



ENVIRONMENTAL SCREENING  
REPORT FOR THE PROPOSED SOLAR  
FARM ON A PART OF THE FARM  
REINGELUK 107, KAI! GARIB LOCAL  
MUNICIPALITY, NORTHERN CAPE,  
SOUTH AFRICA

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### **Acronyms**

CARA	Conservation of Agricultural Resources Act
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation

EA	Environmental Authorisation
ECO	Environmental Control Officer
NEMA	National Environmental Management Act
NEMBA	National Environmental Management Biodiversity Act
NEMPAA	National Environmental Management Protected Areas Act
NWA	National Water Act
WUL	Water Use Licence

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# 1. INTRODUCTION

EP3 Environmental (Pty) Ltd was approached by Sonfin (Pty) Ltd (the developer) to, on behalf of Oseiland Boerdery CC, conduct an Environmental Screening assessment on the farm Reinland 107. The proposed study area is situated within the Kai! Garib Local Municipality, Northern Cape Province (see Figure 1 below).

Oseiland Boerdery CC, the owner of the farm Reinland intends to establish a solar PV plant in the electricity requirements of their farming operations. See Figure 2 below for the proposed site layout of the solar PV plant. The total extent required for the proposed facility is 0.98 hectare (see Figure 2 below).

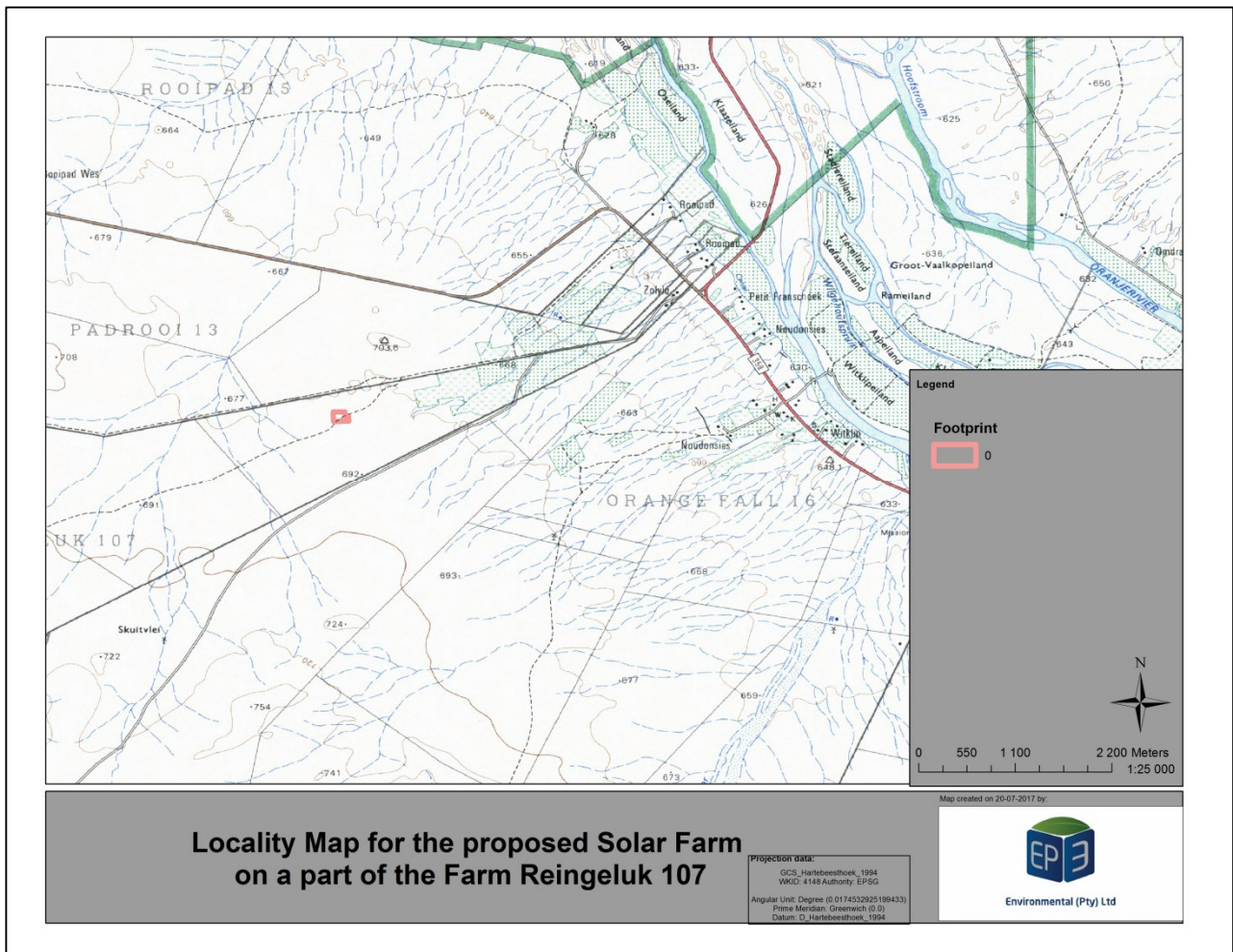


FIGURE 1: LOCALITY MAP

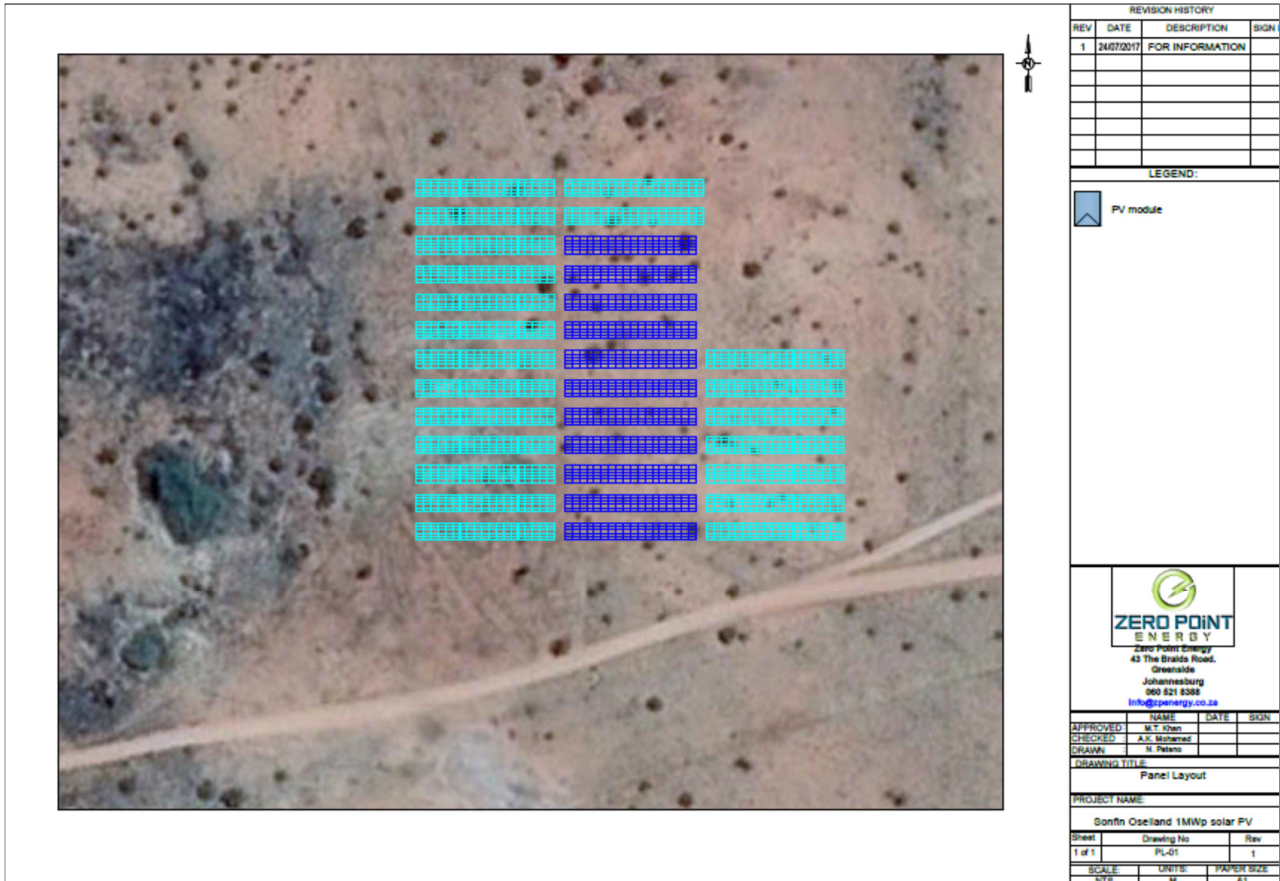


FIGURE 2: FACILITY LAYOUT

## 2. OBJECTIVE AND SCOPE OF ASSESSMENT

The objective of this environmental screening assessment is to determine if permits and approvals may be required for the development to proceed. The report also aims to inform the developer of any specific environmental related mitigation actions that needs to be taken/considered prior to proceeding with the development.

## 3. METHODOLOGY

### 3.1. Literature Study

Applicable legislation and available GIS data was reviewed and studies as part of the screening assessment in order to determine specific requires applicable to the property under question.

### 3.2. Field Survey

A site survey was carried on the 19 of July 2017 to assess the current state of the site. It was clearly visible that the area in which the site is located was previously disturbed and used for farming activities, including the temporary dumping of waste which was later removed. The Oseiland Boerdery CC representative that accompanied the survey team confirmed the previous disturbances of the area for farming activities which are clearly visible on google earth and will be discussed later in the report.

An area in excess of 1 hectare (ha) was thus already cleared at the time of the site visit, because the area directly adjacent to the proposed site for the solar PV plant (see Figure 2 above) was also cleared (for farming activities).

In order to assess the sensitivity of the site and to determine applicable legal requirements, the EP3 team was accompanied by Mr Neels Kruger of Exigo and Mr Peter Kimberg of the Biodiversity Company who conducted an Archaeological Impact Assessment (HIA) and an Ecological Scan respectively. The findings of the HIA and Ecological Scan are also depicted in this screening report and the detail reports are available on request.

## 4. PROPERTY DESCRIPTION/ RECEIVING ENVIRONMENT FINDINGS

### 4.1. Climate

The study area is situated within the Augrabies region. This is a semi-arid region, which implies low annual rainfall and extreme variations of temperatures. In the peak summer months (January / February) the average daytime temperature is 41°C, but highs of 46°C have been recorded.

During winter months the average daytime temperature often hovers around 20°C but lower temperatures are a possibility. Winter nights average around 0°C although the temperature drops to -5° occasionally. The average annual rainfall in the park is 124mm, with most rains occurring between November and April.

### 4.2. Topography & Drainage

The general slope of the study area is flat with a slope of 1:80. Drainage is generally North West towards a non-perennial stream feeding the Orange River (Primary drainage region), and the study area is situated within the D81B tertiary water catchment. According to topography map below, no recorded drainage lines are present within the study area.



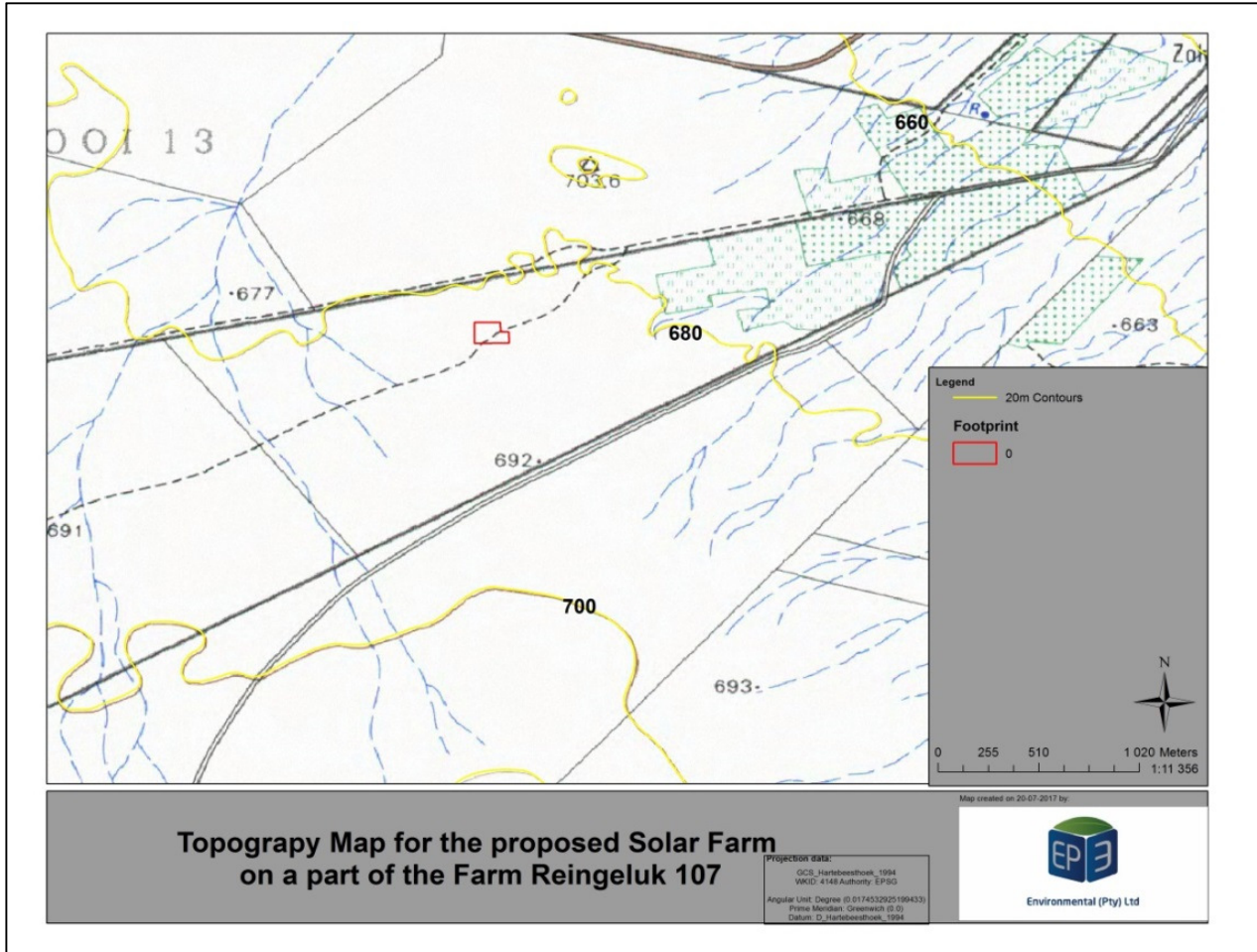


FIGURE 3: TOPOGRAPHY

### 4.3. Ground and Surface Water

The area surrounding the development site holds two (2) separate isolated wetland systems presumably created by surface runoff from existing agricultural activities and one non-perennial drainage line (1) (see Figure 4 below). It was recommended by Mr Kimberg of the Biodiversity Company that buffer areas of 15 m be placed around the drainage line and wetland areas.

Due to the presence of wetlands, it is recommended that Oseiland Boerdery CC consult with the DWS to determine if any registration is required.

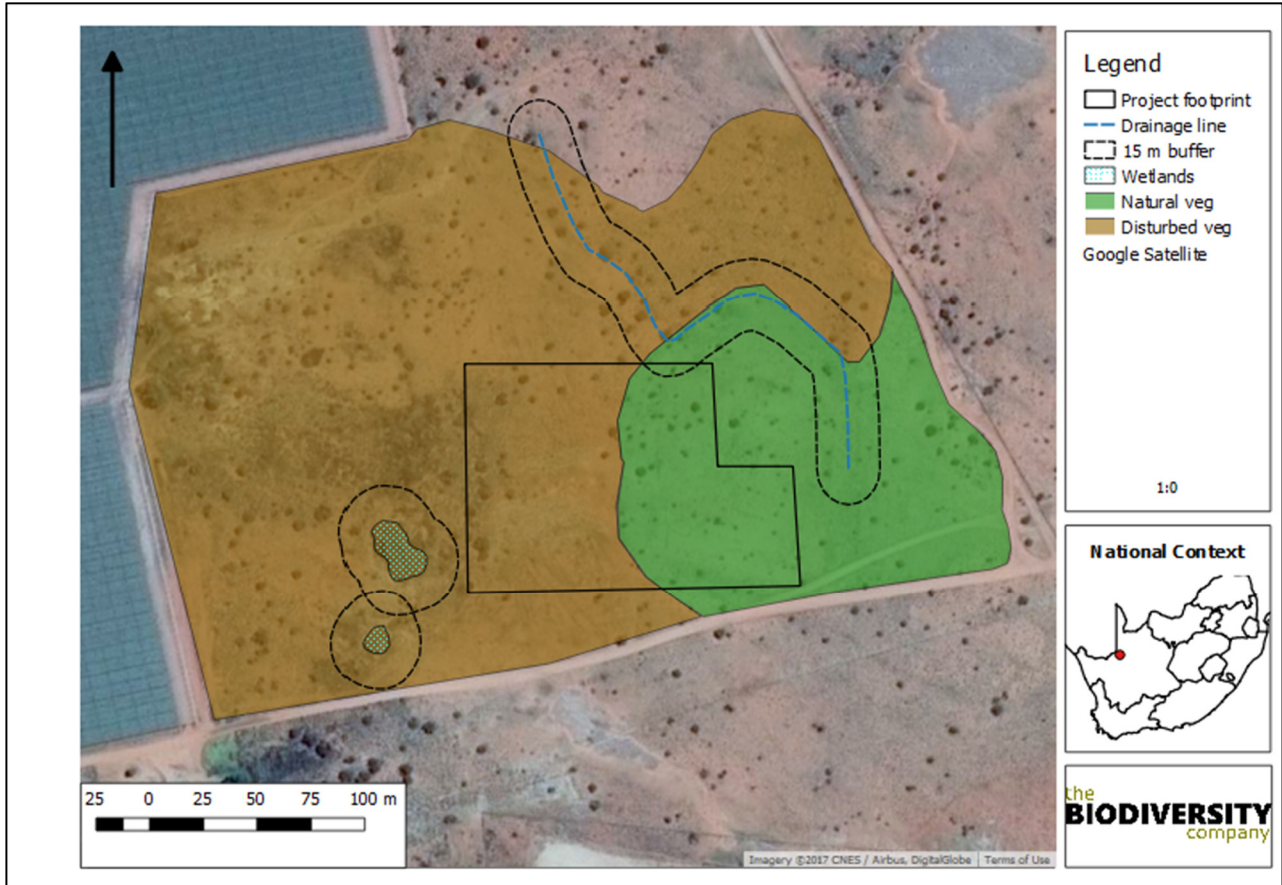


FIGURE 4: WETLANDS AND DRAINAGE LINES

#### 4.4. Geology

Rocks in the region are generally highly deformed metamorphosed sedimentary and volcanic rocks intruded by granitoids and the region is further characterized by numerous geological faults and shear zones. The area forms part of the Namaqua Metamorphic Province and lies within the Kakamas terrane of the Gordonia Sub-province (of the Namaqua Metamorphic Province). The study area is situated within the Okiep, Bushmanland, Korannaland, Geelvloer geological area.

It is not anticipated that any geotechnical assessment will be required, however, this cannot be confirmed by EP3.



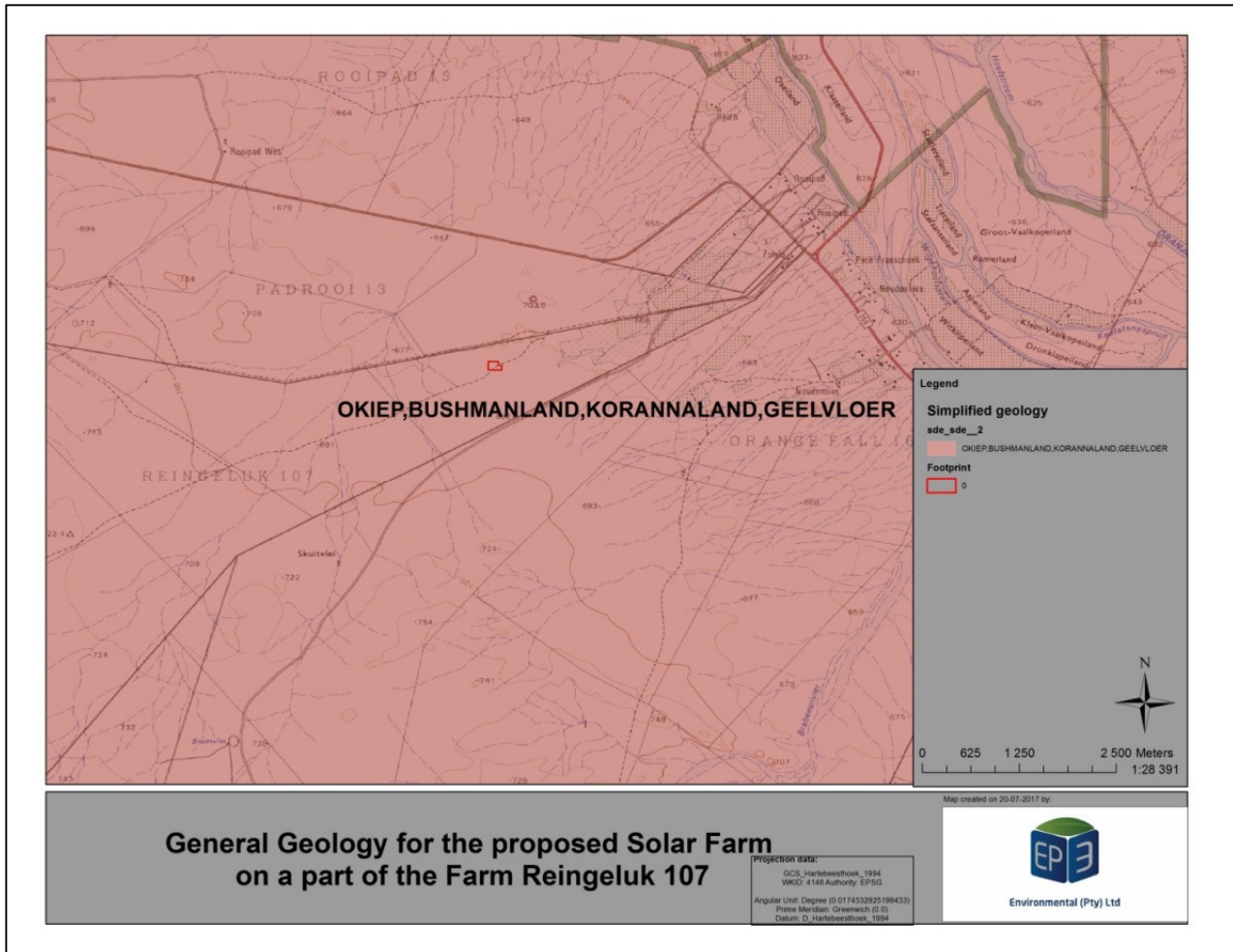


FIGURE 5: GENERAL GEOLOGY

## 4.5. Flora

### 4.5.1. Vegetation Type

The site is situated in the Nama Karoo ecoregion, the Orange Water Management Area (WMA\_06) and the Nama-Karoo biome. The Nama Karoo is an arid biome, with mostly non-perennial rivers (Mucina & Rutherford, 2006).

The floral diversity of the Nama Karoo is not particularly rich, in contrast to the Succulent Karoo biome (Mucina & Rutherford, 2006). The Nama-Karoo biome does not contain any centres of endemism and unlike other South African biomes the local endemism is very low (Mucina & Rutherford, 2006).

### 4.5.2. Bushmanland Arid Grassland (NKb3)

The site is further situated within the Bushmanland Arid Grassland (NKb3) vegetation type (Please refer to Figure 6). This vegetation community comprises extensive to irregular plains on a slightly sloping plateau and is sparsely vegetated by grassland dominated by species of *Aristida* and *Stipagrostis* (Mucina & Rutherford, 2006).

Although only small patches of this vegetation type are statutorily conserved in Augrabies Falls National Park and Goegap Nature Reserve the degree of transformation is very low and thus the community is classified as Least threatened by Mucina & Rutherford (2006).

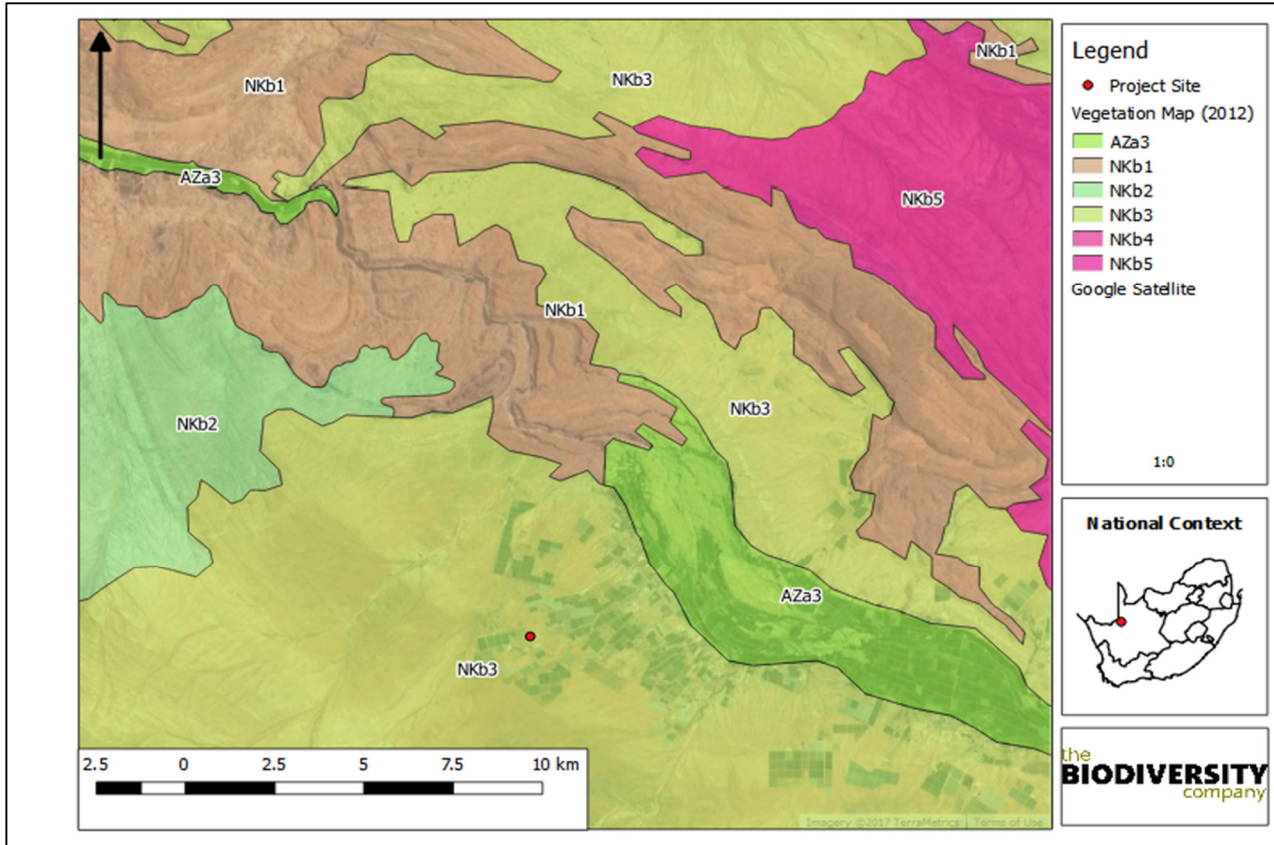


FIGURE 6: VEGETATION TYPES

#### 4.5.3. Vegetation on Site

The vegetation community corresponding to the western portion of the proposed project site was found to be disturbed, with a high prevalence of alien invasive vegetation (Figure 7). This level of disturbance was attributed to previous earthworks/farming activities and dumping of waste (which has since been removed). Based on an assessment of historical data from google earth and a detailed survey of the site and adjacent areas, the ecological Memorandum concluded that only around 0.6 hectares of the total area that was cleared can be considered as being indigenous.

The vegetation community in this area is dominated by *Aristida* and *Stipagrostis* grasses and the shrubs *Boscia foetida* and *Senegalia mellifera* species. No red data fauna or flora were observed on the site during the site visit. It should, however, be noted a single site visit of short duration was conducted during the dry season.

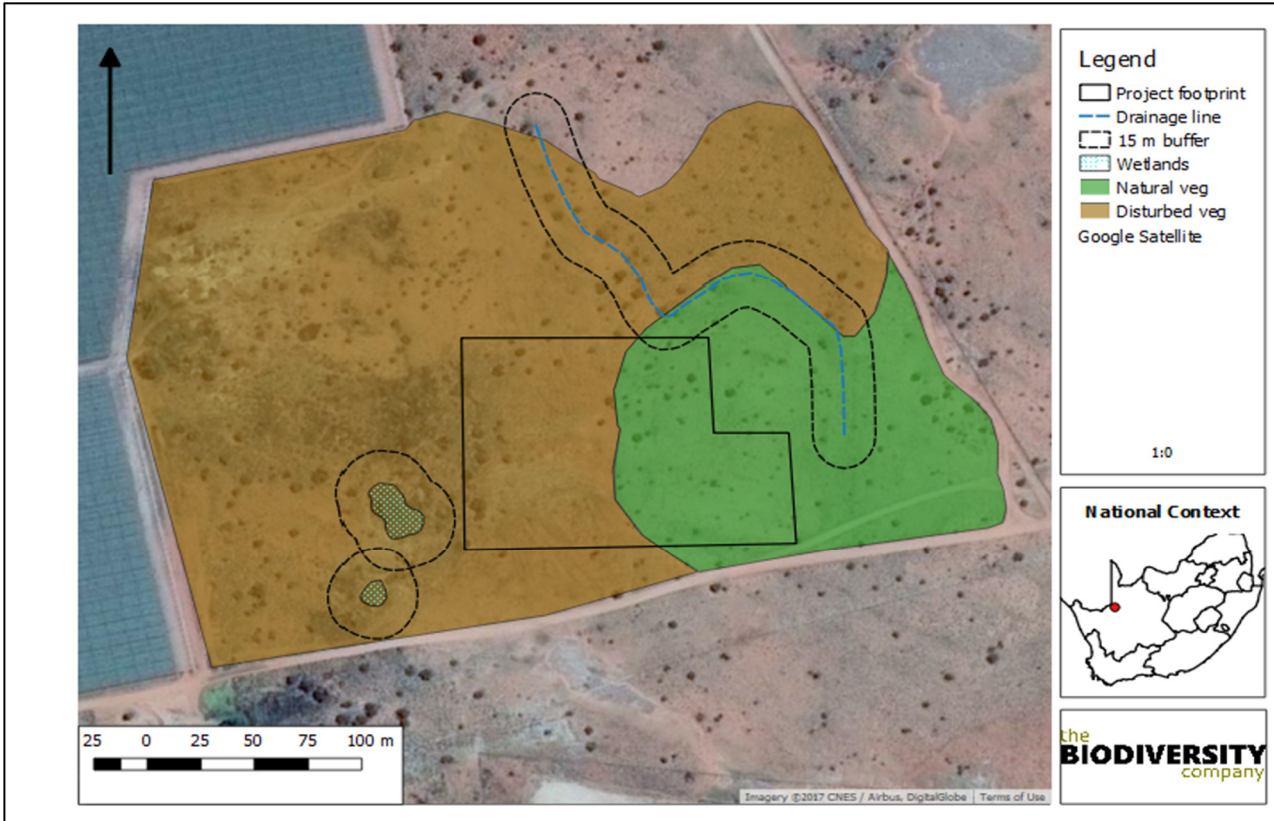


FIGURE 7: SITE SPECIFIC VEGETATION

4.6. National Biodiversity Assessment (NBA, 2011)

The National Biodiversity Assessment (NBA) was completed as collaboration between the South African National Biodiversity Institute (SANBI), the Department of Environmental Affairs and stakeholders, scientists and biodiversity management experts throughout the country over a three-year period (Driver at al., 2012).

The purpose of the NBA is to assess the state of South Africa’s biodiversity with a view to understanding trends over time and informing policy and decision-making across a range of sectors (Driver at al., 2012).

The project area is situated in an environment which is listed as Least Threatened (LT) and not protected (see Figure 8 below).



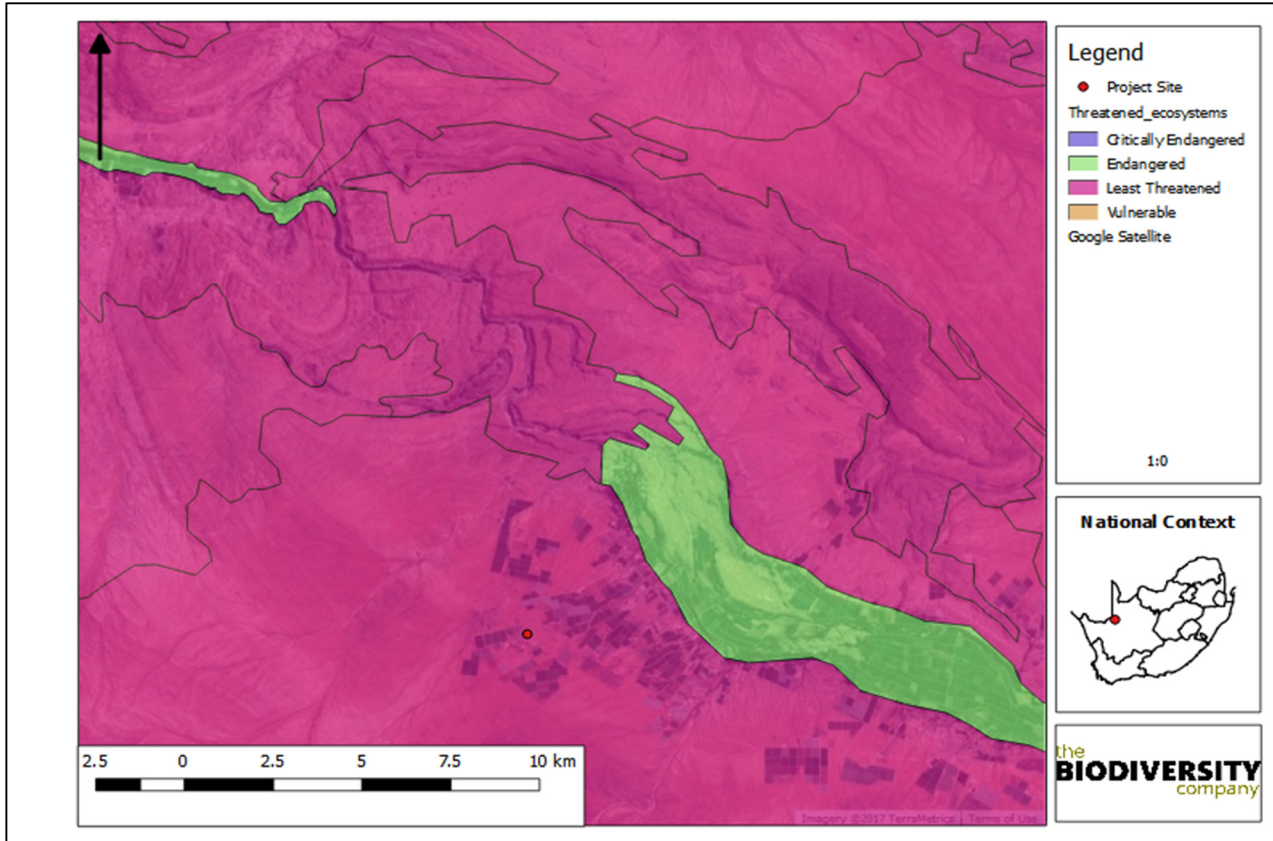


FIGURE 8: THREAT STATUS OF THE ECOSYSTEMS ASSOCIATED WITH PROJECT AREA

#### 4.7. PROTECTED AREAS

Formally protected areas refer to areas protected either by national or provincial legislation whereas informally protected areas refer to privately owned reserves. Figure 9 shows the location of the proposed development in relation to formally protected areas. At its closest point, the project area is situated approximately 3 km from the Augrabies Falls National Park. Based on this assessment the project is not expected to have any impact on the park.

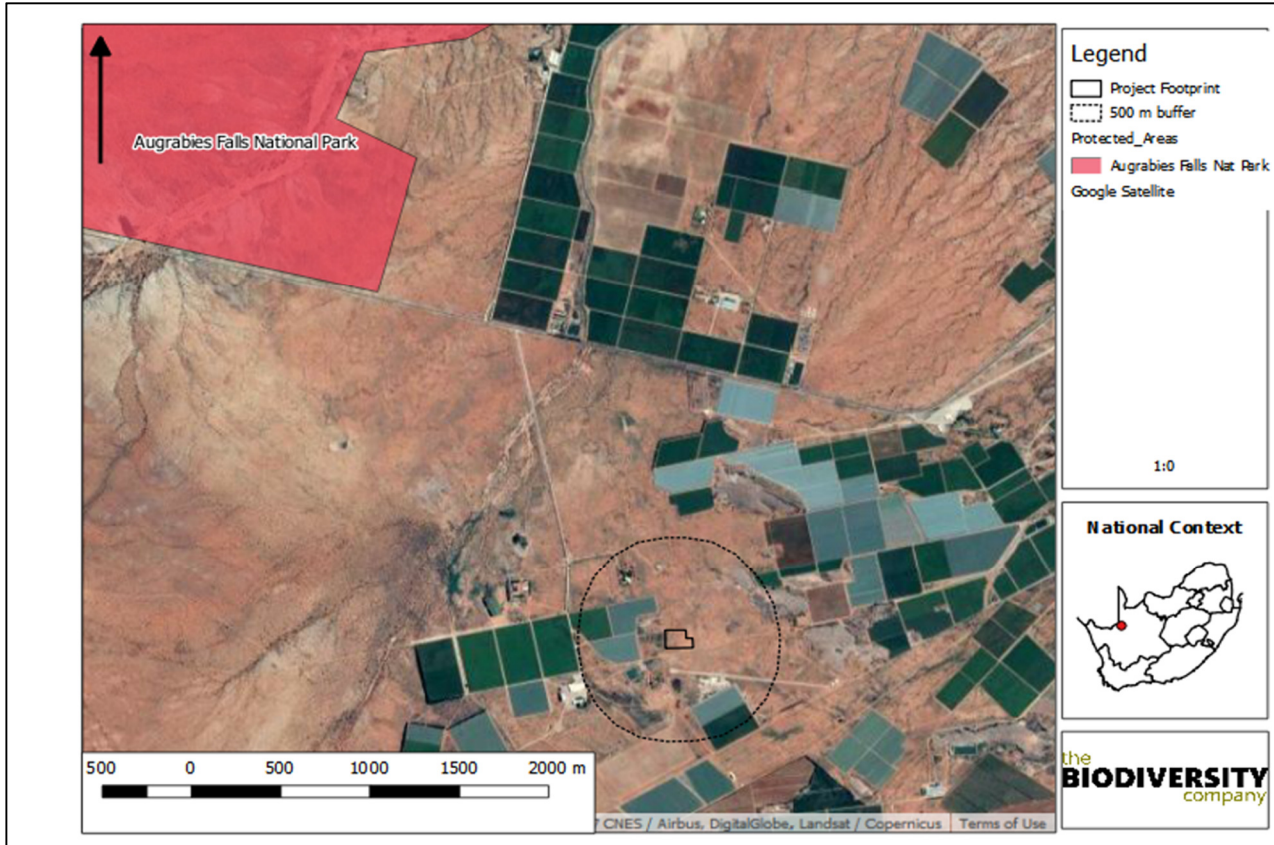


FIGURE 9: LOCATION OF PROPOSED DEVELOPMENT IN RELATION TO PROTECTED AREAS

#### 4.8. Northern Cape Critical Biodiversity Areas (CBA) 2016

The Northern Cape CBA Map identifies biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole.

The proposed project area is situated in a CBA 2 area (see Figure 10 below), however, at the time of writing this report the CBA was not gazetted and based on consultation with the Department of Environmental Affairs (DEA) not applicable until such time of being gazetted.

Note that no written confirmation was obtained from the DEA, and neither was any legal opinion sourced to confirm that the 2016 CBAs are not legally enforceable. EP3, therefore, do not take responsibility should it later be found to be applicable to this project.



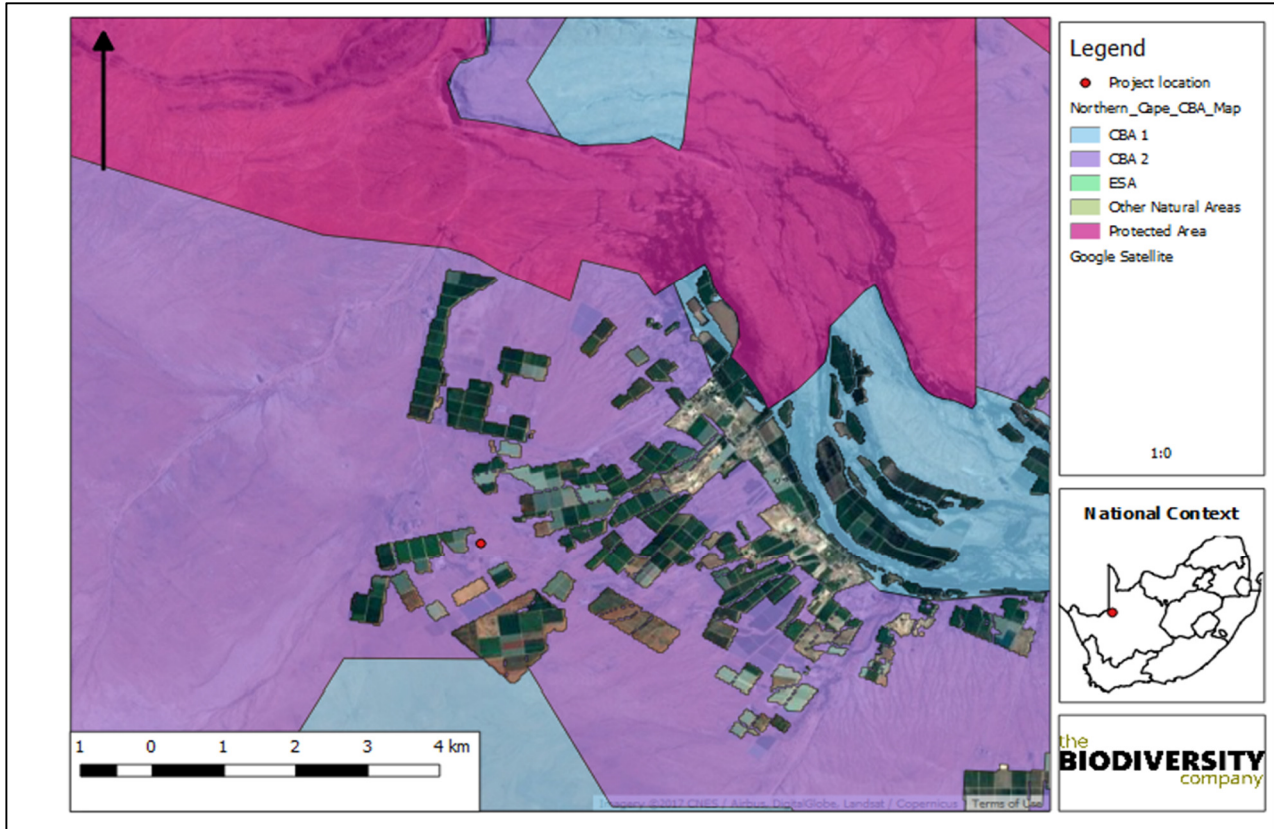


FIGURE 10: CRITICAL BIODIVERSITY AREAS

#### 4.9. Cultural and Historical Sites

The clearing of the study area sterilised the surface and much of subsurface of possible heritage occurrences and remains. However, a careful survey of areas directly surrounding the cleared footprint located only single, localised Middle Stone Age occurrences of low significance. In addition, it was noted that these single artefacts occur in lower lying areas, mostly along drainage lines in association with exposed decomposing calcrete horizons; features which seem not to have existed within the footprint prior to site clearing.

As such, it is believed that the clearing and transformation of the site did not have an adverse impact on heritage resources in the area. However, it should be noted that the occurrence of stone tools elsewhere at the site strongly suggests that similar sites could be located elsewhere in the study area, potentially sub-surface. This is due to the area's close proximity to the Orange River which renders it is prone to alluvial deposits that could burry potential Stone Age material.

The HIA concluded that no heritage resources of significance were impacted on by activities associated with site clearing for the proposed solar plant project footprint. The Archaeologist is also of the opinion that no further heritage assessment of the site is required on the condition that no additional earth clearing and moving activities take place at the site, and provided that no previously undetected heritage remains are found at any point during construction and operational phases.

It is, however, recommended that all construction staff receive suitable training to ensure that all are aware of and can identify possible heritage resources that might be unearthed during construction activities. Daily visual monitoring must be undertaken and should any subsurface paleontological,

archaeological or historical material or heritage resources be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately.

## 5. ENVIRONMENTAL LEGISLATIVE REQUIREMENTS

Based on the above findings, the following was found:

### 5.1. National Environmental Management Act (Act 107 of 1998) (NEMA)

In terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment (EIA) Regulations, dated December 2014 (As amended April 2017):

**TABLE 1: ACTIVITIES IN TERMS OF THE EIA REGULATION, 2014**

EIA Regulations GN 982, December 2014	Activity	Description	Discussion
Listing Notice 1: GN 983	1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where— (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.	The planned facility will have a footprint of less than 1 ha and therefore does not require an application for Environmental Authorisation.
Listing Notice 1: GN 983	27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) Maintenance purposes undertaken in accordance with a maintenance management plan.	The ecologist confirmed that only 0.6 ha of the cleared area can be classified as being indigenous vegetation and therefore the activity does not require an application for Environmental Authorisation.
Listing Notice 3: GN 985	12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. g. Northern Cape: ii. Within critical biodiversity areas identified in bioregional plans.	The site is located within an identified CBA, however, the CBAs have not been gazetted at the time of writing this report.

### 5.2. National Water Act (Act 36 of 1998) (NWA)

It is anticipated that a Water Use registration will have to be applied for in terms of Section 21 (c) and (i) due to the presence of wetlands. It is recommended that Oseiland Boerdery CC consult with the DWS.

### 5.3. National Heritage Resources Act (Act 25 of 1999) (NHRA)

An HIA was conducted and it was concluded that no further assessments/approvals are required.

#### 5.4. National Environmental Management Biodiversity Act (Act 10 of 2004) (NEMBA)

The 2016 CBA map indicated that the site is located within a CBA2, however, the CBAs has not been gazetted. Note that no written confirmation was obtained from the DEA, and neither was any legal opinion sourced to confirm that the 2016 CBAs are not legally enforceable.

NEMBA (2004) requires the eradication of listed alien invasive species. During site clearing activities alien vegetation and weeds were eradicated. It must be ensured that alien vegetation within the site is controlled and eradicated on a regular basis during the operational phase of the project.

#### 5.5. National Environmental Management: Protected Areas Act (Act 57 of 2003) (NEMPAA)

The National Environmental Management: Protected Areas Act (No 57 of 2003, NEM:PAA) makes provision for the management of protected areas. The site is situated approximately 3km from the Augrabies Falls National Park which is a protected area. The ecologist is of the opinion that the project is not expected to have any impact on the park therefore no further assessment is required.

#### 5.6. Conservation of Agricultural Resources Act (Act 43 of 1983)

CARA requires the eradication of alien vegetation and erosion control. During site clearing activities alien vegetation and weeds were eradicated. It must be ensured that alien vegetation within the site is controlled and eradicated on a regular basis during the operational phase of the project. Measures must be implemented to prevent erosion during the operational phase of the project.

## 6. RISK ASSESSMENT & RECOMMENDATIONS

Based on the findings of the screening assessment an environmental risk assessment was conducted based on the triple bottom line principle i.e. People, Planet, Profit – Social Development, Environmental sustainability and the development contributes to Economic growth. In the pre-feasibility phase the environmental risk can only take environmental sustainability into consideration because not all aspects like social development (employment opportunities, social investment, etc.) and economic growth (capital injection into the community, etc.) has been calculated and forecasted.

Environmental risk for the proposed development can be tabled as follows:

**TABLE 2: ENVIRONMENTAL RISK**

No.	Risk area	Impact on Planned Development	Description	Rating
1.	Wetlands, Rivers and watercourses (including buffers)	A drainage line and two small wetland systems lies towards the North West and South west of the application site.	Effective stormwater management is needed to prevent contaminated rainwater from entering any drainage line around the premises. A low risk is foreseen due to the fact that activity itself would have minimal impact on the drainage line due to buffers being in place.	L
2.	Sensitive Habitat including buffers	The planned development is situated within an area considered Least Threatened (LT) and not protected under the National Biodiversity Assessment, 2011.	The total area of indigenous vegetation that was cleared spans 0.6ha and therefore have minimal impact on the receiving environment.	L
3.	Red Data Species including buffers	No red data species were recorded during the site visit.	A low risk is foreseen due to the fact that most of the area has been disturbed and no red data species have been recorded.	L
4.	Ridges (including buffers)	No class ridges exist on or near the study area	N/A	L
5.	Agricultural activities	The study area is situated between cultivated vineyards and the site was specifically chosen within an area where it was not feasible for agricultural activities.	A low risk is foreseen because of the study area is not situated within feasible agricultural land.	L
6.	Geology (Dolomite stability)	Available data does not show any risk of dolomite that may be present on site.	A low risk is foreseen based on the proposed project not having any significant structures.	L
7.	Cultural / Historical impact	No areas of cultural or historical importance were recorded on the study area.	The HIA concluded that no features of cultural or historical significance are present on the study area.	L



No.	Risk area	Impact on Planned Development	Description	Rating
8.	Regulatory – NEMA Listing 1	Clearance of more than 1 ha of indigenous vegetation and total extent of facility being in excess of 1ha.	The design of the facility indicates that the site will be less than 1ha in extent and therefore do not require environmental authorization. The total area that was cleared only had 0.6 ha indigenous vegetation.	L
9.	Regulatory – NEMA Listing 3	Clearance of more than 300m2 of indigenous vegetation in a CBA area.	The current CBA has not been gazetted and therefore not applicable.	L
10.	Regulatory – NWA Section 21 c and i	Two wetlands and a non-perennial drainage line if situated in close proximity to the site.	Due to the presence of wetlands, it is recommended that Oseiland Boerdery CC consult with the DWS to determine if any registration is required.	L
11.	Regulatory – NWA Section 21 a	Water for the washing of solar panels during the operational phase.	A low risk is foreseen under the provision that the water used for the washing of the solar panels is obtained from a legal water source, within the current water rights/registrations of the farm.	L
12.	Regulatory – NEMBA	Critical Biodiversity Area.	The 2016 CBA map indicated that the site is located within CBA2. See report for detail.	L
		Combat or eradicate listed invasive species.	NEMBA requires the eradication of listed alien invasive species. During site clearing activities alien vegetation and weeds were eradicated.	P
13.	Regulatory – NEMPAA	Protected Areas.	The site is located approximately 3 km from the Augrabies Falls National Park. Based on this assessment the project is not expected to have any impact on the park.	L
14.	Regulatory – CARA	Eradication of Alien Vegetation.	CARA requires the eradication of alien vegetation and weeds. During site clearing activities alien vegetation and weeds were eradicated.	P
		Erosion Control.	Measures must be implemented to prevent erosion.	L

	High Risk		Low Risk
	Medium Risk		Positive impact

It can be concluded from the table above that the planned development has a low risk.

## 7. CONCLUSION

The project area was cleared prior to the site assessment and EP3 cannot say with certainty that less than 1 ha of indigenous vegetation was cleared. However, the Ecologist (based on historical data and a site survey) concluded that only around 0.6ha of the total area that was cleared can be considered as being indigenous.

Based on the interpretation of available data, an assessment of the adjacent environment and information received from Sonfin and the Oseiland Boerdery representative as well as the opinion of the ecologist, the development of the solar PV plant may commence on the proposed site without an Environmental Authorisation from the competent authority, subject to:

- The total area of the facility does not exceed 1ha;
- No further vegetation clearing is undertaken;
- A buffer area of 15m is maintained between the two wetlands and the drainage line from the border of the solar PV plant;
- Construction staff must receive training on possible heritage resources and daily monitoring must be undertaken;
- Oseiland Boerdery CC to consult with the DWS with regards to any registration requirements applicable to the wetlands; and
- The contractor implements an Environmental Management Plan during the construction phase of the project.

## 8. LIMITATIONS

Due professional care was exercised by EP3 and its employees during the planning, execution and reporting of the results reflected in this screening assessment. However, absolute assurance cannot be given that other areas of risks and/or possible irregularities do not exist, due to limited testing performed.

Whilst every reasonable care has been taken by EP3 in the development and compiling of this report, EP3 accepts no liability for any loss or damage caused, arising directly or indirectly in connection with reliance on its contents except to the extent that such liability may not be excluded in law.

EP3 cannot be held accountable for any incorrect information provided that may have an impact on the outcome of the survey.

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