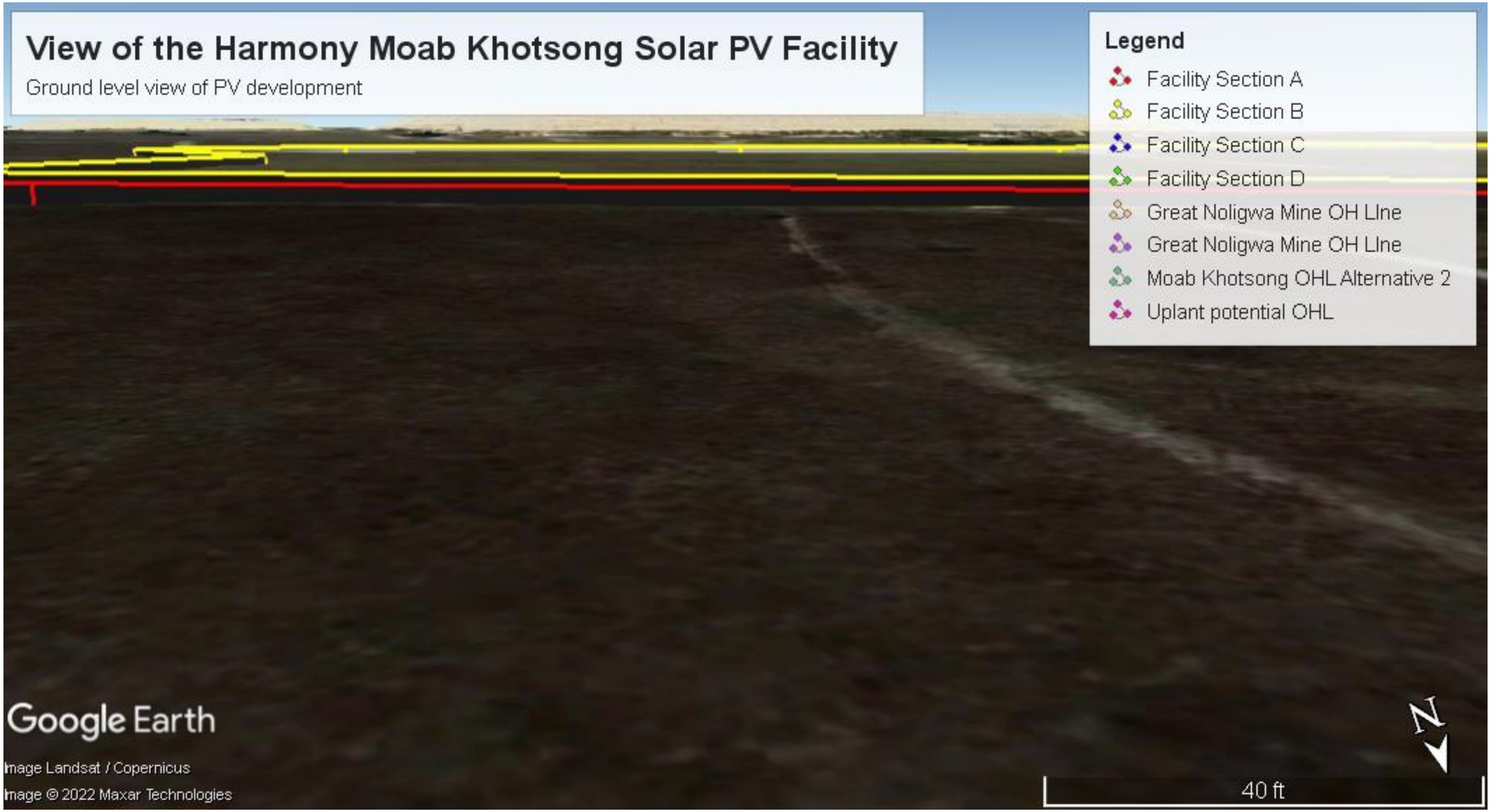

Figure 18: Proposed Development ground view of facility A and B

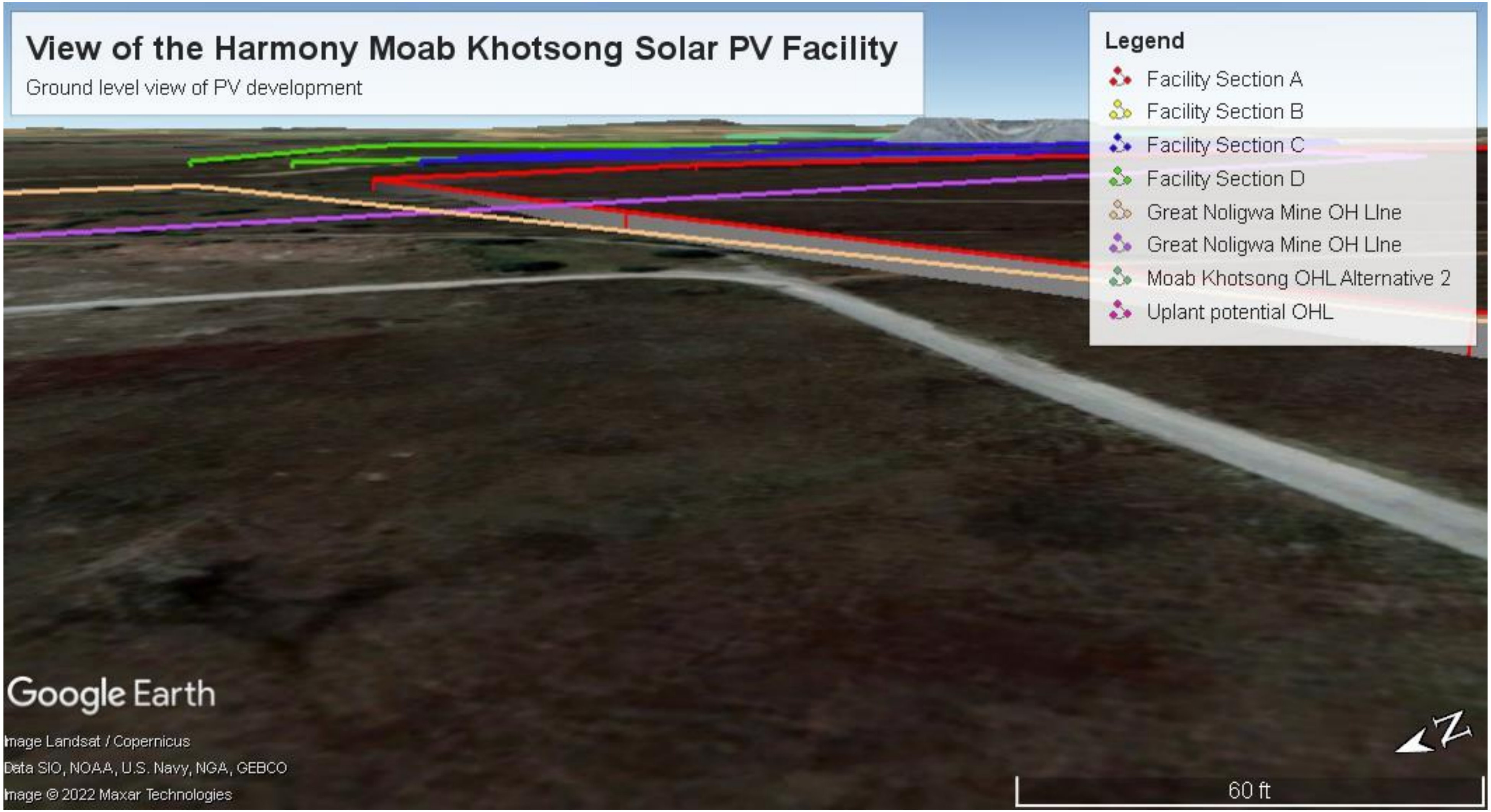

Figure 19: Proposed Development ground level of majority of the PV Facility

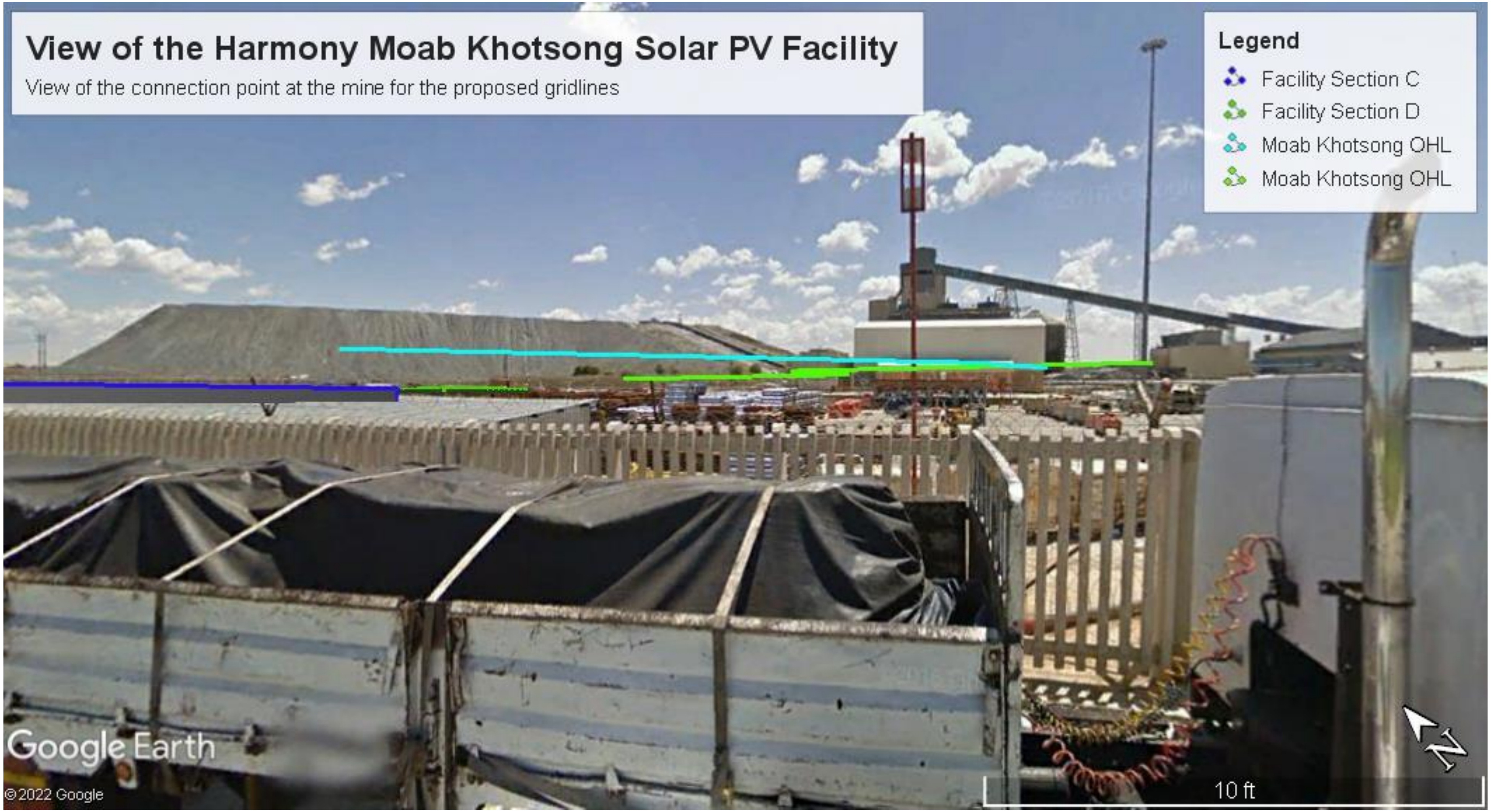

Figure 20: Ground view of development showing grid connection

Figure 21: Proposed Development surrounding area to the west

Figure 22: View of the surrounding area adjacent to the PV facilities showing existing infrastructure

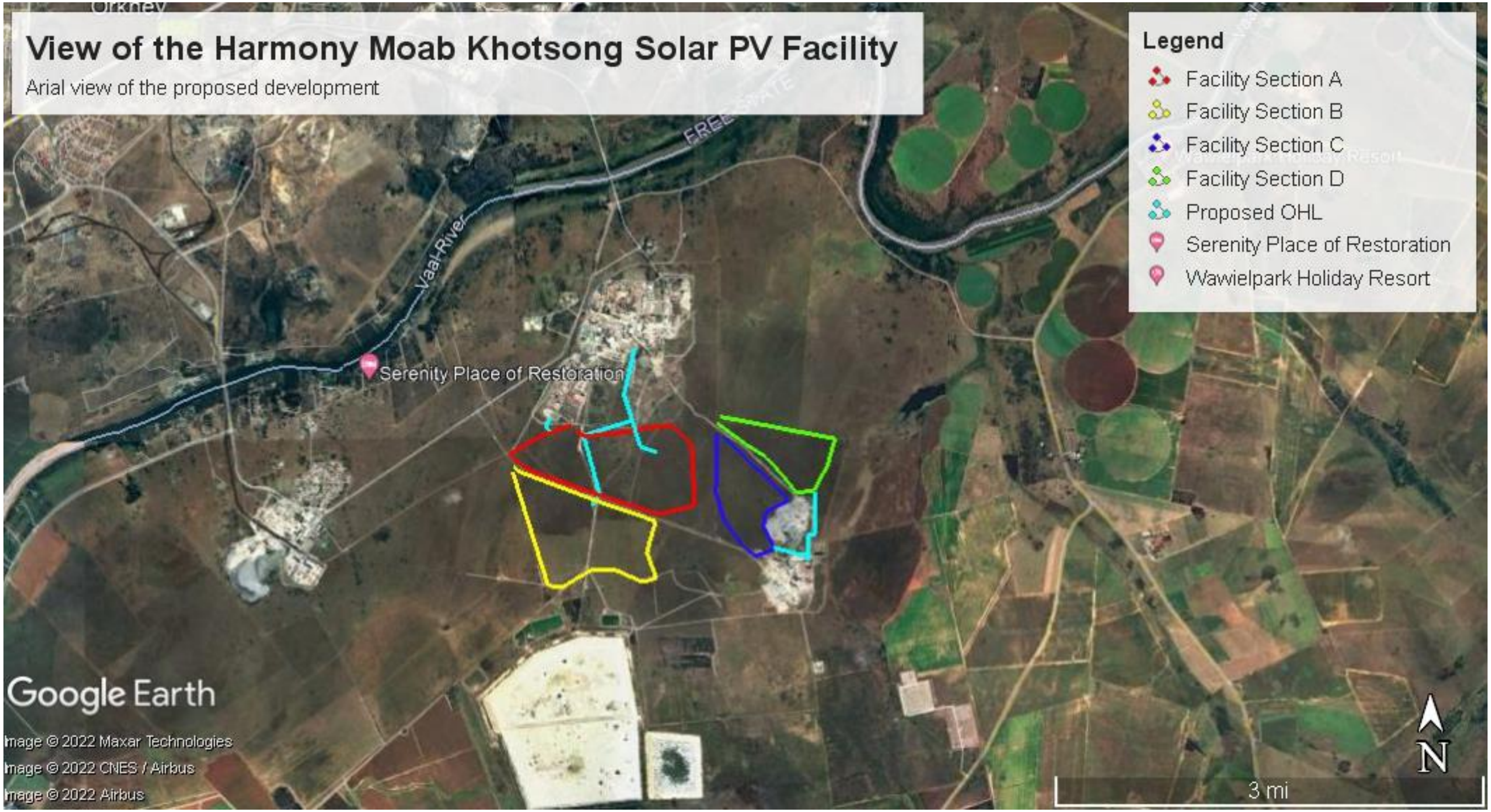

Figure 23: Proposed Development layout map

Figure 24: Proposed Development view from road running parallel to the development

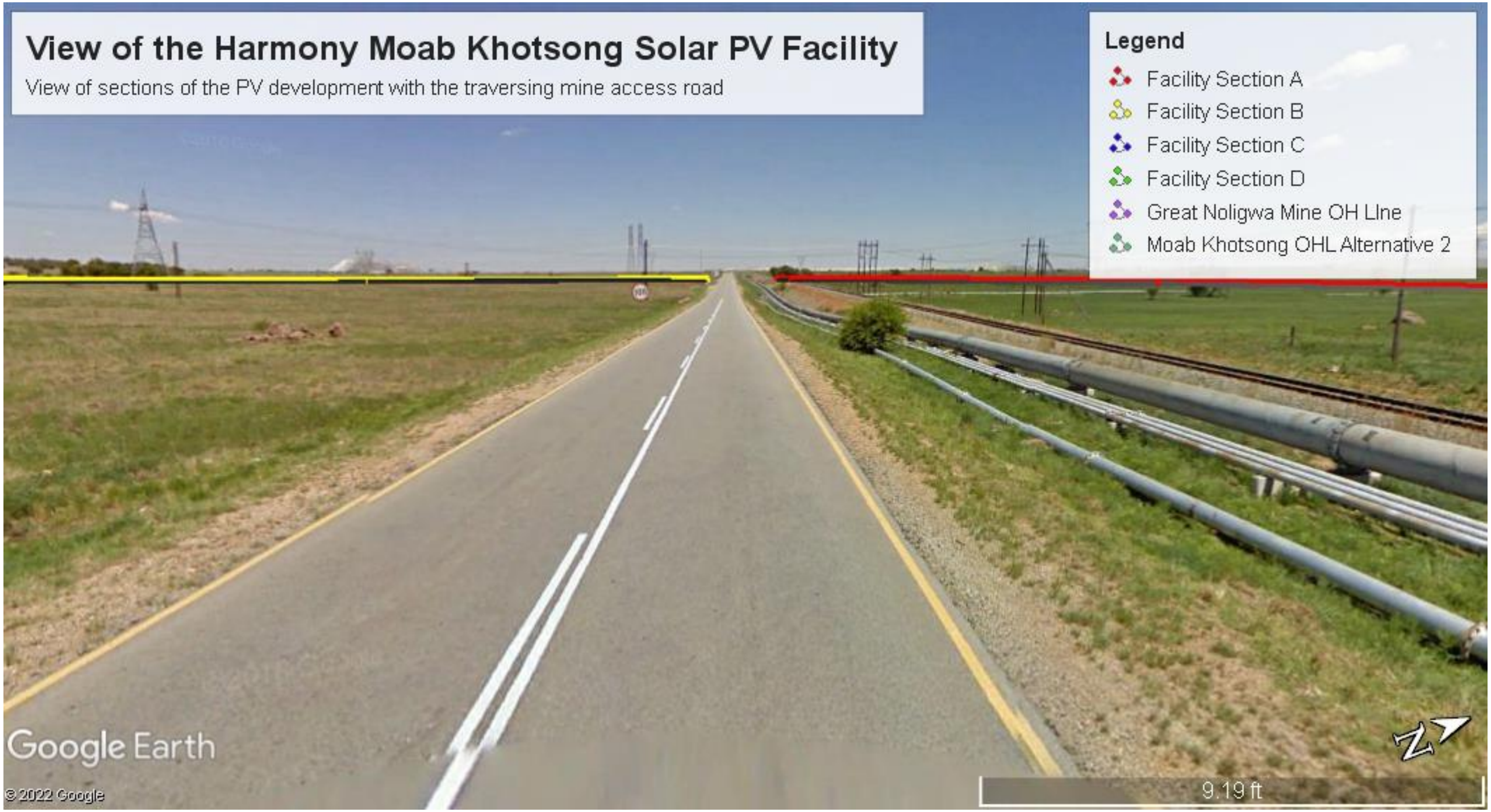

Figure 25: View of sections of the PV facility on the main mine access road

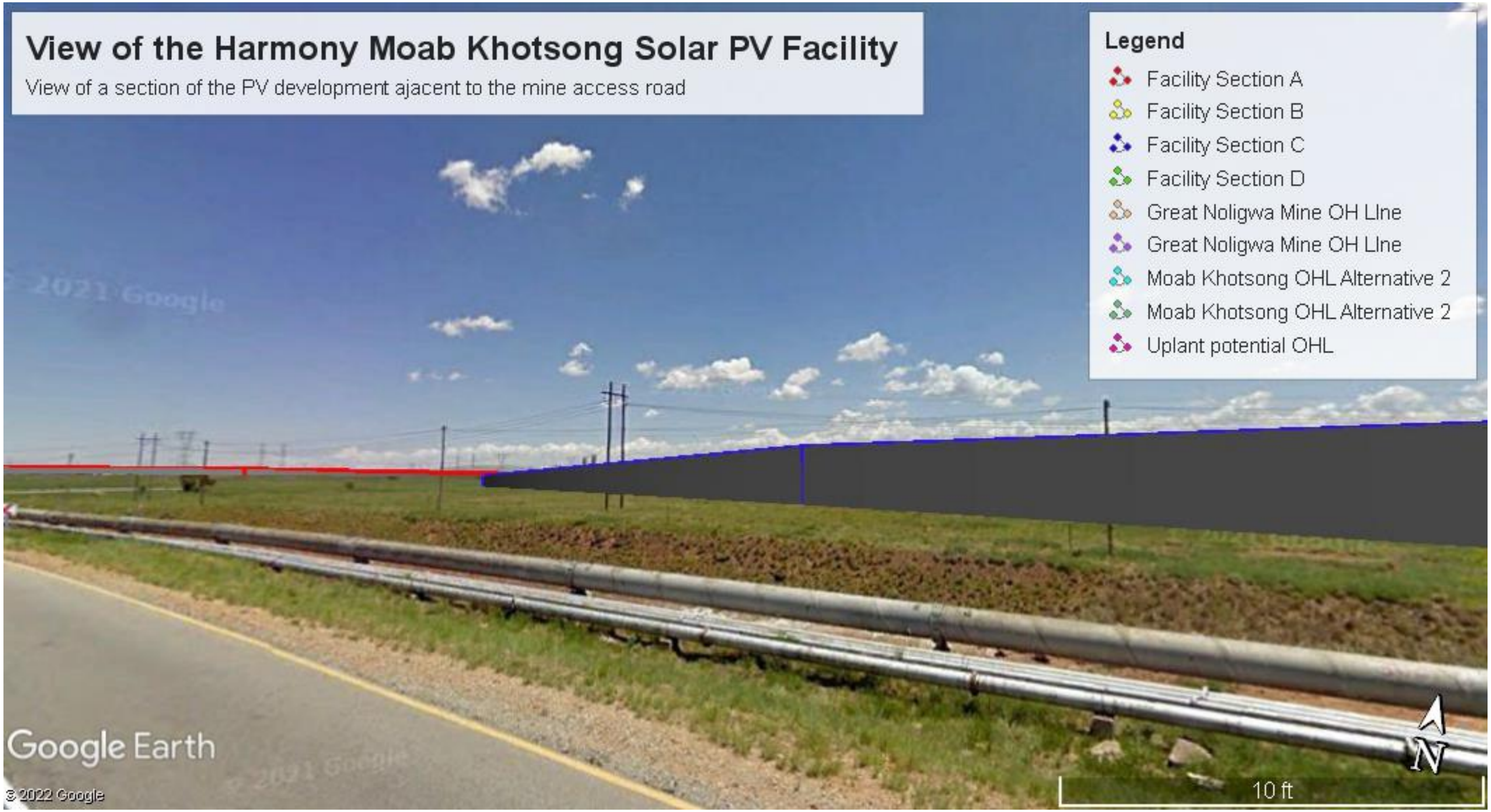

Figure 26: Alternative view of mine access road and proposed PV development

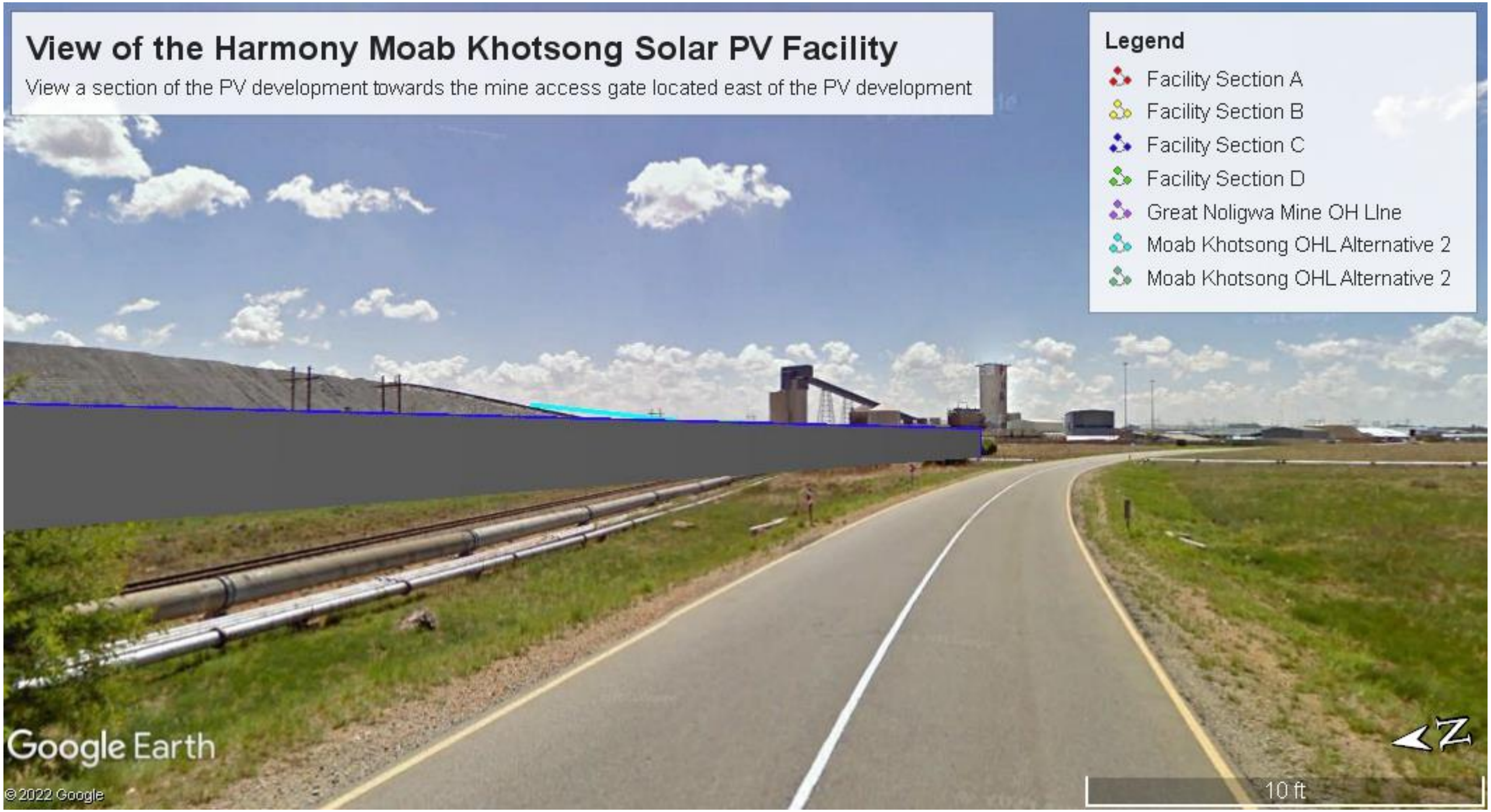

Figure 27: View of proposed facility C from the mine access road

Figure 28: View from the intersection running to the PV development

Figure 29: View of PV Facility from unknown Viljoenskroon road .

Figure 30: Alternative view of PV facility from Viljoenskroon road

6. VISUAL RESOURCE

6.1. Visual Resource Value, Scenic Quality and Landscape Sensitivity

The value of the visual resource and its associated scenic quality are primarily derived from the combination of land-uses described above overlaid onto an open rolling topography. These are the primary features that give the area its general characteristics and a sense of place.

The sensitivity of the study area's landscape can be defined as high, medium, or low (as indicated below and in Figure 31), and is dependent on the Character – does it contribute to the area's sense of place and distinctiveness; Quality – in what condition is the existing landscape; Value – is the landscape valued by people, local community, visitors, and is the landscape recognised, locally, regionally, or nationally; and Capacity – what scope is there for change (either negative or positive) in the existing landscape character?

When the criteria are considered and understood within the context of the sub-region, a visual resource value of *low* (power utility and mining areas), *moderate* (drainage lines, open farmland, and urban recreation development), and *high* (bush-covered low hills), is allocated.

Table 1: Value of the Visual Resource

(After: LiEMA 2013)

High	Moderate	Low
This landscape type is considered to have a *high* value because it is a: Distinct landscape that exhibits an extremely positive character with valued features that combine to give the experience of unity, richness, and harmony. It is a landscape that may be of particular importance to conserve, and which has a strong sense of place.	This landscape type is considered to have a *moderate* value because it is a: Common landscape that exhibits some positive character, but which has evidence of alteration / degradation / erosion of features resulting in areas of more mixed character.	This landscape type is considered to have a *low* value because it is a: Minimal landscape generally negative in character with few, if any, valued features.
Sensitivity: It is sensitive to change in general and will be detrimentally affected if change is inappropriately dealt with.	Sensitivity: It is potentially sensitive to change in general and change may be detrimental if inappropriately dealt with.	Sensitivity: It is not sensitive to change in general and change may be detrimental if inappropriately dealt with.

The Project sites occur within a landscape type rated moderate, with nearby power infrastructure and mines rated low. Generally, because most of the areas surrounding the site are rated moderate to moderately high in scenic value, the area is potentially sensitive to change if the change is inappropriately dealt with.

6.2. Sense of Place

According to Lynch (1992), a sense of place is the extent to which a person can recognize or recall a place as being distinct from other places - as having a vivid, unique, or at least particular character of its own. The sense of place for the study area derives from a combination of the local landscape types described above, their relative 'intactness', and their impact on the senses.

The sub-region is recognised as a major agricultural area. The combination of the mining land and farming activities, along with the distinctiveness of the rolling open land, gives the study area a mixed sense of place. One, in which new development needs to be carefully managed such that the combination of development activities associated with the Project and the landscape are not at odds with each other.

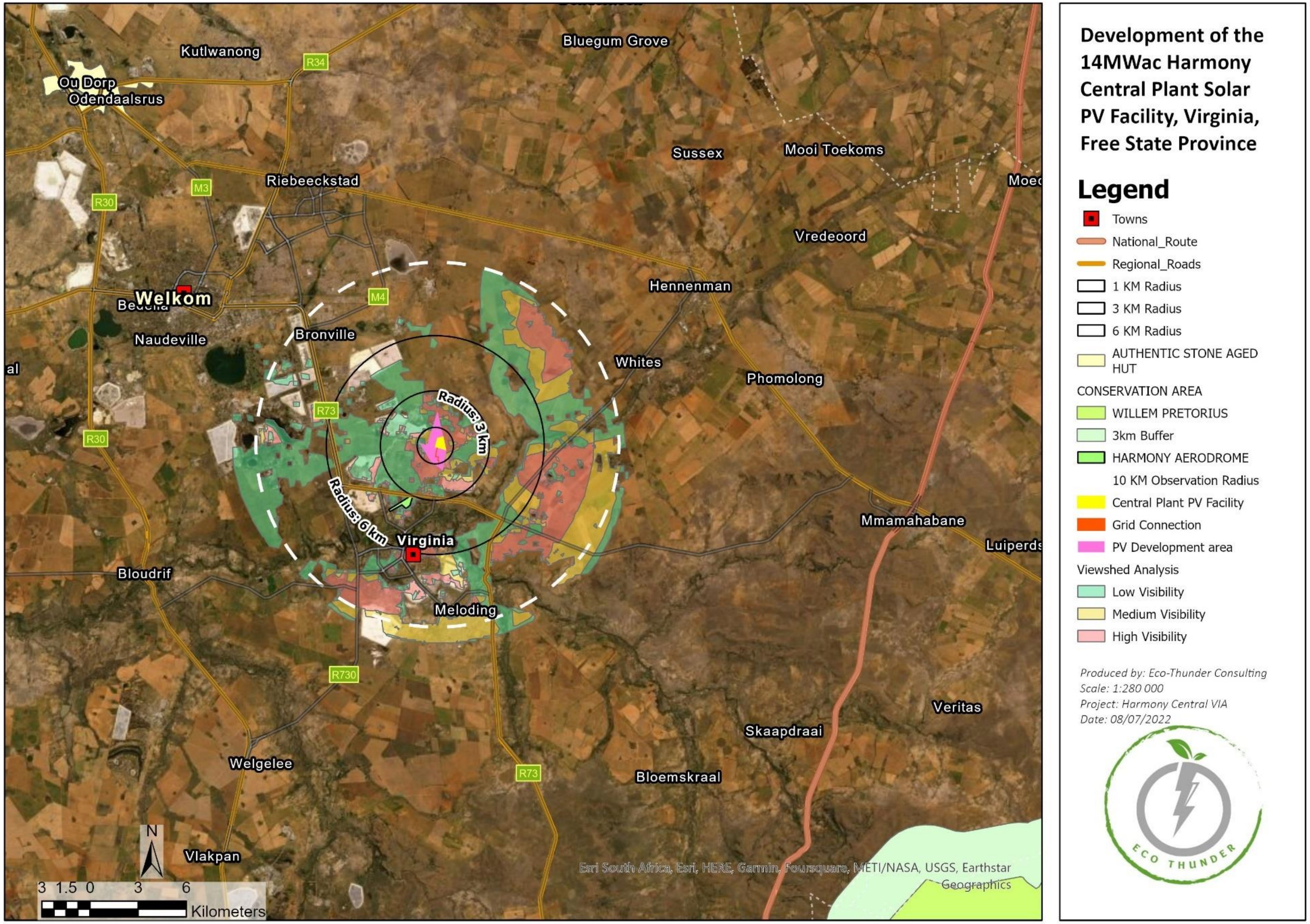

Figure 31: Viewshed analysis

7. VISUAL IMPACT ASSESSMENT

The *intensity* of impact is assessed through a synthesis of visual intrusion, visibility, visual exposure, and viewer sensitivity criteria. Once the intensity of impact has been established this value is further qualified with spatial, duration and probability criteria to determine the *significance* of the visual impact.

In assessing the intensity of visual impact, the study assumes the worst-case scenario, i.e., that the facility (PV and Grid Connections) will be built at the same time. Figure 3 shows that the facilities and grid connection infrastructure are located immediately adjacent to each other, resulting in all Project components being observed within the same visual envelope (to a greater or lesser degree) from the sensitive viewing areas.

It is anticipated that visual impacts will result from the activities and infrastructure in all Project phases i.e., construction, operational, and closure. Activities associated with the Project will be visible, to varying degrees from varying distances around the Project site. During the establishment phase, the Project's visibility will be influenced due to the preparatory activities, primarily earthworks and infrastructure establishment. During the operation phase, the visibility of the Project will be the result of the established PV arrays, the substation, and associated powerline infrastructure (grid connections).

Typical issues associated with solar PV Projects are:

- Who will be able to see the new development?
- What will it look like, and will it contrast with the receiving environment?
- Will the development affect sensitive views in the area and if so, how?
- What will be the impact of the development during the day and at night?
- What will the cumulative impact be if any?

These potential impacts will be considered and rated in the following sections.

7.1. Impact Index

The combined results of the visual exposure, viewer incidence / perception and visual distance of the proposed PV facility is displayed on Map 6. Here the weighted impact and the likely areas of impact have been indicated as a visual impact index. Values have been assigned for each potential visual impact per data category and merged to calculate the visual impact index.

An area with short distance visual exposure to the proposed infrastructure, a high viewer incidence and a potentially negative perception (i.e., a sensitive visual receptor) would therefore have a higher value (greater impact) on the index. This helps in focusing the attention to the critical areas of potential impact and determining the potential magnitude of the visual impact.

The index indicates that potentially sensitive visual receptors within a 1km radius of the PV facility may experience a very high visual impact. The magnitude of visual impact on sensitive visual receptors subsequently subsides with distance to; high within a 1 – 3km radius (where / if sensitive receptors are present) and moderate within a 3 – 6km radius (where / if sensitive receptors are present). Receptors beyond 6km are expected to have a low potential visual impact.

7.2. Visual Absorption Capacity

The broader study area is located within the grassland biome characterised by large open grassy plains and wetlands in the lower lying areas. Large tracts of land are utilised for maize production. Depending on the time of the season, or after the harvesting season, these agricultural fields are devoid of any significantly tall or dense vegetation.

Overall, the Visual Absorption Capacity (VAC) of the receiving environment is deemed low by virtue of the nature of the vegetation and the low occurrence of urban development. In addition, the scale and form of the structures mean that it is unlikely that the environment will visually absorb them in terms of texture, colour, form, and light / shade characteristics.

Where homesteads and settlements occur, some more significant vegetation and trees may have been planted, which would contribute to visual absorption. However, as this is not a consistent occurrence, VAC will not be considered for any of the homesteads or settlements, thus assuming a worst-case scenario in the impact assessment.

Closer to the proposed development site, the occurrence of existing mining is expected to greatly influence the visual exposure of the proposed PV structures and ancillary infrastructure. The existing mining infrastructure is expected to be especially effective in reducing visual exposure to the east and south of the proposed development's location (i.e., along roads and at residence settlements).

7.3. VIA Rating Methodology

This section will attempt to quantify the potential visual impacts in their respective geographical locations and in terms of the identified issues related to the visual impact.

The methodology for the assessment of potential visual impacts states the **nature** of the potential visual impact (e.g., the visual impact on users of major roads in the vicinity of the proposed power line alignment) and includes a table quantifying the potential visual impact according to the following criteria:

- **Extent** - long distance (very low = 1), medium to longer distance (low = 2), short distance (medium = 3) and very short distance (high = 4)[2].
- **Duration** - very short (0 – 1yrs. = 1), short (2 – 5yrs. = 2), medium (5 – 15yrs. = 3), long (>15 yrs. = 4), and permanent (= 5).
- **Magnitude** - None (= 0), minor (= 2), low (= 4), medium / moderate (= 6), high (= 8) and very high (= 10)[3].
- **Probability** – very improbable (= 1), improbable (= 2), probable (= 3), highly probable (= 4) and definite (= 5).
- **Status** (positive, negative, or neutral).
- **Reversibility** - reversible (= 1), recoverable (= 3) and irreversible (= 5).
- **Significance** - low, medium, or high.

The *significance* of the potential visual impact is equal to the *consequence* multiplied by the *probability* of the impact occurring, where the consequence is determined by the sum of the individual scores for magnitude, duration, and extent (i.e., *significance = consequence (magnitude + duration + extent) x probability*).

The significance weighting for each potential visual impact (as calculated above) is as follows:

- <30 points: Low (where the impact would not have a direct influence on the decision to develop in the area)
- 31-60 points: Medium / moderate (where the impact could influence the decision to develop in the area)
- >60: High (where the impact must have an influence on the decision to develop in the area)

7.4. Visual Impact Assessment

The identification and assessment of environmental impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with the proposed project. The process

[2] Long distance = > 3km. Medium to longer distance = 1.5 – 3km. Short distance = 0.5 – 1.5km. Very short distance = < 0.5km (refer to Section 6.3. Visual distance / observer proximity to the grid connection infrastructure).

[3] This value is read from the visual impact index. Where more than one value is applicable, the higher of these will be used as a worst case scenario.

involves consideration of, inter alia: the purpose and need for the Project; views and concerns of interested and affected parties (I&APs); social and political norms, and the public's interest.

The following tables summarise the consequence and significance of the visual impact of the Project. These results are based on worst-case scenario when the impacts of all aspects of the Project are taken together (PV facilities, grid connection and battery systems). Consequence of impact is a function of intensity, duration, and spatial extent (SLR 2020). Intensity of impact is taken from the worst-case situation. These facilities are rated together, from a visual impact perspective, as the one would not exist without the other and they must be understood as the collective / cumulative.

7.4.1. Construction Phase

<table>
<tr><th colspan="4">Table 2: Construction of a PV Facility</th></tr>
<tr><td colspan="4">The development of the proposed solar power plants will require approximately 33.6ha of land. The preparation (earthworks and infrastructure development) will cause a major local contrast with the existing open land, as soil is exposed to create service roads, trenches, erecting structures for the arrays, distribution lines, sub-stations, etc.

Construction activities may potentially result in a moderate (significance rating = 48), temporary visual impact, that may be mitigated to moderate (significance rating = 30).

The clearing of vegetation and exposure of soil during the establishment period will contrast dramatically with the natural layout of the site's vegetation. Once the solar PV arrays have been installed, they will also contrast with the existing landscape due to their dark appearance.</td></tr>
<tr><td></td><td>Rating</td><td>Motivation</td><td>Significance</td></tr>
<tr><td colspan="4">Prior to Mitigation</td></tr>
<tr><td>Duration</td><td>Short (2)</td><td>Changes in the physical characteristics by changing the fabric and character of the landscape</td><td rowspan="4">High (48)</td></tr>
<tr><td>Extent</td><td>Very Short Distance (4)</td><td>Partial loss of features that contribute to the existing landscape by the introduction of new elements and structures</td></tr>
<tr><td>Magnitude</td><td>Moderate (4)</td><td></td></tr>
<tr><td>Probability</td><td>Highly probable (4)</td><td>If development is approved there is a high probability the landscape will be impacted</td></tr>
<tr><td colspan="4">Mitigation/Enhancement Measures</td></tr>
<tr><td colspan="4">Mitigation:
Retain and maintain natural vegetation (if present) immediately adjacent to the development footprint.
Ensure that vegetation cover adjacent to the development footprint (if present) is not unnecessarily removed during the construction phase, where possible.
Plan the placement of laydown areas and temporary construction equipment camps to minimise vegetation clearing (i.e., in already disturbed areas) wherever possible.
Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.
Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
Reduce and control construction dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent).
Restrict construction activities to daylight hours whenever possible to reduce lighting impacts.
Rehabilitate all disturbed areas (if present / if required) immediately after the completion of construction works.</td></tr>
<tr><td colspan="4">Post Mitigation/Enhancement Measures</td></tr>
<tr><td>Duration</td><td>Short (2)</td><td>Changes in the physical characteristics by changing the fabric and character of the landscape</td><td rowspan="2">Low (30)</td></tr>
<tr><td>Extent</td><td>Very Short Distance (4)</td><td>Partial loss of features that contribute to the existing landscape by the introduction of new elements and structures</td></tr>
</table>

Magnitude	Low (4),		
Probability	Probable (3)	If development is approved there is a high probability the landscape will be impacted	
Cumulative Impacts: The construction of the Solar Energy Facility (SEF) is expected to increase the cumulative visual impact within the region, considering the visual exposure of the power line infrastructure already present at this locality. Alternatively, the close proximity of the proposed site to the existing visual disturbances (power lines) allows for the effective connection with the power grid without incurring any additional expanded visual impacts.			
Residual Risks: The visual impact will be removed after decommissioning, provided the SEF infrastructure is removed and the site is rehabilitated to its original (current) status. Failing this, the visual impact will remain.			

Table 3: Impact of PV facility on Roads in Close Proximity			
The Solar Energy Facility (SEF) could potentially have a **moderate** visual impact on road users travelling along the main road traversing south and east of the facility, as well as the local road towards the north of the facility. These roads are however expected to be frequented primarily by local users going about their daily business (i.e., not sight-seeing), potentially lessening the probability of the impact significance.			
	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long term (4)	Development of the SEF will be visible for its entire lifespan	**Moderate (48)**
Extent	Local (4)	Only road users in the area will be subjected to the impact	
Magnitude	High (8)		
Probability	Probable (3)	Road users will most likely be able to see the SEF when using the roads	
Mitigation/Enhancement Measures			
Mitigation: **Mitigation of this impact is possible** and both specific measures as well as general "best practice" measures are recommended to reduce / mitigate the potential visual impact to **low**. The table below illustrates this impact assessment. ***General mitigation / management:*** Planning: • Retain and maintain natural vegetation in all areas outside of the development footprint. Operations: • Maintain the general appearance of the facility as a whole. Decommissioning: • Remove infrastructure not required for the post-decommissioning use of the • facility. • Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. • Monitor rehabilitated areas post-decommissioning and implement remedial actions. ***Site specific mitigation measures:*** • Plant vegetation barriers along the border of the SEF to shield the structures from observers travelling along this road.			
Post Mitigation/Enhancement Measures			
Duration	Local (4)	Development of the SEF will be visible for its entire lifespan	**Low (24)**
Extent	Long Term (4)	Only road users in the area will be subjected to the impact	
Magnitude	Low (4)		
Probability	Improbable (2)	Vegetation will shield any possible visual intrusion	
Cumulative Impacts: The construction of the SEF is expected to increase the cumulative visual impact within the region, considering the visual			

exposure of the power line infrastructure already present at his locality. Alternatively, the close proximity of the proposed site to the existing visual disturbances (power lines) allows for the effective connection with the power grid without incurring any additional expanded visual impacts.

Residual Risks:

The visual impact will be removed after decommissioning, provided the SEF infrastructure is removed and the site is rehabilitated to its original (current) status. Failing this, the visual impact will remain.

Table 4: Visual Impact on Residence and Homesteads in Close Proximity

The potential visual impact on residents of homesteads and homes in close proximity to the Solar Energy Facility (SEF) is expected to be of **moderate** significance. The residences in question are any farmhouses adjacent to the property as well as the SaaiPlaas settlement south-west of the proposed development site.

	Rating	Motivation	Significance
Prior to Mitigation			
Duration	Long term (4)	The residence surrounding the development will be able to see the SEF	**Moderate (42)**
Extent	Local (4)	The development is proposed to only disrupt local visual receptors	
Magnitude	Moderate (6)		
Probability	Probable (3)	Residence will most likely be able to see the SEF	
Mitigation/Enhancement Measures			
Post Mitigation/Enhancement Measures			
Duration	Long term (4)	The SEF will be visible for its entire lifespan	**Low (24)**
Extent	Local (4)		
Magnitude	Low (4)		
Probability	Improbable (2)	With the correct mitigation measures in place, it is highly unlikely that there would be permanent impact on local residence	

Mitigation/Enhancement Measures:

Mitigation:

General mitigation/management:

Planning:

- Retain and maintain natural vegetation in all areas outside of the development footprint.

Operations:

- Maintain the general appearance of the facility as a whole.

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the facility.
- Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Site specific mitigation measures:

- Plant vegetation barriers along the western and south-western borders of the SEF in order to shield the structures from observers residing at the above-mentioned homesteads and residential settlements.

Cumulative impacts:

The construction of the SEF is expected to increase the cumulative visual impact within the region, considering the visual exposure of the power line infrastructure already present at this locality. Alternatively, the close proximity of the proposed site to the existing visual disturbances (power lines) allows for the effective connection with the power grid without incurring any additional expanded visual impacts.

Residual Risks:

None

7.4.2. Operation Phase

Table 5: Glint and Glare

Potential visual impact of solar glint and glare as a visual distraction and possible air / road travel hazard

The visual impact of glint and glare relates to the potential it has to negatively affect sensitive visual receptors in relatively close proximity to the source (e.g., residents of neighbouring properties), or aviation safety risk for pilots (especially where the source interferes with the approach angle to the runway).

The proposed PV facility is located approximately 4km from a semi operational airfield and 3km from a major road. No impacts are predicted towards pilots along any of the assessed approach paths and no ATC Tower was identified. The potential visual impact related to solar glint and glare as an air / road travel hazard is expected to be of **low** significance. No mitigation of this impact is required since the PV facility is not expected to interfere with aircraft operations or impact the safety of road users.			
	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long term (4)	This will be a possible risk for the entire life cycle of the SEF	**Low (24)**
Extent	Very short distance (4)	This will only be a problem from short distances and at sustain times of day	
Magnitude	Low (4)		
Probability	Probable (4)	Reflection from sunlight, cars traveling on adjacent roads or night time elimination will trigger this risk	
Mitigation/Enhancement Measures			
Mitigation: N/A			
Post Mitigation/Enhancement Measures			
Duration	N/A		
Extent	N/A		
Magnitude	N/A		
Probability	N/A		
Cumulative Impacts: N/A			
Residual Risks: N/A			

Table 6: Visual Exposure			
Visual exposure is determined by qualifying the visibility of an object, with a distance rating to indicate the degree of intrusion and visual acuity. As distance between the viewer and the object increases, the visual perception of the object reduces exponentially as generally changes in form, line, colour, and texture in the landscape become less perceptible with increasing distance. The basic areas of concern are: • The public roads including the R73, Boundary Road, and local roads generally servicing the farms, towns, and mines throughout the study area. • The residential areas surrounding the Project sites.			
	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long term (4)	The development will be visible for its life cycle duration	**Moderate (42)**
Extent	Local (4)	Visual receptors within the local area will be subjected to this impact	
Magnitude	Moderate (6)		
Probability	Probable (3)	Without mitigation there is a high level of certainty that this impact will take place	
Mitigation/Enhancement Measures			
Mitigation: **General mitigation/management:** Planning: • Retain and maintain natural vegetation in all areas outside of the development footprint. Operations: • Maintain the general appearance of the facility as a whole. Decommissioning:			

• Remove infrastructure not required for the post-decommissioning use of the facility. • Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. • Monitor rehabilitated areas post-decommissioning and implement remedial actions. **Site specific mitigation measures:** • Plant vegetation barriers along the western and south-western borders of the SEF in order to shield the structures from observers residing at the above-mentioned homesteads and residential settlements.			
Post Mitigation/Enhancement Measures			
Duration	Long term (4)	The development will be visible for its life cycle duration	**Low (24)**
Extent	Local (4)	Visual receptors within the local area will be subjected to this impact	
Magnitude	Low (4)		
Probability	Improbable (2)	With Mitigation this impact is likely to be significantly reduced	
Cumulative Impacts: The construction of the SEF is expected to increase the cumulative visual impact within the region, considering the visual exposure of the power line infrastructure already present at this locality. Alternatively, the close proximity of the proposed site to the existing visual disturbances (power lines) allows for the effective connection with the power grid without incurring any additional expanded visual impacts.			
Residual Risks: None			

Table 7: Visual intrusion			
Visual intrusion deals with the notion of contextualism i.e., how well does a Project component fit with or disrupt / enhance the ecological and cultural aesthetic of the landscape as a whole? And ties in with the concept of visual absorption capacity (VAC), which for the Project site is **low**.			
	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long term (4)	The development will be visible for its life cycle duration	**Low (30)**
Extent	Local (2)	Visual receptors within the local area will be subjected to this impact	
Magnitude	Moderate (4)		
Probability	Probable (3)	A significant probability for this to occur exists, which can be mitigated	
Mitigation/Enhancement Measures			
Mitigation:			
Post Mitigation/Enhancement Measures			
Duration	N/A		
Extent	N/A		
Magnitude	N/A		
Probability	N/A		
Cumulative impacts: The combined effects of these changes will negatively affect the overall character of the landscape.			
Residual Risks: "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).			

Table 8: Ancillary Infrastructure

On-site ancillary infrastructure associated with the PV facility includes an 11kV power line, inverters, low voltage cabling between the PV arrays, meteorological measurement station, internal access roads, workshop, office buildings, etc. No dedicated viewshed analyses have been generated for the ancillary infrastructure, as the range of visual exposure will fall within that of the PV arrays. The anticipated visual impact resulting from this infrastructure is likely to be of **low** significance both before and after mitigation.			
	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long term (4)	The development will be visible for its life cycle duration	**Low (24)**
Extent	Local (4)	Visual receptors within the local area will be subjected to this impact	
Magnitude	Low (4)		
Probability	Improbable (2)	There is a small chance that this will impact visual receptors.	
Mitigation/Enhancement Measures			
Mitigation:			
Post Mitigation/Enhancement Measures			
Duration	N/A		
Extent	N/A		
Magnitude	N/A		
Probability	N/A		
Cumulative Impacts: The combined effects of these changes will negatively affect the overall character of the landscape.			
Residual Risks: None			

Table 9: Sense of place			
Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria, specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.), plays a significant role. An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The environment surrounding the proposed PV facility has a predominantly rural and undeveloped character. These generally undeveloped landscapes are considered to have a high visual quality, except where urban development and mining/industrial activities represents existing visual disturbances. The anticipated visual impact of the proposed PV facility on the regional visual quality, and by implication, on the sense of place, is difficult to quantify, but is generally expected to be of **low** significance. This is due to the relatively low viewer incidence within close proximity to the proposed development site and the presence of existing mining and industrial activities within the region.			
	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long term (4)	The development will be visible for its life cycle duration	**Low (22)**
Extent	Regional (3)	Visual receptors within the local area will be subjected to this impact	
Magnitude	Low (4)		
Probability	Improbable (2)	There is a small chance that this will impact visual receptors.	
Mitigation/Enhancement Measures			
Mitigation: N/A			
Post Mitigation/Enhancement Measures			

Duration	N/A		
Extent	N/A		
Magnitude	N/A		
Probability	N/A		
Cumulative impacts: The combined effects of these changes will negatively affect the overall character of the landscape.			
Residual Risks: The visual impact will be removed after decommissioning, provided the PV facility infrastructure is removed. Failing this, the visual impact will remain.			

7.4.3. Cumulative Effects

Cumulative landscape and visual effects (impacts) result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future. They may also affect how the landscape is experienced. Cumulative effects may be positive or negative. Where they comprise a range of benefits, they may be considered to form part of the mitigation measures.

Cumulative effects can also arise from the intervisibility of a range of developments and /or the combined effects of individual components of the proposed development occurring in different locations or over some time. The separate effects of such individual components or developments may not be significant, but together they may create an unacceptable degree of adverse effect on visual receptors within their combined visual envelopes. Intervisibility depends upon general topography, aspect, tree cover or other visual obstruction, elevation, and distance as this affects visual acuity, which is also influenced by weather and light conditions (LI-IEMA (2013)).

Cumulative effect of the Project

The cumulative impact of the Project, the facilities and infrastructure taken together, is significant, along with the existing power infrastructure (ESKOM sub-station and transmission lines) that exists in the study area. Intervisibility for the proposed Project and the existing infrastructure would be evident. The VAC for the study area is relatively low, and the combined effect over time of these developments would result in the study area being impacted upon in a moderate manner beyond the anticipated negative impacts of the proposed Project alone.

Table 10: Cumulative Impact

Nature of Impact: The potential cumulative visual impact of the PV facility on the visual quality of the landscape.		
	Overall impact of the proposed project considered in isolation (with mitigation)	***Cumulative impact of the project and other projects within the area (with mitigation)***
Extent	Very short distance **(4)**	Medium to longer distance **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Moderate **(6)**	Moderate **(6)**
Probability	Probable **(3)**	Probable **(3)**
Significance	Moderate **(42)**	Moderate **(36)**
Status (positive, neutral, or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, only best practise measures can be implemented	

Generic best practise mitigation/management measures:
Planning: ➢ Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint where possible. Operations: ➢ Maintain the general appearance of the facility as a whole. Decommissioning: ➢ Remove infrastructure not required for the post-decommissioning use. ➢ Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.
Residual impacts: The visual impact will be removed after decommissioning, provided the PV facility infrastructure is removed. Failing this, the visual impact will remain.

7.5. Impact Statement

The findings of the Visual Impact Assessment undertaken for the proposed $14MW_{ac}$ PV facility is that the visual environment surrounding the site, especially within a 1 - 3km radius, may be visually impacted during the anticipated operational lifespan of the facility (i.e., a minimum of 25 years).

This impact is primarily applicable to the individual Harmony Moab Khotsong PV Facility and the cumulative impact of the Project, and the existing infrastructure would be evident. The VAC for the study area is relatively low, and the combined effect over time of these developments would result in the study area being impacted upon in a moderate manner beyond the anticipated of the proposed Project alone.

- The anticipated **visual** impact is not considered to be a fatal flaw from a visual perspective, considering the low incidence of visual receptors occurring within the region.

The following is a summary of impacts remaining, assuming mitigation as recommended, is exercised:

- During construction, there may be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and landowners in the area. Construction activities may potentially result in high, temporary visual impact that may be mitigated to **low**.

- The PV facility is expected to have a **moderate** (to potentially **high**) visual impact on observers travelling along the R73 and adjacent secondary roads. There are no homesteads within a 1km radius of the operational PV facility structures. The facility would be highly visible from the Harmony Moab Khotsong PV Facility mining operation, but observers at this locality are associated with Harmony Gold and are assumed to be supportive of the development. The impacts may be contained to **Low** significance if the proposed impact mitigation measures are implemented.

- The operational PV facility could have a **moderate** visual impact on observers (residents and road users) located between a 1 – 3km radius of the PV facility structures, both before and after the implementation of mitigation measures.

- The anticipated impact of lighting at the PV facility is likely to be of **moderate** significance and may be mitigated to **low**.

- The potential visual impact related to solar glint and glare as an air travel hazard is expected to be of **low** significance, due to the long distance in between the proposed PV facility and the airfield. No mitigation of this impact is required since the PV facility is not expected to interfere with aircraft operations at the airfield.

- The potential visual impact of solar glint and glare as a visual distraction and possible hazard to road users is expected to have a **low** (to potentially **moderate**) visual impact on observers travelling along the R73 and secondary road. These glint and glare impacts are mitigated if the PV panels are shielded from the surrounding area by means of planted vegetation cover, or solid fencing along the road servitude. If the PV panels are not exposed to road users (due to the project being screened from the road users) the impacts associated with glint and glare is expected to be of **low** (to no) significance.

- There are no homesteads located within a 1km radius of the proposed PV facility. The closest homestead is located 1.3km south-east of the facility (Saaiplaas settlement). The potential visual impact of solar glint and glare on static ground-based receptors (residents of homesteads) in closer proximity to the PV facility is therefore expected to be of **low** significance.

- The anticipated visual impact resulting from the construction of on-site ancillary infrastructure is likely to be of **low** significance both before and after mitigation.

- The anticipated visual impact of the proposed PV facility on the regional visual quality, and by implication, on the sense of place, is difficult to quantify, but is generally expected to be of **low** significance. This is due to the relatively low viewer incidence within close proximity to the proposed development site and the presence of existing mining and industrial activities within the region.

- The anticipated cumulative visual impact of the proposed Harmony Solar PV facility is expected to be of **low** significance.

The anticipated visual impacts listed above (i.e., post mitigation impacts) range from **moderate** to **low** significance. **Anticipated visual impacts on sensitive visual receptors (if and where present) in close proximity to the proposed facility are not considered to be fatal flaws for the proposed PV facility.**

Considering all factors, it is recommended that the development of the facility as proposed be supported; subject to the implementation of the recommended mitigation measures (**Section 7.4.**) and management programme (**Section 9.**).

Table 11: Intensity of impact of the proposed Project

High	**Moderate**		**Low**	**Negligible**
No areas	Sections of the R73, Boundary Road, the local road south of the site as wellas farmsteads to the immediate south and east of the site that are less than 3km away.		Farmsteads, over 3,0kmnorth, east, west, and south of the Project site	The remainder of the study area including most of the open areas and farms
Major loss of or alteration to key elements / features / characteristics of the baseline in the immediate vicinity of the site. i.e., Pre-development landscape or view and / or introduction of elements considered to beuncharacteristic when set within the attributes of the receiving landscape. **High scenic quality impacts would result.**	Partial loss of or alteration to key elements / features / characteristics of the baseline. i.e., Pre-developmentlandscape or view and / or introduction of elements that may be prominent but maynot necessarily be substantially problematicwhen set within the attributesof the receiving landscape. **Moderate scenic quality impacts would result**		Minor loss of or alterationto key elements / features / characteristics of thebaseline. i.e., Pre-development landscape or view and / orintroduction of elementsthat may not be problematic when setwithin the attributes of the receiving landscape. **Low scenic quality impacts would result.**	Very minor loss or alteration to key elements / features / characteristics of the baseline. i.e., Pre-development landscape or view and / or introduction of elements that is not problematic with the surrounding landscape approximating the 'no change' situation. **Negligible scenic quality impacts would result.**

8. MITIGATION AND MANAGEMENT MEASURES

In considering mitigation measures three rules are considered - the measures should be feasible (economically), effective (how long will it take to implement and what provision is made for management / maintenance), and acceptable (within the framework of the existing landscape and land use policies for the area). To address these, the following principles have been established:

- Mitigation measures should be designed to suit the existing landscape character and needs of the locality.
- They should respect and build upon landscape distinctiveness.
- It should be recognized that many mitigation measures, especially the establishment of planted screens and rehabilitation, are not immediately effective.

The primary visual impact, namely the appearance of the Solar Energy Facility is not possible to mitigate. The functional design of the PV panels cannot be changed in order to reduce visual impacts. Mitigation is however possible if the recommended general actions are followed.

8.1. Preparatory Works and Construction Concerns

Mitigation of visual impacts associated with the construction phase, albeit temporary, would entail proper planning, management, and rehabilitation of the construction site. Recommended mitigation measures include the following:

- Ensure that vegetation is not unnecessarily cleared or removed during the construction period.
- Reduce the construction period through careful logistical planning and productive implementation of resources.
- Plan the placement of lay-down areas and any potential temporary construction camps in order to minimise vegetation clearing (i.e., in already disturbed areas) wherever possible.
- Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.
- Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
- Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent).
- Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.
- Rehabilitate all disturbed areas, construction areas, roads, slopes, etc. immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.
- With the preparation of the portions of land onto which activities will take place the minimum amount of existing vegetation and topsoil should be removed. Large trees should be saved were possible, specifically along the R73.
- Ensure, wherever possible, natural indigenous vegetation is retained and incorporated into the site rehabilitation.
- All topsoil that occurs within the proposed footprint of an activity must be removed and stockpiled for later use. The construction contract must include the stripping and stockpiling of topsoil. Topsoil would be used later during the rehabilitation phase of disturbed areas. The presence of degraded areas and disused construction roads, which are not rehabilitated, will increase the overall visual impact.
- Specifications with regards to the placement of construction camps, as well as a site plan of the construction camp, indicating waste areas, storage areas, and placement of ablution facilities should be included in the EMPr. These areas should either be screened or positioned in areas where they would be less visible from human settlements and main roads.
- Construction activities should be limited to between 08:00 and 17:00 or in conjunction with the ECO.
- Adopt responsible construction practices aimed at strictly containing the construction / establishment activities to specifically demarcated areas.

- Building or waste material discarded should be undertaken at an authorised location, which should not be within any sensitive areas.

8.2. Earthworks

- Earthworks should be executed in such a way that only the footprint and a small 'construction buffer zone' around the proposed activities are exposed. In all other areas, the naturally occurring vegetation should be retained, especially along the periphery of the sites.
- All cut and fill slopes (if any) and areas affected by construction work should be progressively top soiled and re-vegetated as soon as possible.
- Any soil must be exposed for the minimum time possible once cleared of vegetation to avoid prolonged exposure to wind and water erosion and to minimise dust generation.

8.3. Landscaping and Ecological Approach

- It is recommended that the existing vegetation cover be maintained / established in all areas outside of the actual development footprint, both during construction and operation of the proposed facility. This will minimise visual impact as a result of cleared areas, power line servitudes and areas denuded of vegetation.
- Where new vegetation is proposed to be introduced to the site, an ecological approach to rehabilitation as opposed to a horticultural approach should be adopted. For example, communities of indigenous plants will enhance biodiversity, a desirable outcome for the area. This approach can significantly reduce long-term costs as less maintenance would be required over conventional landscaping methods as well as the introduced landscape being more sustainable.
- Progressive rehabilitation of all construction areas should be carried out immediately after they have been established.
- Undertake planting of screening vegetation along the eastern and southern boundaries of the Project sites.

8.4. Mounting Structures and Associated Infrastructure

- Paint the mounting structures with colours that reflect and compliment the colours of the surrounding landscape.
- Ensure the perimeter fence is of a 'see through' variety and that its colour blends with the environment.

8.5. Good housekeeping

- "Housekeeping" procedures should be developed for the Project to ensure that the Project site and lands adjacent to the Project site are kept clean of debris, garbage, graffiti, fugitive trash, or waste generated onsite; procedures should extend to control "track out" of dirt on vehicles leaving the active construction site and controlling sediment in stormwater runoff
- During construction, temporary fences surrounding the material storage yards and laydown areas should be covered with 'shack' cloth (khaki coloured).
- Operating facilities should be actively maintained during operation.

8.6. Operation Phase

- During operation, the maintenance of the PV panels, ancillary structures and infrastructure will ensure that the facility does not degrade, preventing aggravation of the visual impact. Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. Once the facility has exhausted its life span, the main facility and all associated infrastructure not required for the post rehabilitation use of the site should be removed and all disturbed areas appropriately rehabilitated. An ecologist should be consulted to give input into rehabilitation specifications. All rehabilitated areas should be monitored for at least a year following decommissioning, and remedial actions implemented as and when required. Where sensitive visual receptors are likely affected, it is recommended that the developer enter into negotiations regarding the potential screening of visual impacts, either at the receptor site or along the perimeter of the facility. This may entail the planting of vegetation or the construction of landscaped berms or screens.

8.7. Lighting

Light pollution is largely the result of bad lighting design, which allows artificial light to shine outward and upward into the sky, where it is not wanted, instead of focusing the light downward, where it is needed. Ill- designed lighting washes out the darkness of the night sky and radically alters the light levels in rural areas where light sources shine as 'beacons' against the dark sky and are generally not wanted.

Of all the pollutions faced, light pollution is perhaps the most easily remedied. Simple changes in lighting design and installation yield immediate changes in the amount of light spilled into the atmosphere. The following are measures that must be considered in the lighting design of the Project, particularly at the management and service platforms:

Mitigation measures include the following:

- Shielding the sources of light by physical barriers (walls, vegetation, or the structure itself);
- Limiting mounting heights of lighting fixtures, or alternatively using footlights or bollard level lights;
- Making use of downward directional lighting fixtures;
- Making use of minimum lumen or wattage in fixtures;
- Making use of down-lighters, or shielded fixtures;
- Making use of Low-Pressure Sodium lighting or other types of low impact lighting.
- Making use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.

In terms of ancillary infrastructure, it is recommended that access roads and other on-site infrastructure be planned so that the clearing of vegetation is minimised. Consolidate infrastructure as much as possible and make use of already disturbed areas rather than pristine sites, wherever possible. Mitigation of lighting impacts includes the pro-active design, planning and specification lighting for the facility. The correct specification and placement of lighting and light fixtures for the proposed Solar Energy Facility and ancillary infrastructure will go far to contain rather than spread the light.

8.8. Branding and Marketing

The applicants may wish to give consideration, where appropriate, to the development and installation of viewing areas, interpretation panels, visitor, or educational facilities as part of the development proposal. This may appeal to tourists visiting the area who may be curious about renewable energy projects.

8.9. MANAGEMENT PROGRAMME

The following management plan tables aim to summarise the key findings of the visual impact report and suggest possible management actions in order to mitigate the potential visual impacts. Refer to the tables below.

Table 12: Management programme – Planning.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the planning of the proposed PV facility.

Project Component/s	The solar energy facility and ancillary infrastructure (i.e., PV panels, access roads, transformers, security lighting, workshop, power line, etc.).	
Potential Impact	Primary visual impact of the facility due to the presence of the PV panels and associated infrastructure as well as the visual impact of lighting at night.	
Activity/Risk Source	The viewing of the above mentioned by observers on or near the site (i.e., within 1km of the site) as well as within the region.	
Mitigation: Target/Objective	Optimal planning of infrastructure to minimise the visual impact.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
Plan the placement of laydown areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e., in already disturbed areas) wherever possible.	Project proponent / contractor	Early in the planning phase.

Retain and maintain natural vegetation (if present) immediately adjacent to the development footprint.	Project proponent/ design consultant	Early in the planning phase.
Make use of existing roads wherever possible and plan the layout and construction of roads and infrastructure with due cognisance of the topography to limit cut and fill requirements.	Project proponent/ design consultant	Early in the planning phase.
Plan all roads, ancillary buildings, and ancillary infrastructure in such a way that clearing of vegetation is minimised. Consolidate infrastructure and make use of already disturbed sites rather than undisturbed areas.	Project proponent/ design consultant	Early in the planning phase.
Consult a lighting engineer in the design and planning of lighting to ensure the correct specification and placement of lighting and light fixtures for the PV Facility and the ancillary infrastructure. The following is recommended: o Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). o Limit mounting heights of fixtures or use footlights or bollard lights. o Make use of minimum lumen or wattage in fixtures. o Making use of down-lighters or shielded fixtures. o Make use of Low-Pressure Sodium lighting or other low impact lighting. o Make use of motion detectors on security lighting, so allowing the site to remain in darkness until lighting is required for security or maintenance purposes.	Project proponent / design consultant	Early in the planning phase.
Performance Indicator	Minimal exposure (limited or no complaints from I&APs) of ancillary infrastructure and lighting at night to observers on or near the site (i.e., within 3km) and within the region.	
Monitoring	Monitor the resolution of complaints on an ongoing basis (i.e., during all phases of the project).	

Table 13: Management programme – Construction.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the construction of the proposed Harmony Moab Khotsong PV Facility

Project Component/s	Construction site and activities	
Potential Impact	Visual impact of general construction activities, and the potential scarring of the landscape due to vegetation clearing and resulting erosion.	
Activity/Risk Source	The viewing of the above mentioned by observers on or near the site.	
Mitigation: Target/Objective	Minimal visual intrusion by construction activities and intact vegetation cover outside of immediate construction work areas.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
Ensure that vegetation cover adjacent to the development footprint (if present) is not unnecessarily removed during the construction phase, where possible.	Project proponent / contractor	Early in the construction phase.
Reduce the construction phase through careful logistical planning and productive implementation of resources wherever possible.	Project proponent / contractor	Early in the construction phase.

Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.	Project proponent / contractor	Throughout the construction phase.
Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.	Project proponent / contractor	Throughout the construction phase.
Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent).	Project proponent / contractor	Throughout the construction phase.
Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting, where possible.	Project proponent / contractor	Throughout the construction phase.
Rehabilitate all disturbed areas (if present/if required) immediately after the completion of construction works.	Project proponent / contractor	Throughout and at the end of the construction phase.
Performance Indicator	Vegetation cover on and in the vicinity of the site is intact (i.e., full cover as per natural vegetation present within the environment) with no evidence of degradation or erosion.	
Monitoring	Monitoring of vegetation clearing during construction (by contractor as part of construction contract). Monitoring of rehabilitated areas quarterly for at least a year following the end of construction (by contractor as part of construction contract).	

Table 14: Management programme – Operation.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the operation of the proposed Harmony Moab Khotsong PV Facility

Project Component/s	The solar energy facility and ancillary infrastructure (i.e., PV panels, access roads, workshop, etc.).	
Potential Impact	Visual impact of facility degradation and vegetation rehabilitation failure.	
Activity/Risk Source	The viewing of the above mentioned by observers on or near the site.	
Mitigation: Target/Objective	Well maintained and neat facility.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
If specific sensitive visual receptors are identified during operation, investigate screening at the receptor site.	Project proponent / operator	Throughout the operation phase.
Investigate the potential to screen the PV facility from the Secunda secondary road (located within 1km of the facility) with planted vegetation cover or solid fencing, where possible/if required.	Project proponent / operator	Throughout the operation phase.
Maintain the general appearance of the facility as a whole, including the PV panels, servitudes, and the ancillary structures.	Project proponent / operator	Throughout the operation phase.
Maintain roads and servitudes to forego erosion and to suppress dust.	Project proponent / operator	Throughout the operation phase.
Monitor rehabilitated areas and implement remedial action as and when required.	Project proponent / operator	Throughout the operation phase.
Investigate and implement (should it be required) the potential to screen visual impacts at affected receptor sites.	Project proponent / operator	Throughout the operation phase.
Performance Indicator	Well maintained and neat facility with intact vegetation on and in the vicinity of the facility.	
Monitoring	Monitoring of the entire site on an ongoing basis (by operator).	

Table 15: Management programme – Decommissioning.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the decommissioning of the proposed Harmony Moab Khotsong PV Facility

Project Component/s	The solar energy facility and ancillary infrastructure (i.e., PV panels, access roads, workshop, transformers, etc.).	
Potential Impact	Visual impact of residual visual scarring and vegetation rehabilitation failure.	
Activity/Risk Source	The viewing of the above mentioned by observers on or near the site.	
Mitigation: Target/Objective	Only the infrastructure required for post decommissioning use of the site retained and rehabilitated vegetation in all disturbed areas.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
Remove infrastructure not required for the post-decommissioning use of the site.	Project proponent / operator	During the decommissioning phase.
Rehabilitate access roads and servitudes not required for the post-decommissioning use of the site. If necessary, an ecologist should be consulted to give input into rehabilitation specifications.	Project proponent / operator	During the decommissioning phase.
Monitor rehabilitated areas quarterly for at least a year following decommissioning and implement remedial action as and when required.	Project proponent / operator	Post decommissioning.
Performance Indicator	Vegetation cover on and in the vicinity of the site is intact (i.e., full cover as per natural vegetation within the environment) with no evidence of degradation or erosion.	
Monitoring	Monitoring of rehabilitated areas quarterly for at least a year following decommissioning.	

9. CONCLUSION

The proposed Solar Energy Facility utilises a renewable source of energy to generate power. It does not emit any harmful by-products or pollutants and is not negatively associated with health risks to observers. It is therefore perceived to be accepted in a more favourable light by visual receptors.

The facility has a generally unfamiliar novel and futuristic design that invokes a curiosity factor not generally present with other conventional power generating plants, to the effect that people may actually visit the area to see the facility. A number of mitigation measures have been proposed (Section 8), which, if implemented and maintained, will reduce the significance of certain visual impacts associated with the proposed facility.

The existing visual condition of the landscape that may be affected by the proposed Project has been described. The study areas scenic quality has been rated moderate within the context of the sub-region, sensitive viewing areas and landscape types identified and mapped indicating potential sensitivity to the Project. The site itself is in a landscape type rated as moderate.

Visual impacts will be caused by activities associated with the Harmony Moab Khotsong PV Facility Project. The significance of visual impact is based on the worst-case scenario. This scenario assumes that all facilities along with the associated grid infrastructure and sub-stations would be constructed at the same time. At the time of writing there was no evidence to the contrary. This assumption is also based on the nature of the visual impact and the fact that receptors would experience all facilities in the same visual envelope from their respective locations or as they travel along adjacent roads.

Impacts on views are the highest when viewers are identified as being sensitive to change in the landscape, and their views are focused on and dominated by the change. The visual impact of the Project will cause changes in the landscape that are noticeable to viewers experiencing the study area from the R73, Boundary Road, local roads to the west and south of the site, and homesteads also in this general area.

Visual impacts that would potentially result from Project activities are likely to be moderately adverse, long-term, and will most likely cause loss of landscape and visual resources. If mitigation is undertaken as recommended, it is concluded that the significance of anticipated visual impacts will remain at acceptable levels. As such, the facility and the proposed ancillary infrastructure would be considered to be acceptable from a visual perspective.

The cause of these anticipated visual impacts would be:

Construction Phase:

- Removal of vegetation, the building of access roads, earthworks, and exposure of earth to establish the areas to be developed.
- Physical presence of construction camps and the movement of construction vehicles within the site and along local roads.
- Generation of dust by construction activities.

Operational Phase

- Physical presence of the solar arrays and a minor potential of glint and glare.
- Reduction in the rural sense of place for the study area.
- Light pollution.

Decommissioning Phase

- Physical presence of the activities associated with removing the structures and rehabilitating the site.

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