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Soil and Agricultural Potential Scoping Report for the Proposed Barleria, Dicoma and Setaria PV Facilities

Submitted by TerraAfrica Consult cc

Mariné Pienaar

5 October 2021

Declaration of the Specialist

Details of Specialist

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Declaration of Independence

I, Mariné Pienaar, hereby declare that TerraAfrica Consult, an independent consulting firm, has no interest or personal gains in this project whatsoever, except receiving fair payment for rendering an independent professional service.

I further declare that I was responsible for collecting data and compiling this report. All assumptions, assessments and recommendations are made in good faith and are considered to be correct to the best of my knowledge and the information available at this stage.

TerraAfrica Consult cc represented by M Pienaar
5 October 2021

1. INTRODUCTION

Terra-Africa Consult cc was appointed by Savannah Environmental (Pty) Ltd to conduct the Soil and Agricultural Assessment as part of the Scoping and Environmental Impact Assessment process for the proposed development of three solar PV facilities. The project area of the three PV facilities are located 5km north west of the town of Lichtenburg (see Figure 1). The site is accessible via an existing gravel road which provides access to the development area off the R505, located east of the development area. The PV facilities, including associated facility and grid connection infrastructure, will be located on the following properties:

- Portion 1 of the Farm Houthaalboomen 31
- Portion 9 of the Farm Houthaalboomen 31
- Portion 10 of the Farm Houthaalboomen 31
- Portion 0 of Farm Talene 25
- Portion 7 of Farm Elandsfontein 34

The proposed development will also include site and internal access roads (up to 8m wide), Loop-in-Loop-out (LILO) overhead 132 kV power line, a Battery Energy Storage System (BESS) and inverters and transformers. For each of the three PV facilities, two grid connection corridor alternatives are considered. The layout of each facility and the associated infrastructure is depicted in Figure **2** (Barleria PV facility), Figure **3** (Dicoma PV facility) and Figure **4** (Setaria PV facility).

2. TERMS OF REFERENCE

The terms of reference applicable to the soil and agricultural potential scoping assessment include the following:

- Conduct a desktop assessment of the baseline soil and agricultural properties for the proposed development area and access road route
- Identify site sensitivities to the proposed project pertaining to the soil properties, associated land capabilities and the agricultural potential of the project area following the analysis of desktop data.
- Conduct a site assessment of two days to determine soil properties, land uses, surrounding land uses and the presence of other land uses that may have high sensitivity to the proposed project.
- Provide a preliminary site sensitivity rating following the site visit and identify no-go areas for the process of micro-siting of the infrastructure associated with the proposed projects.
- Identify potential impacts that will be caused by the projects and that will have to be assessed as part of the detail study phase.
- Identify a plan of study that will include the methodology to be followed during the detailed soil and agricultural potential impact assessment that will form part of the final EIA report that will be submitted.

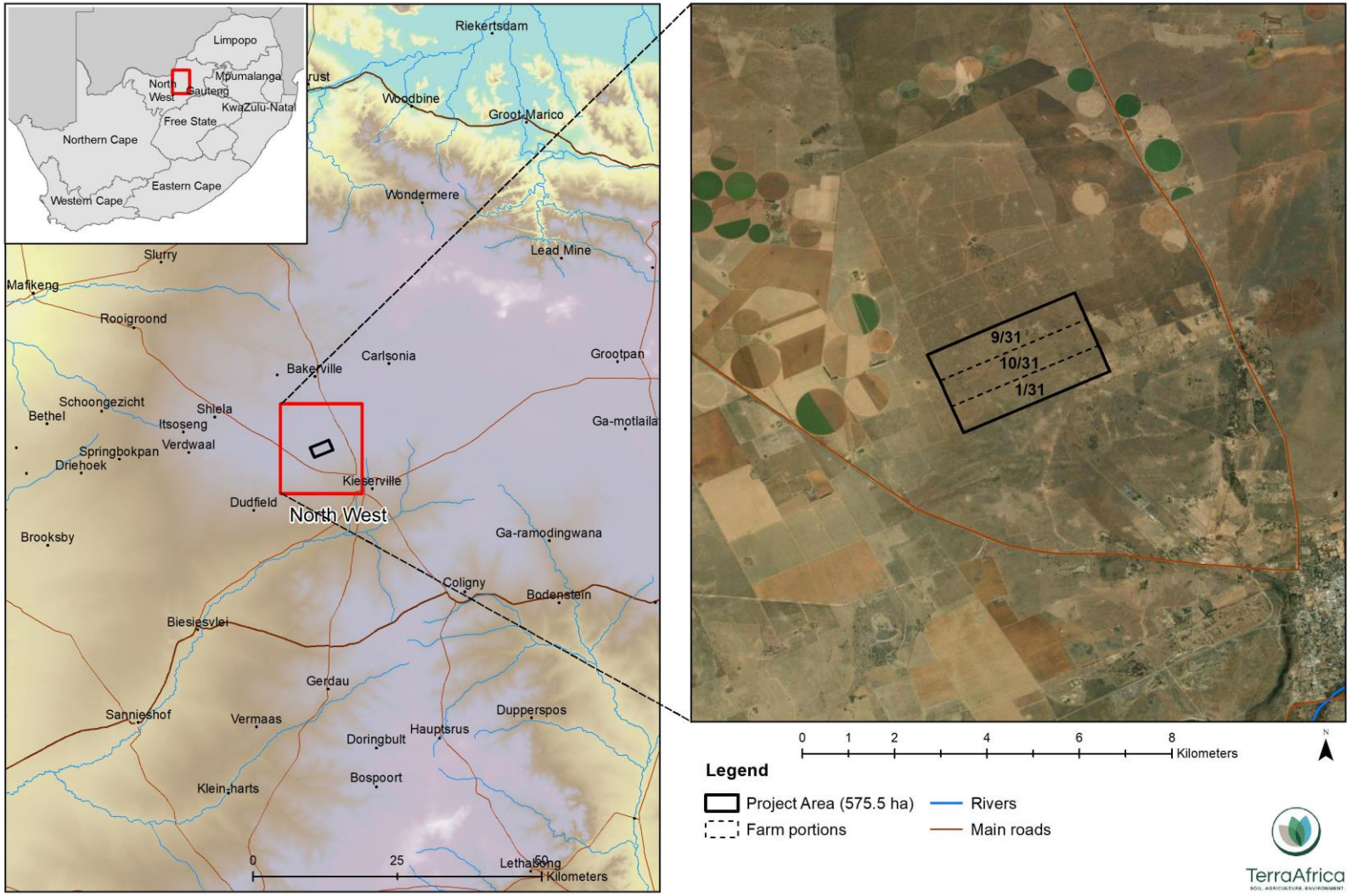

Figure 1 Locality map of the project area of three proposed solar PV facilities (Barleria, Dicoma and Setaria) outside Lichtenburg

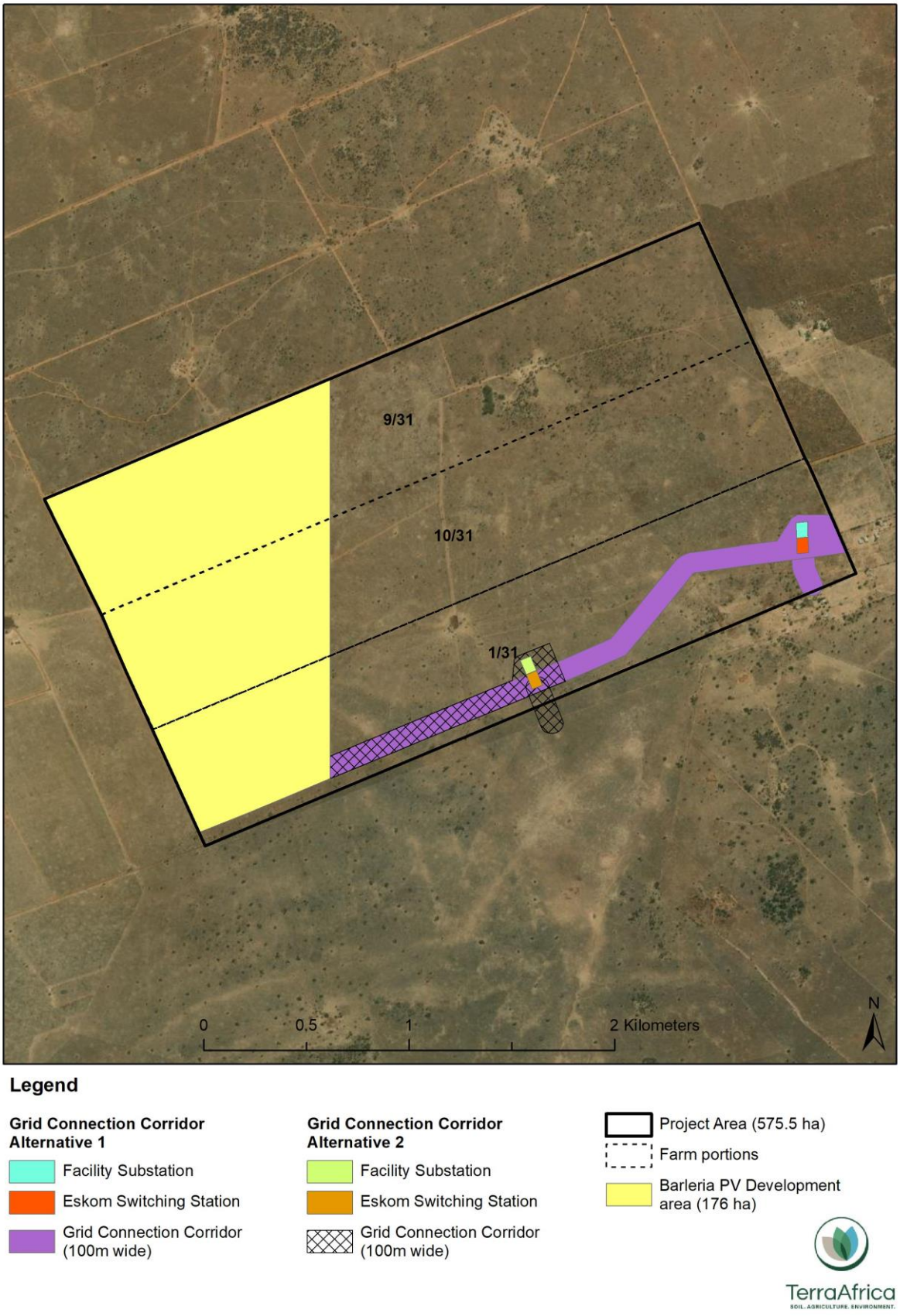

Figure 2 Layout of the proposed Barleria solar PV facility and grid connection corridor alternatives

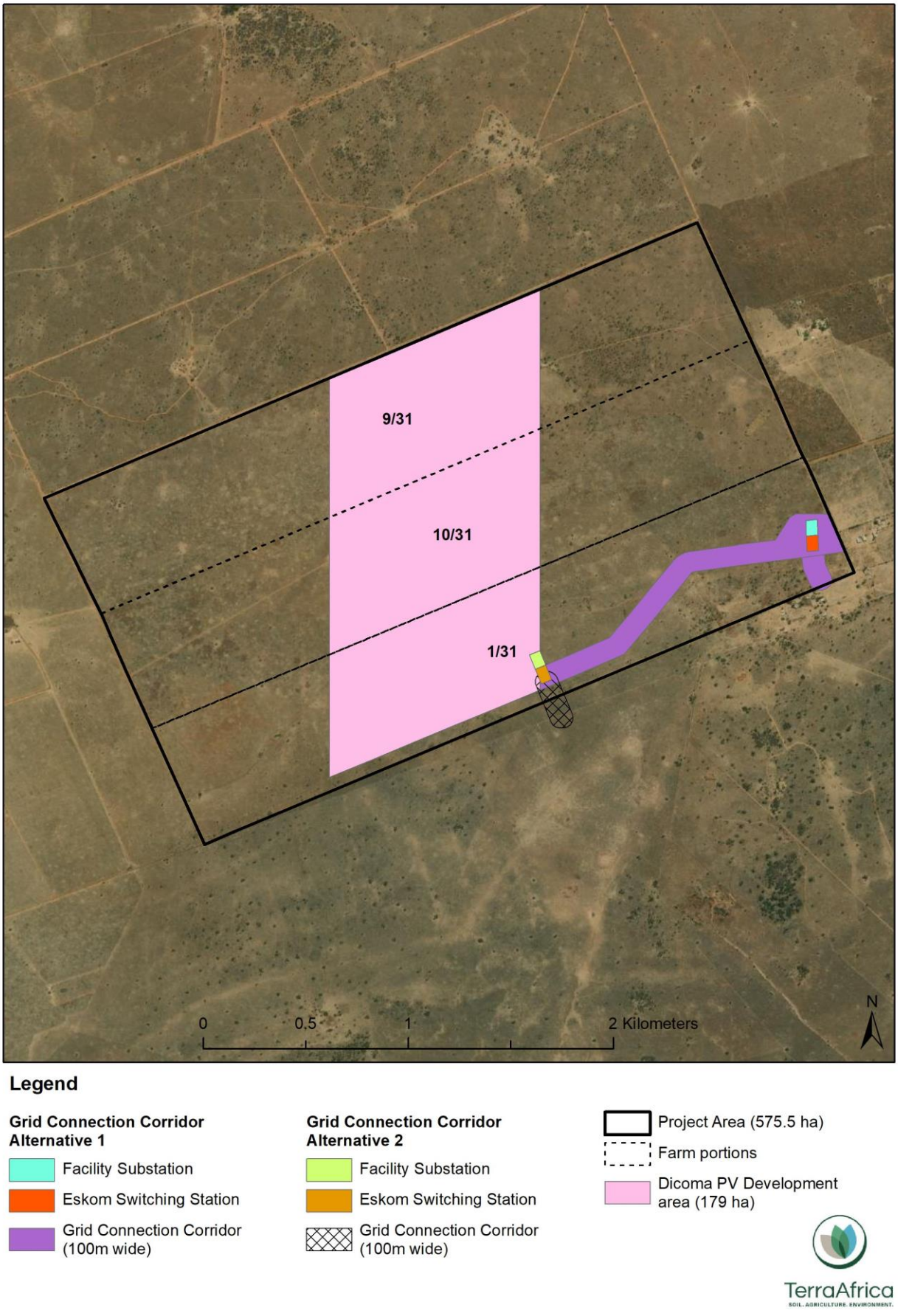

Figure 3 Layout of the proposed Dicoma solar PV facility and grid connection corridor alternatives

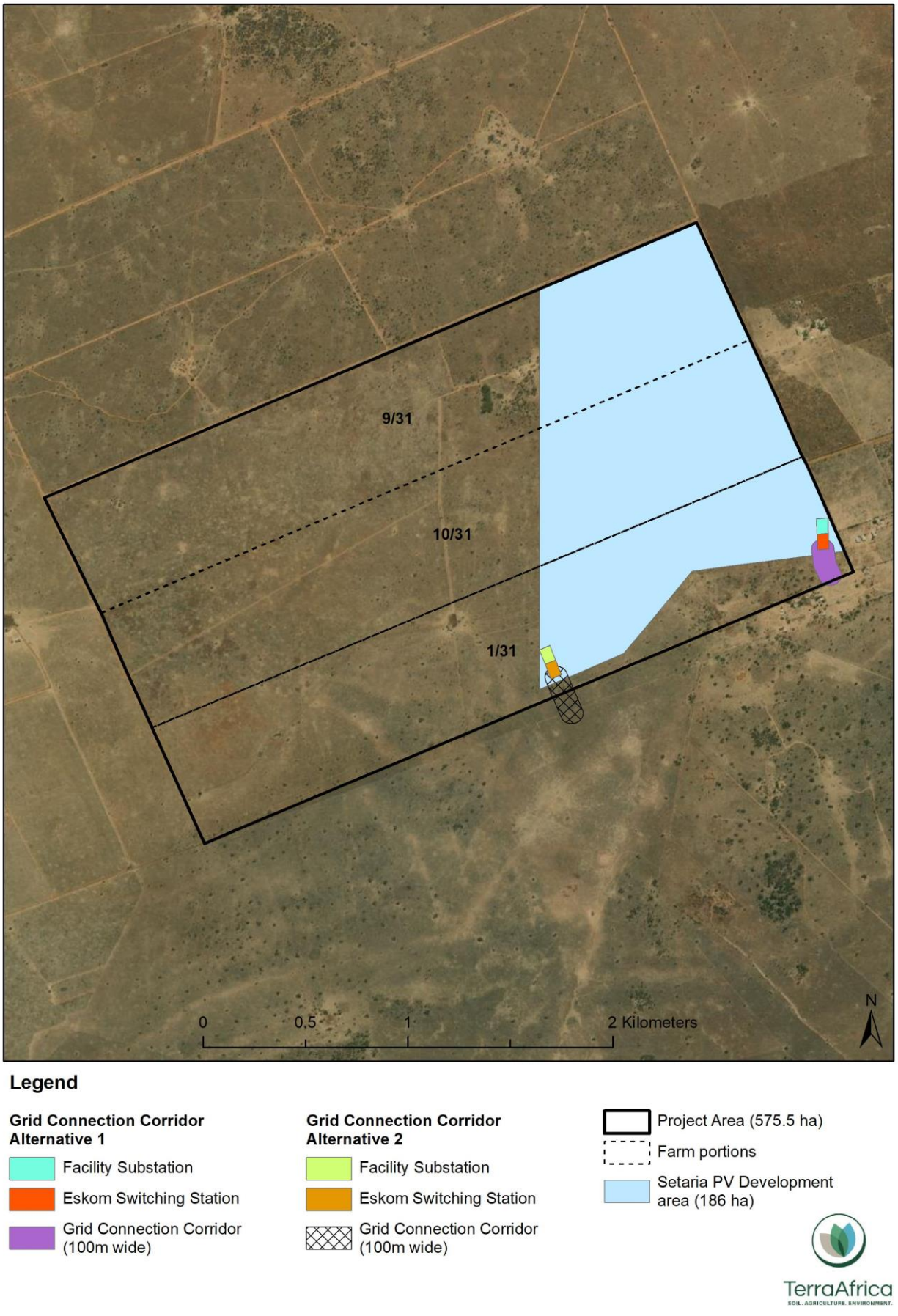

Figure 4 Layout of the proposed Setaria solar PV facility and grid connection corridor alternatives

3. METHODOLOGY

3.1 Desktop assessment of available data

The proposed development area was superimposed on five different raster data sets obtained from the National Department of Agriculture, Land Reform and Rural Development (DALRRD).

The data sets are:

- Land type data for the project assessment zone was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC) (Land Type Survey Staff, 1972 – 2006). The land type data is presented at a scale of 1:250 000 and entails the division of land into land types, typical terrain cross sections for the land type and the presentation of dominant soil types for each of the identified terrain units.
- The Refined Land Capability Evaluation Raster Data for South Africa that was developed using a spatial evaluation modelling approach (DALRRD, 2016).
- The long-term grazing capacity for South Africa 2018 that present the long term grazing capacity of an area with the understanding that the veld is in a relatively good condition (South Africa, 2018).
- The North West Field Crop Boundaries show crop production areas may be present within the development area. The field crop boundaries include rainfed annual crops, non-pivot and pivot irrigated annual crops, horticulture, viticulture, old fields, small holdings and subsistence farming (DALRRD, 2019).

3.2 Scoping phase site sensitivity verification

The first site visit was conducted on 2 and 3 September 2021. The soil profiles were examined to a maximum depth of 1.5m using a hand-held auger. Observations on site were made regarding soil texture, structure, colour and soil depth at each survey point. A cold 10% hydrochloric acid solution was used on site to test for the presence of carbonates in the soil. A hand-held Garmin GPS was used to the log the coordinates of each of the survey points. The soils are described using Soil Classification: A Natural and Anthropogenic System for South Africa (Soil Classification Working Group, 2018).

Other observations made during the site visit include recording the presence of farm buildings, cattle handling facilities and water troughs. The larger area around the study area was also assessed by driving through the area to gain an understanding of the agro-ecosystem within which the study area functions. Photographic evidence of soil properties, current land uses and farm infrastructure were taken with a digital camera and presented in Section 4 of the report.

4. RESULTS OF DESKTOP ASSESSMENT

4.1 Land type classification

A small portion of the Barleria PV development area consists of Land Type Bc 11 along its south western boundary and the remaining area consists of Land Type Fa11. The entire development areas of both the Dicoma PV and Setaria PV projects, consist of Land Type Fa 11. The land type classification of the area is depicted in (Figure 5). Each of the land types

present are described below and the complete land type data sheets, are attached as Appendix 1.

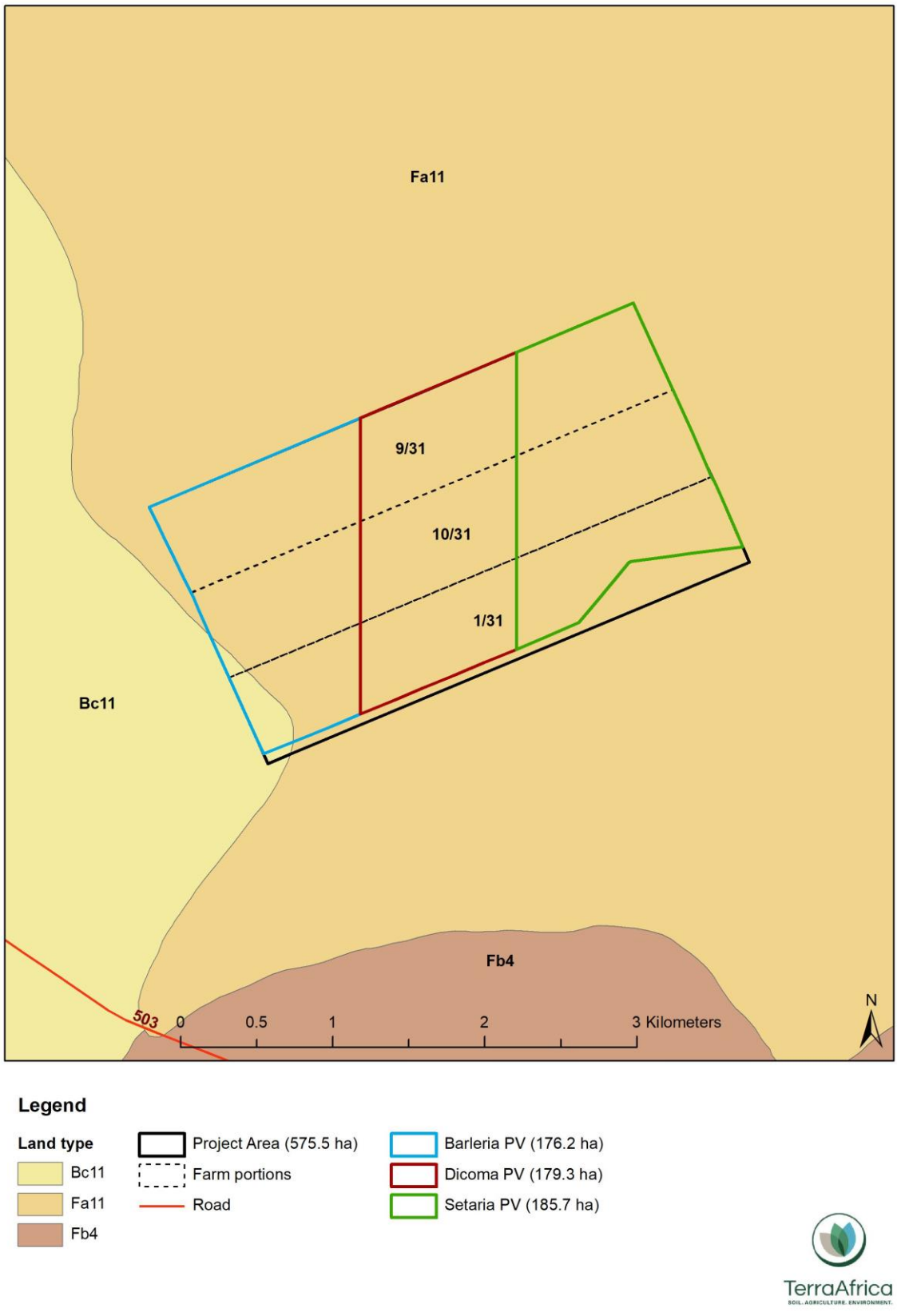

Figure 5 Land type map of the proposed solar PV facilities (Barleria, Dicoma and Setaria)

4.1.1 Land Type Fa11

The terrain forms of Land Type Fa11 are depicted in Figure 6. The crests and mid-slopes (Terrain units 1 and 3) are dominated by soil of the Glenrosa and Mispah forms. The rest of this land type consists of yellow-brown and red apedal (structureless) soil either underlain by unspecified material or by plinthic material (either soft or hard plinthite) along the toe-slopes and valley bottoms (Terrain units 4 and 5, respectively). According to the land type charts, 40 to 50% of foot slope and valley bottom positions consist of these deeper soil forms. The valley bottoms might potentially consist of a hydromorphic soil form that may have wetland potential. The slope of the terrain is very flat with Terrain unit 3 having the steepest slope (between 2% and 5%). The clay content of the topsoil horizons are estimated to range between 10% and 25% while subsoil clay content is estimated to range between 13% and 40%.

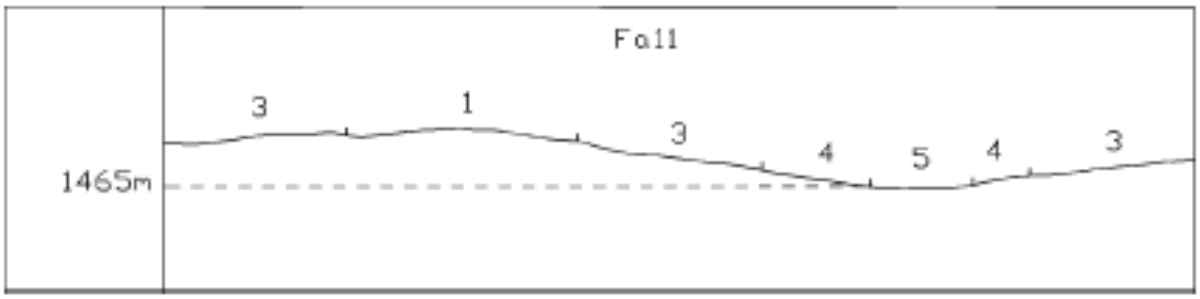

Figure 6 Depiction of the terrain form of Land Type Fa11

4.1.2 Land Type Bc11

In comparison to Land Type Fa11, Land Type Bc11 consists only of two different terrain units that are illustrated in Figure **7**. Of the entire land type area, 95% consists of flat toe-slopes (with slope between 0 and 2%) with slope length between 1300 and 1700m. These areas consist predominantly of Westleigh, Hutton, Avalon, Glencoe and Bainsvlei soil forms. The remaining 5% of the land type area consists of valley bottoms (Terrain unit 5). The valley bottoms have about 60% soils of the Sterkspruit form and 40% soils of the Rensburg form. The slope length of the valley bottoms are short (between 50 and 100m) and slope ranges between 0 and 1%.

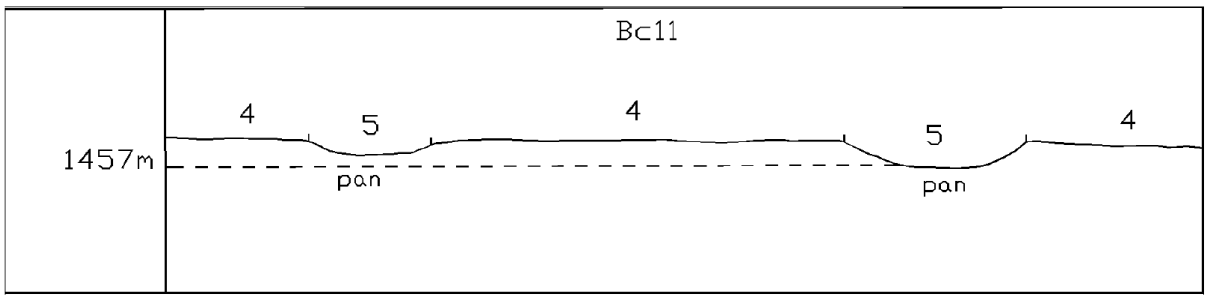

Figure 7 Terrain form sketch of Land Type Bc11

4.2 Land capability classification

The land capability classification of the three solar PV development areas according to the DALRR raster data (DALRRD, 2016), is shown in Figure 8.

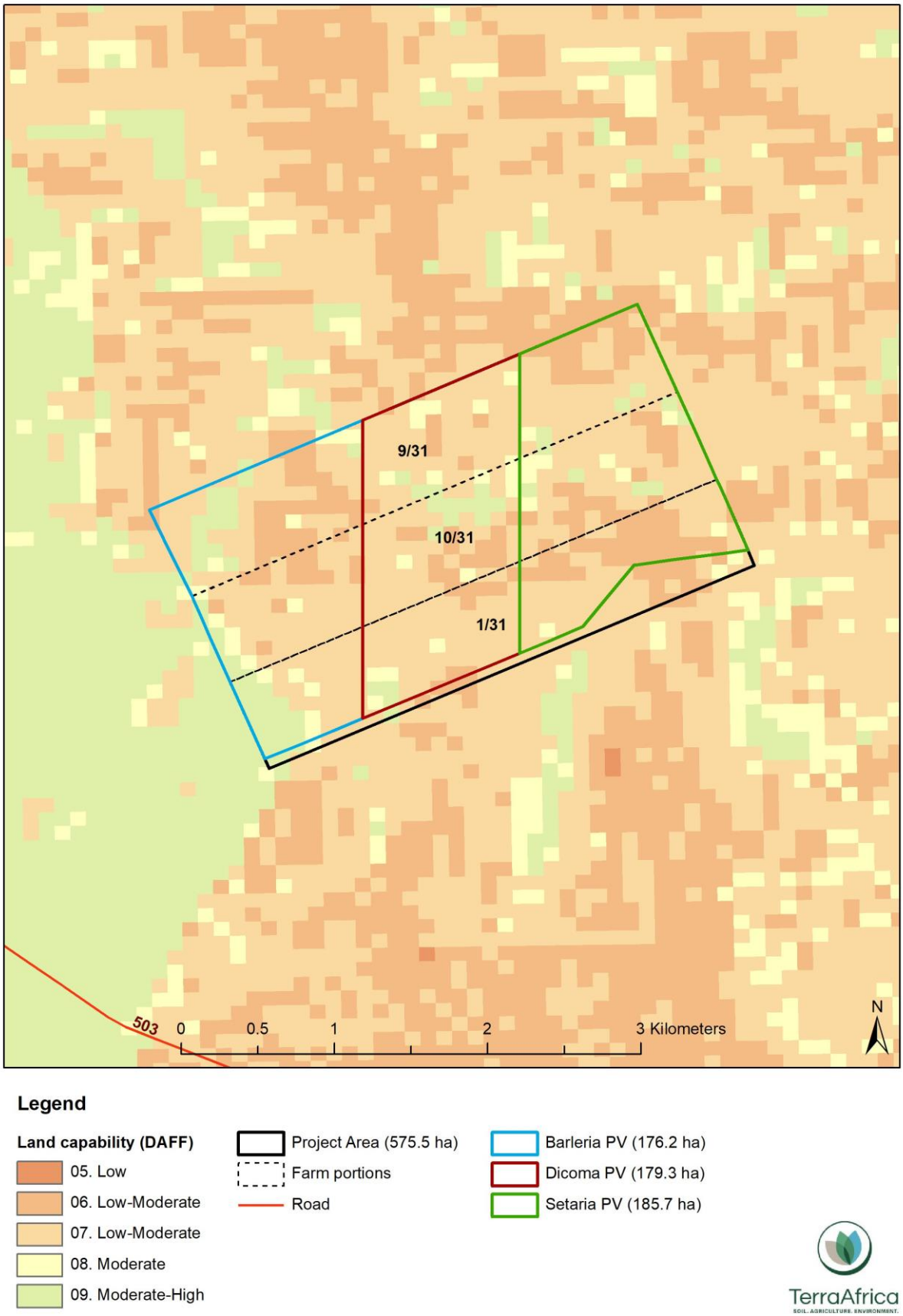

Figure 8 Land capability map of the proposed solar PV facilities (Barleria, Dicoma and Setaria) (data source: DALRRD, 2016)

4.2.1 Barleria PV development area

The largest part of the Barleria PV development area consists of land with Low-Moderate (Class 07) land capability. This land capability class is present along almost the entire eastern boundary of the development area while the southern section of the western boundary consists of land with Moderate-High (Class 09) land capability. A small section in the north western corner of the site also consists of Moderate-High (Class 09) land capability. The north eastern corner has lower land capability than the surrounding areas and is classified as Low-Moderate (Class 06). Very small sections of land Moderate (Class 08) land capability are present between land with Moderate-High (Class 09) and Moderate-Low (Class 07) land capability.

4.2.2 Dicoma PV development area

Similar to the Barleria PV development area, the largest part of the Dicoma PV development area also consists of land with Low-Moderate (Class 07) land capability. This land capability class is most prevalent within the southern half as well as the northern third of the area. Between these main areas, there is a small horizontal section of land with Moderate-High (Class 09) land capability. Just south of that, is land with Low-Moderate (Class 06) land capability. A few small areas of land with Moderate land capability (Class 08) is interspersed between that.

4.2.3 Setaria PV development area

Land with Low-Moderate (Class 06) land capability is present along the northern and southern boundaries of the Setaria PV development area. There is also a small section of this land capability class along the eastern boundary. The remaining area consists almost solely of land with Low-Moderate (Class 07) land capability. A few very small areas of land with Moderate (Class 08) and Moderate-High (Class 09) land capability are scattered across the middle section of the development area.

4.3 Field crop boundaries

Following the data analysis of the field crop boundaries within the development area (see Figure 9), there are no crop fields within any of the three development areas. The different areas are discussed below.

4.3.1 Barleria PV development area

There are no crop field boundaries within the Barleria PV development area (see Figure 9). Crop fields with rainfed annual crops and planted pastures as well as centre pivot irrigation, are present directly west of the Barleria site. More pivot irrigation is present about 8km north and 4km north-east of the site.

4.3.2 Dicoma PV development area

There are no crop field boundaries within the Dicoma PV development area (see Figure 9). Crop fields with rainfed annual crops and planted pastures as well as centre pivot irrigation, are present between 1 and 1.5km west of the western boundary of the Dicoma site. More pivot

irrigation is present about 8km north and 3km north-east of the site. Small-holdings are present 2.5km east of the development area.

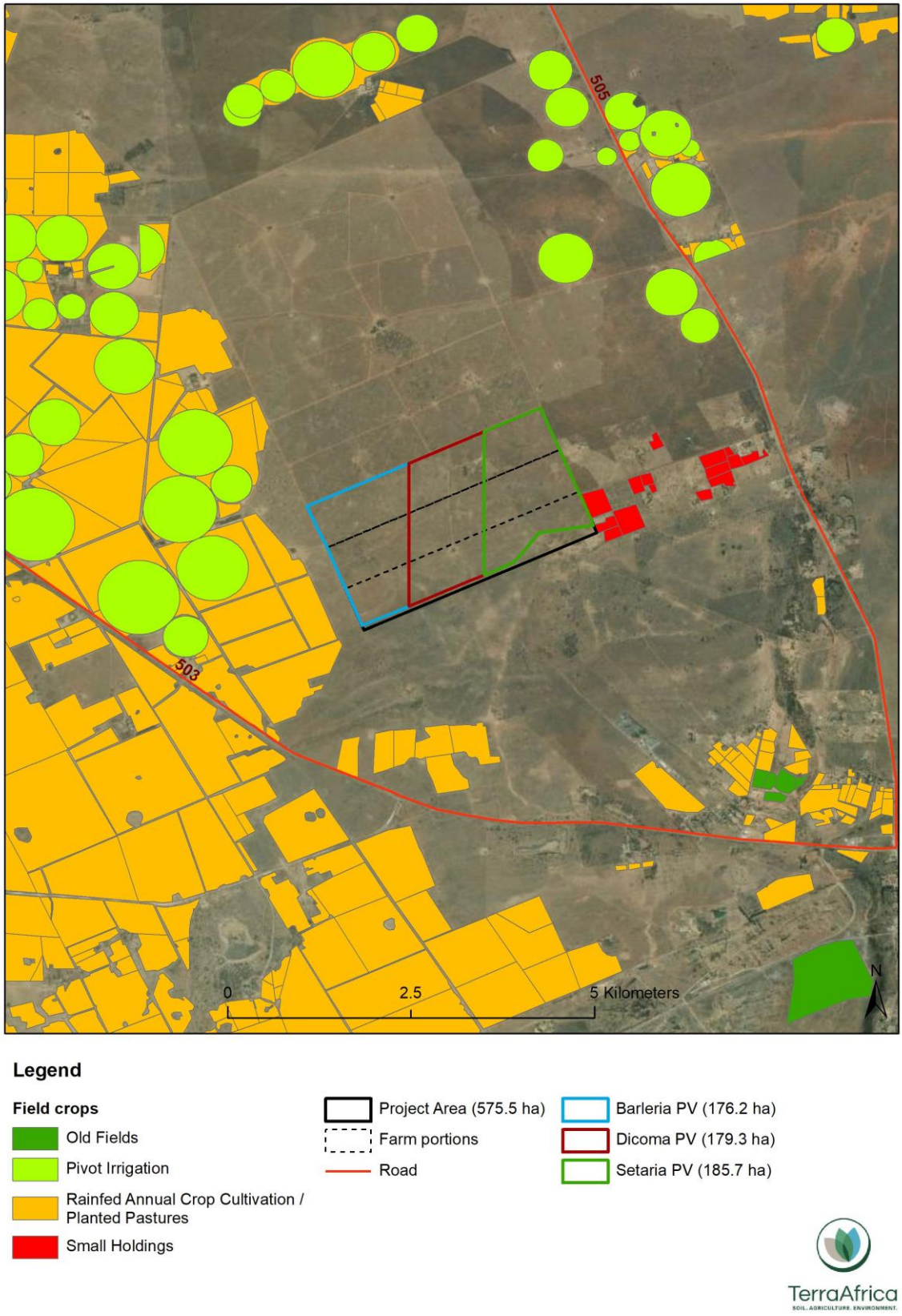

Figure 9 Field crop boundaries of the proposed solar PV facilities (Barleria, Dicoma and Setaria) (data source: DALRRD, 2019)

4.3.3 Setaria PV development area

There are no crop field boundaries within the Setaria PV development area (see Figure 9). Small-holdings are present directly east of the eastern boundary of the site. The closest centre pivot irrigation area is located 2km north of the northern boundary of the area. Crop fields with rainfed annual crops and planted pastures as well as centre pivot irrigation fields are located 2.5km west of the western boundary of the development area. More pivot irrigation fields are present about 7km north of the site.

5. RESULTS OF THE SITE ASSESSMENT

5.1.1 Barleria PV development area

The soil profiles classified within the Barleria development area consist of the Glenrosa, Mispah and Nkonkoni forms. The Glenrosa soils are present at around 80% of the proposed Barleria development area while the Mispah forms are found at 15% and the remaining 5% is Nkonkoni soils. The Glenrosa soils range in depth between 0.25 and 0.40m while the Mispah soils are between 0.05 and 0.20m deep. The Nkonkoni soils are between 0.40 and 0.90m deep.

The current land use of the site is extensive livestock farming with cattle. The available grazing consists of natural veld and there are no planted pastures and no grass harvesting and baling. The grazing capacity of the development area is 8ha/LSU (Figure 10). The development area therefore has the capacity to feed 22 head of cattle. Land with grazing capacity of 8ha/LSU is considered to have moderate grazing potential. It is lower than the wetter, eastern parts of the country such as Mpumalanga where the grazing capacity ranges from 4 to 6 ha/LSU. However, it is higher than drier areas in the western parts of South Africa, such as the Kalahari. Grazing capacity in the Kalahari ranges between 11 and 17 ha/LSU. The grazing capacity of the Karoo is much lower than that, with some areas having grazing capacity as low as 70ha/LSU.

The surrounding land uses include irrigated and rainfed production of grain crops to the west of the site while the areas located north, east and south of the site are used for livestock farming.

5.1.2 Dicoma PV development area

The soil profiles classified within the Dicoma development area consist of the Glenrosa and Mispah forms. The Glenrosa soils are present at around 90% of the proposed Dicoma development area while the Mispah forms are found at the remaining 10%. The Glenrosa soils range in depth between 0.25 and 0.40m while the Mispah soils are between 0.05 and 0.20m deep. The current land use of the site is extensive livestock farming with cattle. The available grazing consists of natural veld and there are no planted pastures and no grass harvesting and baling. The grazing capacity of the development area is 8ha/LSU (Figure 10). The development area therefore has the capacity to feed 22 head of cattle. The surrounding land uses include irrigatedand rainfed production of grain crops to the west of the site while the areas located north, east and south of the site are used for livestock farming.

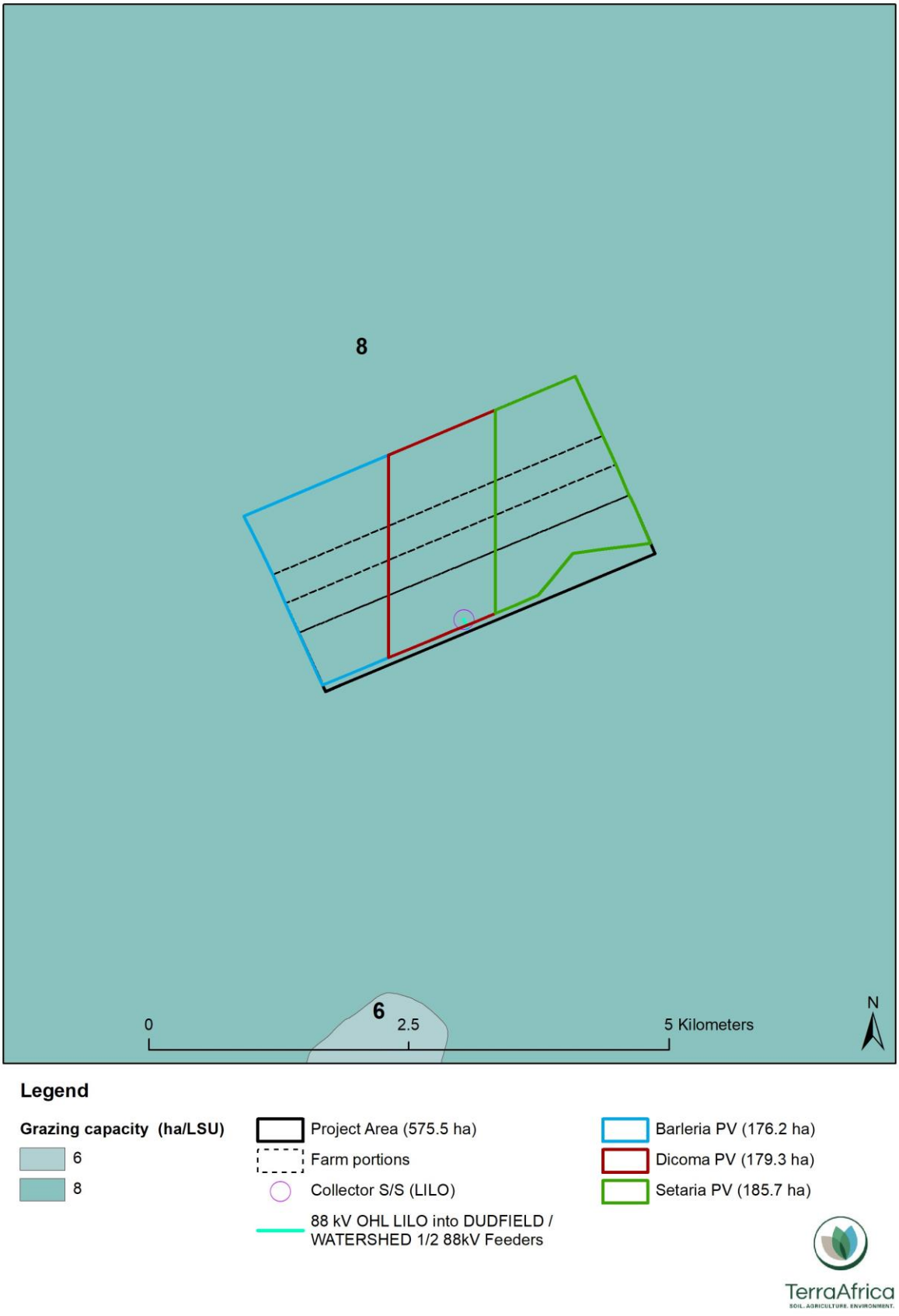

Figure 10 Grazing capacity of the proposed solar PV facilities (Barleria, Dicoma and Setaria) (data source: DALRRD, 2018)

5.1.3 Setaria PV development area

The soil profiles classified within the Setaria development area consist of 95% Glenrosa soils and 5% Mispah soils. The Glenrosa soils range in depth between 0.25 and 0.40m. The current land use of the site is extensive livestock farming with cattle. The available grazing consists of natural veld and there are no planted pastures and no grass harvesting and baling. The grazing capacity of the development area is 8ha/LSU. The development area therefore has the capacity to feed 23 head of cattle. The surrounding land uses include irrigated and rainfed production of grain crops to the west of the site while the areas located north, east and south of the site are used for livestock farming.

6. PRELIMINARY SENSITIVITY ANALYSIS

Considering both the site assessment data together with the desktop data, the site has been assigned a preliminary sensitivity rating (see Figure 11). The entire development areas of all three the proposed solar PV facilities, have Medium sensitivity to the proposed development. The sensitivity rating was assigned with the reasoning that although the site is not suitable for rainfed crop production due to the shallow soil profiles found over the largest part of the site, it has good to moderate grazing capacity and can be used for livestock farming.

Even though there are small pockets of deeper Nkonkoni soil profiles within the project site, these areas are very small in comparison to the surrounding areas and too small to be viable as individual crop fields. During the detailed study for the EIA phase, the sensitivity rating of each facility's development area, will be refined based on the soil classification of the area.

All three the sites are only used for livestock grazing and the shallow, rocky nature of the soils within the area limits the potential for rainfed crop production. These soils may be suitable for irrigated farming but none of the three development areas has any irrigation infrastructure.

According to the landowner, there are no groundwater access points within all three the properties. It was also mentioned by the landowner that the groundwater levels in the greater area around have dropped significantly over the last ten years. This has resulted in several farmers being unable to continue crop farming through pivot irrigation.

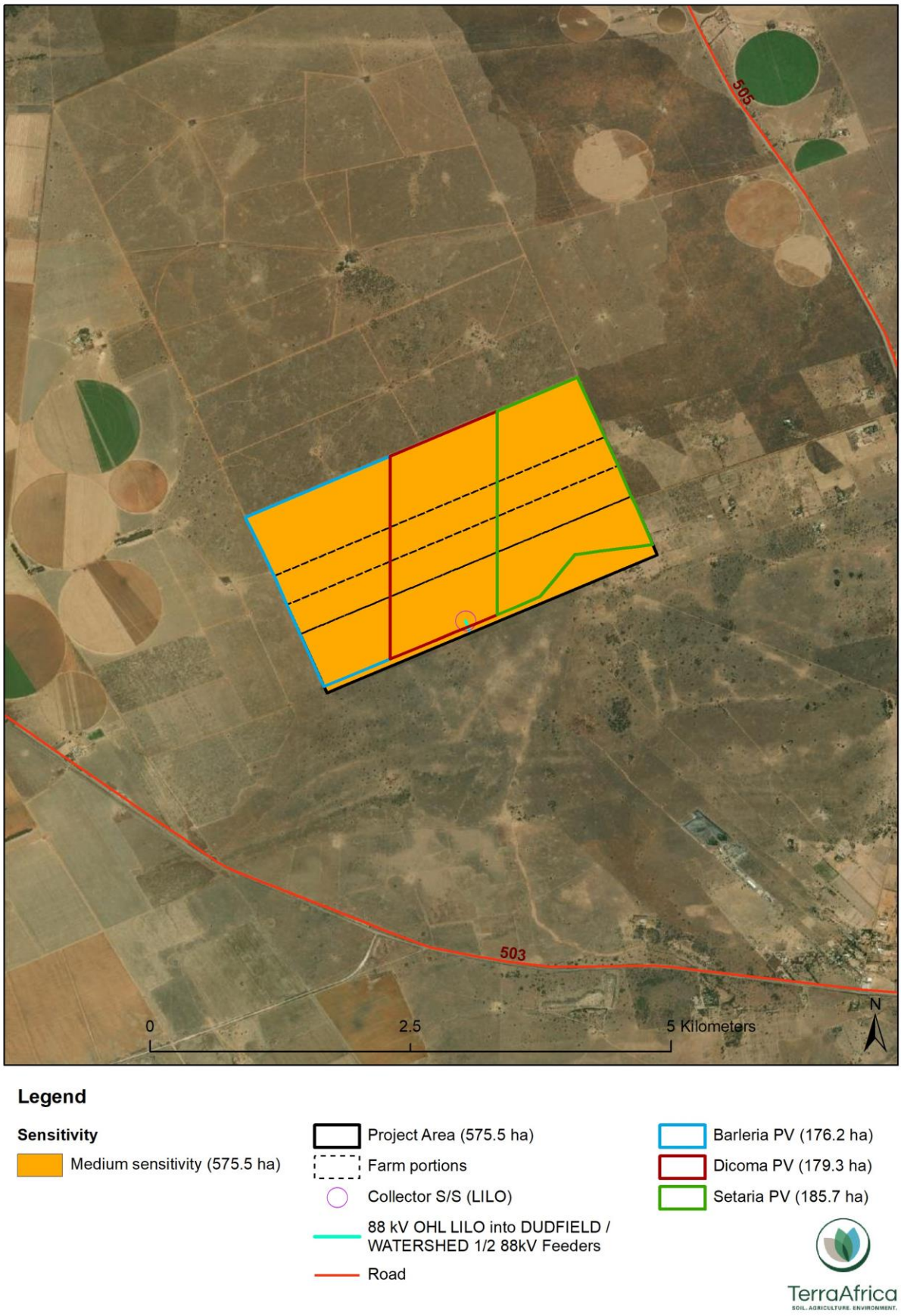

Figure 11 Agricultural sensitivity of the proposed solar PV facilities (Barleria, Dicoma and Setaria) (data source: DALRRD, 2019)

7. POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

7.1 Project description

Each of the proposed solar PV facilities (Barleria, Dicoma and Setaria) will have a contracted capacity of up to 75MW. Each facility will consist of a facility development area and two alternative grid connection solutions. The infrastructure associated with each 75MW PV facility includes:

- PV modules and mounting structures
- Inverters and transformers
- Battery Energy Storage System (BESS)
- Site and internal access roads (up to 8m wide)
- Site offices and maintenance buildings, including workshop areas for maintenance and storage.
- Temporary and permanent laydown area
- Grid connection solution (two alternative locations assessed) within a 100m wide corridor, including:
- 33kV cabling between the project components and the facility substation
  - A 132kV facility substation
  - A 132kV Eskom switching station
  - A Loop-in-Loop out (LILO) overhead 132kV power line between the Eskom switching station and the existing Delareyville Munic–Watershed 1 88kV power line[1].

7.2 Potential impacts of the proposed solar PV facilities

The three sites have similar baseline conditions and the same impacts on soil and agriculture are anticipated. Below follows a description of the potential impacts.

7.2.1 Potential impacts on agricultural production

Impact Loss of areas of grazing areas where livestock can be produced			
Issue	**Nature of Impact**	**Extent of Impact**	**No-Go Areas**
Areas where the PV modules and other infrastructure will be constructed, will no longer be available for livestock production.	Negative	Local	None
Description of expected significance of impact The sites have largely Low-Moderate land capability and is used for livestock production. The expected significance of this impact is Medium.			
Gaps in knowledge & recommendations for further study			

[1] The LILO corridor intersects with several existing parallel Eskom power lines (Watershed-Sephaku 1 132kV, Dudfield–Watershed 2 88kV, Dudfield-Watershed 1 88kV, and Watershed-Klerksdorp North 1 132kV). Therefore, should the connection to the Delareyville Munic–Watershed 1 88kV not be technically feasible, connection to the above mentioned power lines would still be within the assessed LILO corridor and considered feasible through the construction of a shorter LILO connection.

The final layout of the infrastructure, especially the need for additional access roads, will determine the size of the areas to be lost. Once the final layout is available, the impacts can be assessed in detail.

7.2.2 Potential impacts on soil

Impact Soil compaction			
Issue	**Nature of Impact**	**Extent of Impact**	**No-Go Areas**
Soil compaction will occur wherever construction vehicles and equipment will traverse the site and where the PV modules and other long-term infrastructure will be erected.	Negative	Local	None
Description of expected significance of impact Wherever the impact occurs (where heavy vehicles traverse) the impact is expected to be of Mmedium significance during the construction phase. Once construction is finalised, areas that are affected by compaction outside of the development footprint, must be rehabilitated.			
Gaps in knowledge & recommendations for further study The exact footprint will be determined for the EIA phase and it is recommended that existing roads be used for the transport of equipment as far as possible to limit soil compaction.			

Impact: Soil erosion			
Issue	**Nature of Impact**	**Extent of Impact**	**No-Go Areas**
Wherever construction activities will result in bare soil surfaces, these surfaces prone to loss of soil particles as a result of wind and water movement	Negative	Local	None
Description of expected significance of impact The impact is expected to be of medium significance.			
Gaps in knowledge & recommendations for further study • Soil texture and soil organic carbon analysis results of the EIA phase will be used to calculate the erodibility of soils within the development footprint.			

Impact: Loss of soil fertility through disturbance of in situ horizon organisation			
Issue	**Nature of Impact**	**Extent of Impact**	**No-Go Areas**
In any area where topsoil will be stripped for construction purposes, the soil horizons will be mixed and the mixture may have lower soil fertility than before it was stripped.	Negative	Local	None
Description of expected significance of impact Low to moderately low significance			
Gaps in knowledge & recommendations for further study The final results of the EIA phase soil classification survey will be used to develop guidelines for topsoil stripping and stockpile management during the construction phase.			

Impact: Soil chemical pollution			
Issue	**Nature of Impact**	**Extent of Impact**	**No-Go Areas**
Oil and fuel spillages as well as waste generation during the project cycle will result in soil chemical pollution.	Negative	Local	None
Description of expected significance of impact The significance of this impact is moderate to high.			
Gaps in knowledge & recommendations for further study The only knowledge gap is an project description that includes detail of activities and materials that may result in soil pollution during the different project phases.			

8. PLAN OF STUDY

Once the infrastructure layout has went through the final process of micro-siting based on the recommendations of this report and other reports, any gaps in the existing baseline will be updated by conducting an additional site visit. The survey will include soil classification according to the Soil Classification: A Natural and Anthropogenic System for South Africa (Soil Classification Working Group, 2018). It will also include the collection of soil samples for analysis of soil texture, organic carbon, pH and major cations.

The landowners and/or land users will be consulted individually for discussion of the productivity and employment data associated with the areas that will impacted by the proposed development. The discussion will also address the limitations and risks of livestock production in the area in order to compare it to renewable energy production. Following the discussion, the current agricultural production from the land portions, will be calculated. Also, the anticipated loss of agricultural productivity and employment, will be calculated and compared to the employment opportunities and electricity generation of the proposed projects. This will be used to consider the acceptability of the project.

The report will be prepared in alignment with all the relevant NEMA regulations as well as General Notice 320 of 2020 that specifically address Agricultural Agro-Ecosystem reporting for the renewable energy sector.

9. CONCLUSION

Following the desktop analysis of available data as well as the data obtained during the site visit, it is concluded that the entire development area of each of the three proposed solar PV facilities, have Medium sensitivity to the development from the perspective of soil and agricultural potential conservation.

10. LIST OF REFERENCES

Crop Estimates Consortium, 2019. *Field crop boundary data layer (NW province)*, 2019. Pretoria. Department of Agriculture, Forestry and Fisheries .

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South Africa (Republic), 2018. *Long-term grazing capacity for South Africa*: Data layer. Government Gazette Vol. 638, No. 41870. 31 August 2018. Regulation 10 of the Conservation of Agricultural Resources Act (CARA): Act 43 of 1983. Pretoria. Government Printing Works.

The Soil Classification Working Group, 2018. *Soil Classification – Taxonomic System for South Africa.* Dept. of Agric., Pretoria.

APPENDIX 1 – LAND TYPE DATA SHEETS

LAND TYPE / *LANDTIPE*..... : Fa11

CLIMATE ZONE / *KLIMAATSONE* ..... : 11S

Area / *Oppervlakte* ..... : 41880 ha

Estimated area unavailable for agriculture

Beraamde oppervlakte onbeskikbaar vir landbou : 1100 ha

Occurrence (maps) and areas / *Voorkoms (kaarte) en oppervlakte :*

2524 Mafikeng (430 ha) 2526 Rustenburg (10140 ha)

2624 Vryburg (2070 ha) 2626 Wes-Rand (29240 ha)

Inventory by / *Inventaris deur :*

R W Bruce

Modal Profiles / *Modale profiele :*

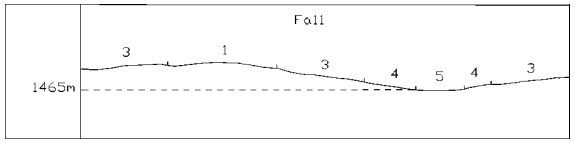
None / Geen

Terrain unit / *Terreineenheid*	:	1	3	4	5
% of land type / *% van landtipe*	:	25	60	10	5
Area / *Oppervlakte (ha)*	:	10470	25128	4188	2094
Slope / *Helling (%)*	:	0 - 2	2 - 5	1 - 2	0 - 1
Slope length / *Hellingslengte (m)*	:	400 - 600	800 - 1200	400 - 600	40 - 60
Slope shape / *Hellingsvorm*	:	Y	Z-Y	Z-X	X
MB0, MB1 (ha)	:	1256	11810	2094	1675
MB2 - MB4 (ha)	:	9214	13318	2094	419

Soil series or land classes *Grondseries of landklasse*	**Depth** *Diepte* (mm)	MB		ha	%	ha	%	ha	%	ha	%	**Total** *Totaal* ha	%	**Clay content %** *Klei-inhoud %* A	E	B21	Hor	**Texture** *Tekstuur* Class / *Klas*	**Depth limiting material** *Diepte-beperkende materiaal*
Soil-rock complex			:																
Grond-rotskompleks:			:																
Rock/Rots		4	:	1675	16	1759	7	712	17	126	6	4272	10.2						
Mispah Ms10, Klipfontein Ms11,			:																
Platt Gs14, Glenrosa Gs15,			:																
Trevanian Gs17	100-150	3	:	7538	72	11559	46	1382	33	293	14	20772	49.6	10-20			A	meSaLm-LmSa	so,R,hp
Msinga Hu26, Clansthal Hu24,			:																
Lichtenburg Hu23	250-1200+	0	:	1256	12	11810	47	2094	50	838	40	15998	38.2	10-25		13-30	B	meSaLm-SaClLm	R,so
Devon We22, Newport Cv27,			:																
Southwold Cv26, Avalon Av26,			:																
Chinyika Wo21	250-1200+	0	:							838	40	838	2.0	20-40		20-40	A	SaClLm-SaCl	sp

Terrain type / *Terreintipe :* A2

Terrain form sketch / *Terreinvormskets*



For an explanation of this table consult LAND TYPE INVENTORY (table of contents)

Ter verduideliking van hierdie tabel kyk LANDTIPE - INVENTARIS (inhoudsopgawe)

Geology: Dolomite and chert belonging to the Chuniespoort Group; chert gravels are abundant on middle and footslopes including valley bottoms.

Geologie: Dolomiet en chert van die Groep Chuniespoort; chertgruise is volop op middel- en voethange, asook valleivloere.

LAND TYPE / *LANDTIPE*..... : Bc11

CLIMATE ZONE / *KLIMAATSONE* ..... : 11S

Area / *Oppervlakte* ..... : 32540 ha

Estimated area unavailable for agriculture
Beraamde oppervlakte onbeskikbaar vir landbou : 1000 ha

Terrain unit / *Terreineenheid*	:	4	5
% of land type / *% van landtipe*	:	95	5
Area / *Oppervlakte (ha)*	:	30913	1627
Slope / *Helling (%)*	:	0 - 2	0 - 1
Slope length / *Hellingslengte (m)*	:	1300 - 1700	50 - 100
Slope shape / *Hellingsvorm*	:	Z-Y	Z-X
MB0, MB1 (ha)	:	30913	1627
MB2 - MB4 (ha)	:	0	0

Occurrence (maps) and areas / *Voorkoms (kaarte) en oppervlakte :*

2524 Mafikeng (9100 ha) 2624 Vryburg (15830 ha)

2626 Wes-Rand (7610 ha)

Inventory by / *Inventaris deur :*

R W Bruce

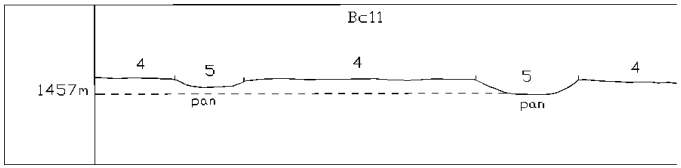
Modal Profiles / *Modale profiele :*

P113

Soil series or land classes *Grondseries of landklasse*	**Depth** *Diepte* (mm)	MB		ha	%	ha	%	**Total** *Totaal* ha	%	**Clay content %** *Klei-inhoud %* A	E	B21	Hor	**Texture** *Tekstuur* Class / *Klas*	**Depth limiting material** *Diepte-beperkende materiaal*
Rietvlei We12, Sibasa We13	500-700	0	:	9892	32			9892	30.4	15-25		30-40	B	fiSaClLm	B2gc
Shorrocks Hu36, Msinga Hu26	>1200	0	:	8037	26			8037	24.7	14-18		18-25	B	fiSaLm-SaClLm	R,so
Soetmelk Av36, Avalon Av26	900-1200	0	:	5255	17			5255	16.2	15-18		18-25	B	fiSaLm-SaClLm	B2gc
Lonetree Bv26, Bainsvlei Bv36	900-1100	0	:	4946	16			4946	15.2	15-18		18-25	B	fiSaLm-SaClLm	B2gc
Lichtenburg Hu23, Mangano Hu33	>1200	0	:	1546	5			1546	4.8	9-12		12-15	B	LmfiSa-SaLm	R,so
Leslie Gc36, Glencoe Gc26	500-700	0	:	1237	4			1237	3.8	15-18		18-25	B	fiSaLm-SaClLm	hp
Sterkspruit Ss26	200-250	0	:			976	60	976	3.0	18-25		35-40	A	fiSaLm-SaClLm	B2
Rensburg Rg20	700-900	0	:			651	40	651	2.0	30-50			A	fiSaCl-Cl	G

Terrain type / *Terreintipe :* A1

Terrain form sketch / *Terreinvormskets*



For an explanation of this table consult LAND TYPE INVENTORY (table of contents)
Ter verduideliking van hierdie tabel kyk LANDTIPE - INVENTARIS (inhoudsopgawe)

Geology: Thick aeolian sand on the Chuniespoort Group. In places calcrete underlies solums. Small pans occupy 5% of the land type.

Geologie: Dik eoliese sand op die Groep Chuniespoort.Kalkreet kom soms onder solums voor.Klein panne beslaan 5% van die landtipe.