COMPLAINCE STATEMENT FOR DE HOOP HOUSING MALMESBURY POWERLINE, WESTERN CAPE

PREPARED FOR

ENVIROAFRICA

OCTOBER 2023

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BACKGROUND TO THE STUDY

Digital Soils Africa (Pty) LTD (DSA) were tasked by Enviro Africa, to undertake an Agricultural Compliance Statement for the Environmental Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment ("EIA") Regulations, 2014. As per GN960 of 2019, read with Section 24(5)(a) of the NEMA, an Environmental Screening Report (ESR) was generated for the application using the National Web-based Screening Tool. The ESR classifies the area as being of High sensitivity for the Agricultural theme. But due to the linear nature of the proposed development, a compliance statement was done.

The Compliance Statement is reported according to the protocol for the specialist assessment and minimum report content requirements for the environmental impacts on agricultural resources (GN320 of 2020).

The proponent intends to establish a powerline that will transmit power to the De Hoop housing Estate in Malmesbury, Western Cape. The proposed powerline has a length of 4,7 km.

The study site is southwest of Malmesbury in the Western Cape and stretches from De Hoop housing estate to the south.

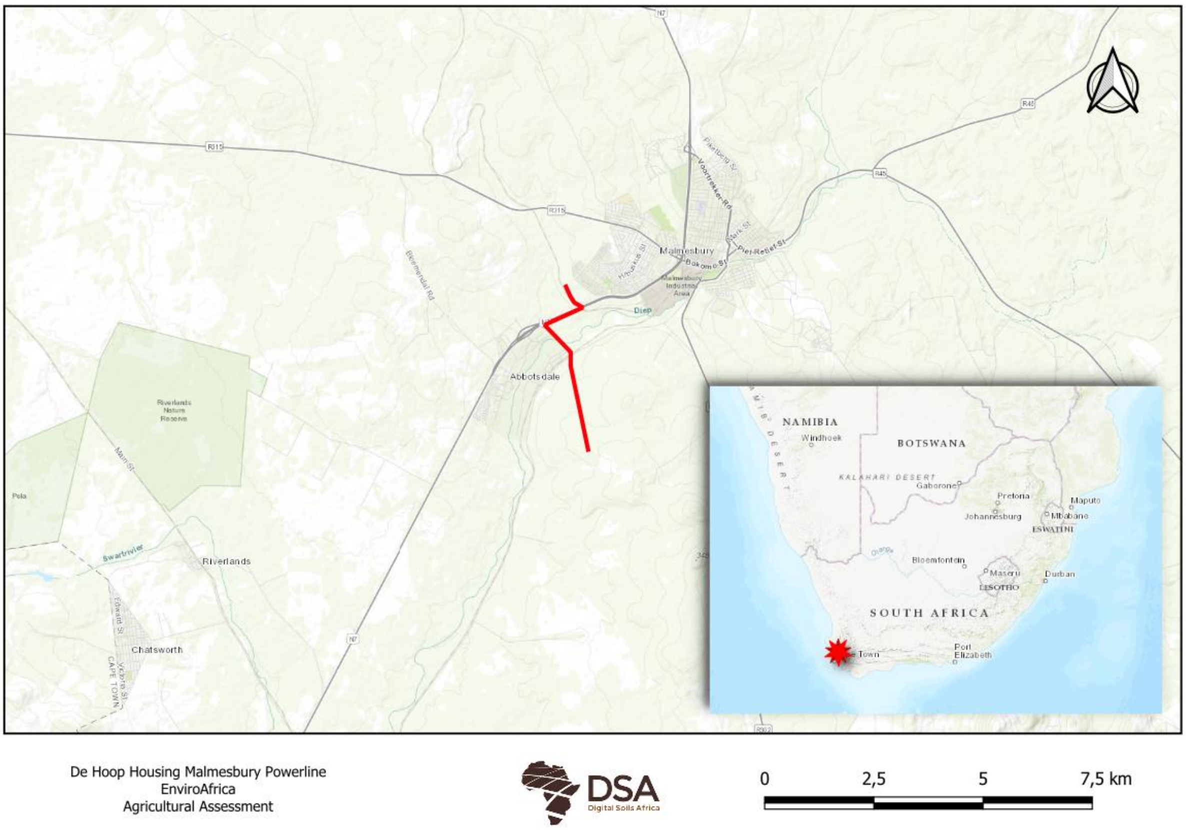


FIGURE 1: LOCATION OF THE STUDY AREA IN THE WESTERN CAPE PROVINCE.

ENVIRONMENTAL SCREENING TOOL

Agricultural sensitivity, as reported in the screening tool, is based upon the land use (SANLC, 2014) and land capability (Department of Agriculture, Forestry and Fisheries, 2017, also referred to as DAFF, 2017).

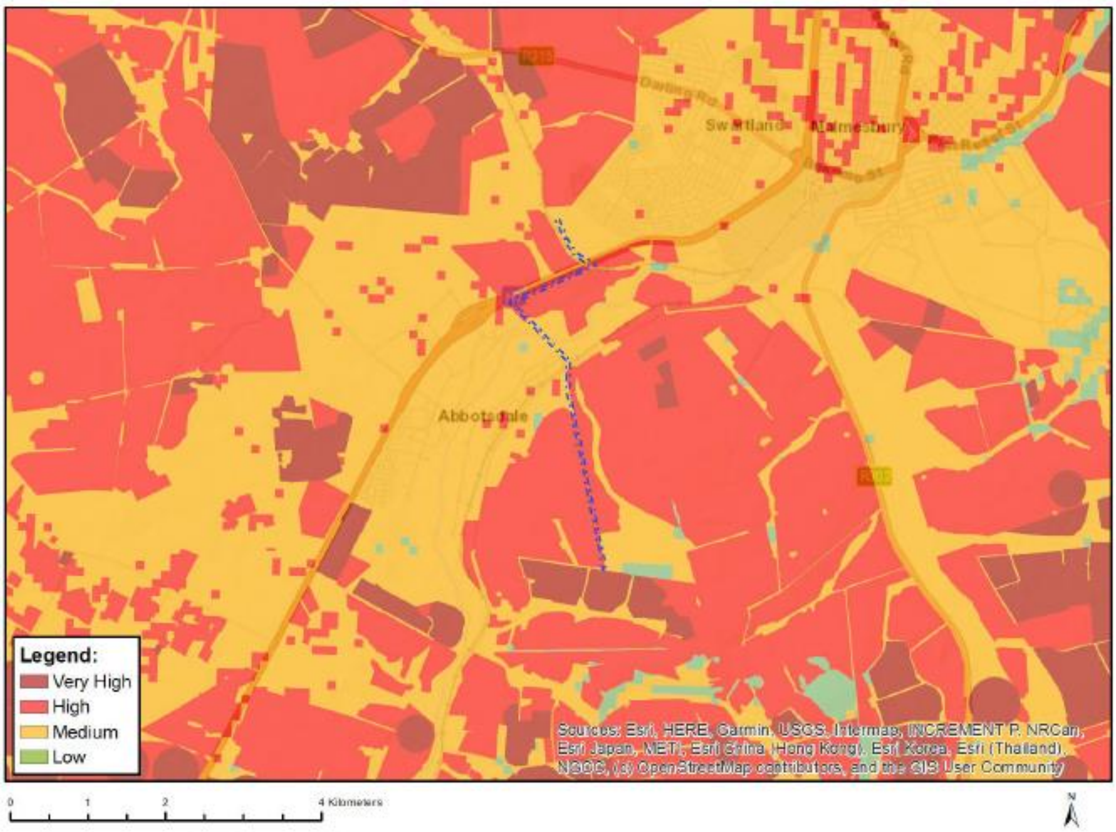
All cultivated land is considered a high sensitivity, while irrigation and unique crops, are considered very high sensitivity, irrespective of the land capability. The land use in the screening tool is based on the South African Nation Land Cover (SANLC, 2014). Meanwhile, there have been two more updated versions of the South African National Land Cover (2018 and 2020).

According to the Department of Agriculture, Forestry and Fisheries (2017), land capability is defined as the most intensive long-term use of land for purposes of rainfed farming determined by the interaction of climate, soil, and terrain. The following weight was given to each attribute when calculating the Land Capability:

Land capability = Climate (40%) + Terrain (30%) + Soil (30%)

According to the National Web based Environmental Screening Tool, the agricultural sensitivity is classified as High agricultural sensitivity (Figure 2). The land capability (DAFF, 2017) classifies the soils as having a mostly medium land capability with approximately 3 pixels having High land capability that intercepts the study area path (Figure 3). There is Annual crop cultivation as well as planted pastures on the site according to the screening tool (Figure 4).

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

FIGURE 2: RESULTS FROM THE ENVIRONMENTAL SCREENING TOOL.

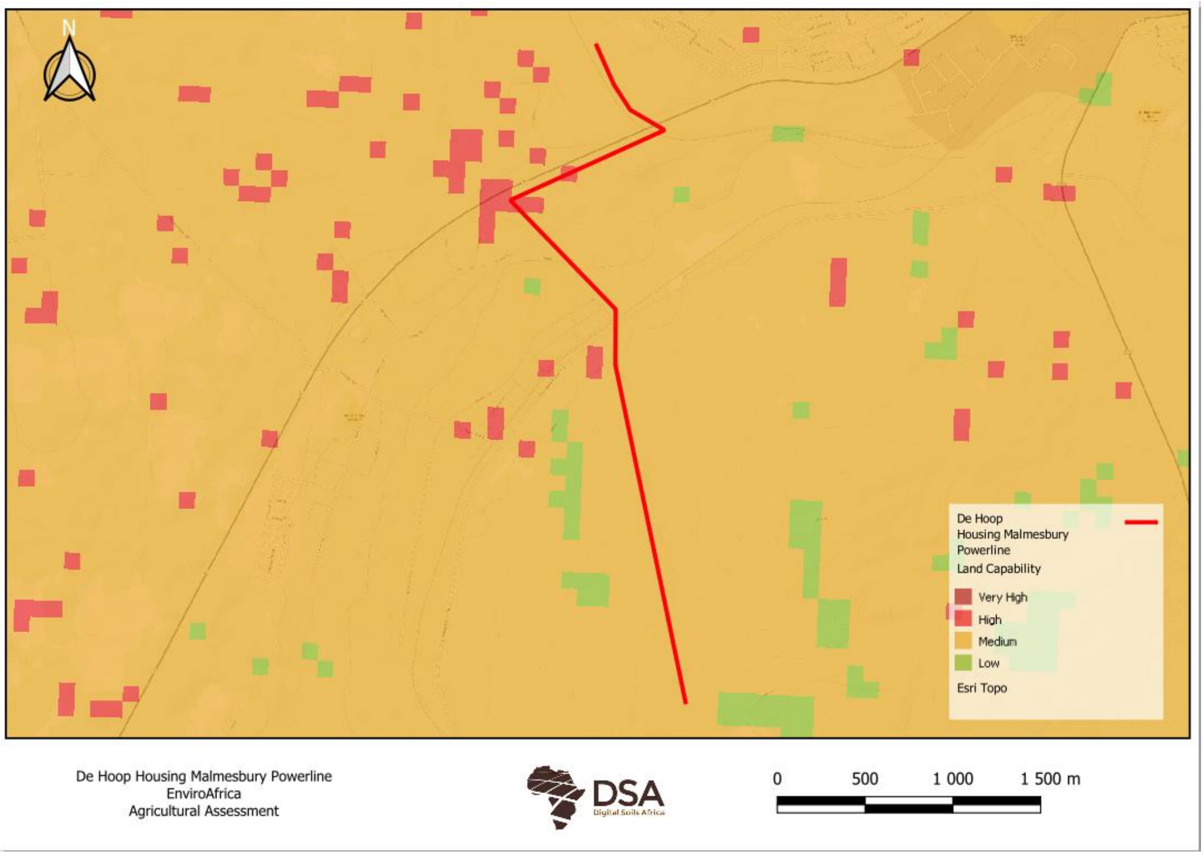


FIGURE 3: THE LAND CAPABILITY OF THE STUDY AS USED IN THE SCREENING TOOL.

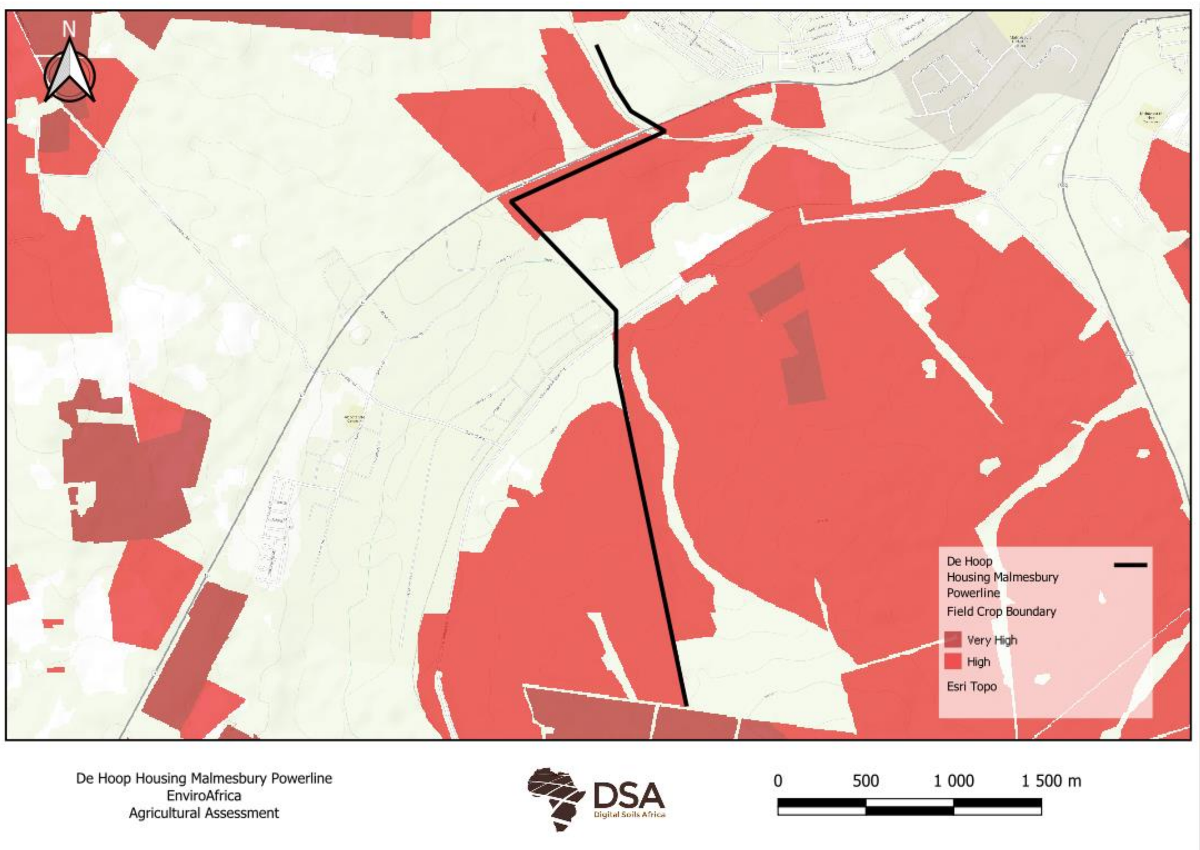


FIGURE 4: THE FIELD CROP BOUNDARIES AS USED IN THE SCREENING TOOL.

Preservation and Development of Agricultural Land Framework Act (PD-ALF) is in the process of being published. The new statutory framework will replace the Subdivision of Agricultural Land Act, Act 70 of 1970.

Protected Agricultural Area, as in the draft framework, is defined as *"an agricultural land use zone, protected for purposes of food production and ensuring that high potential and best available agricultural land are protected against non-agricultural land uses in order to promote long-term agricultural production and food security."*

The southern half of the study area is situated in a Protected Agricultural Area (Figure 5).

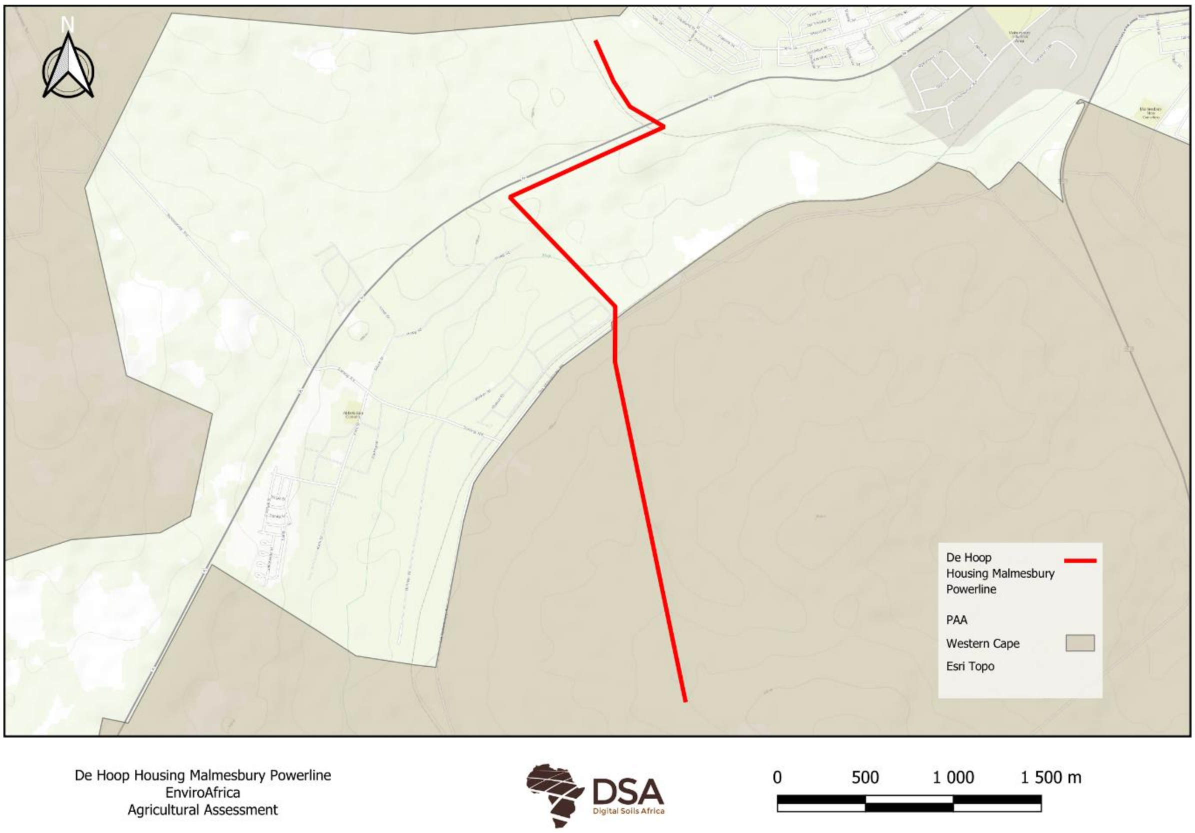


FIGURE 5: THE PROTECTED AGRICULTURAL AREAS FOR THE STUDY AREA.

As per the protocol, Terms of Reference applicable to an "Agricultural Compliance Statement" is as follows:

- The compliance statement must be prepared by a soil scientist or agricultural specialist registered with the SACNASP. (pg26)
- The compliance statement must:
- be applicable to the preferred site and proposed development footprint (pg4);

- confirm that the site is of "low" or "medium" sensitivity for agriculture(pg23);
- indicate whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site (pg23).
- The compliance statement must contain, as a minimum, the following information:
- contact details and relevant experience as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the assessment including a curriculum vitae (pg26);
- a map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool (pg6);
- confirmation from the specialist that all reasonable measures have been taken through micro-siting to avoid or minimise fragmentation and disturbance of agricultural activities (pg24);
- a substantiated statement from the soil scientist or agricultural specialist on the acceptability, or not, of the proposed development and a recommendation on the approval, or not, of the proposed development (pg24);
- any conditions to which the statement is subjected (pg23);
- in the case of a linear activity, confirmation from the agricultural specialist or soil scientist, that in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase (not applicable).
- where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr (not applicable);
- and a description of the assumptions made and any uncertainties or gaps in knowledge or data (pg4).

ASSUMPTIONS AND GAPS

It is assumed that the data used in the desktop is correct, as no observations were made on site.

RESULTS

CLIMATE CAPABILITY

The climate is warm and temperate in Malmesbury. The winters are rainier than the summers in Malmesbury. The Köppen-Geiger climate classification identifies this particular weather pattern as belonging to the category of Csa. The mean temperature prevailing in the city of Malmesbury is recorded as 16.9 °C, according to statistical data. The rainfall here is around 584 mm per year.

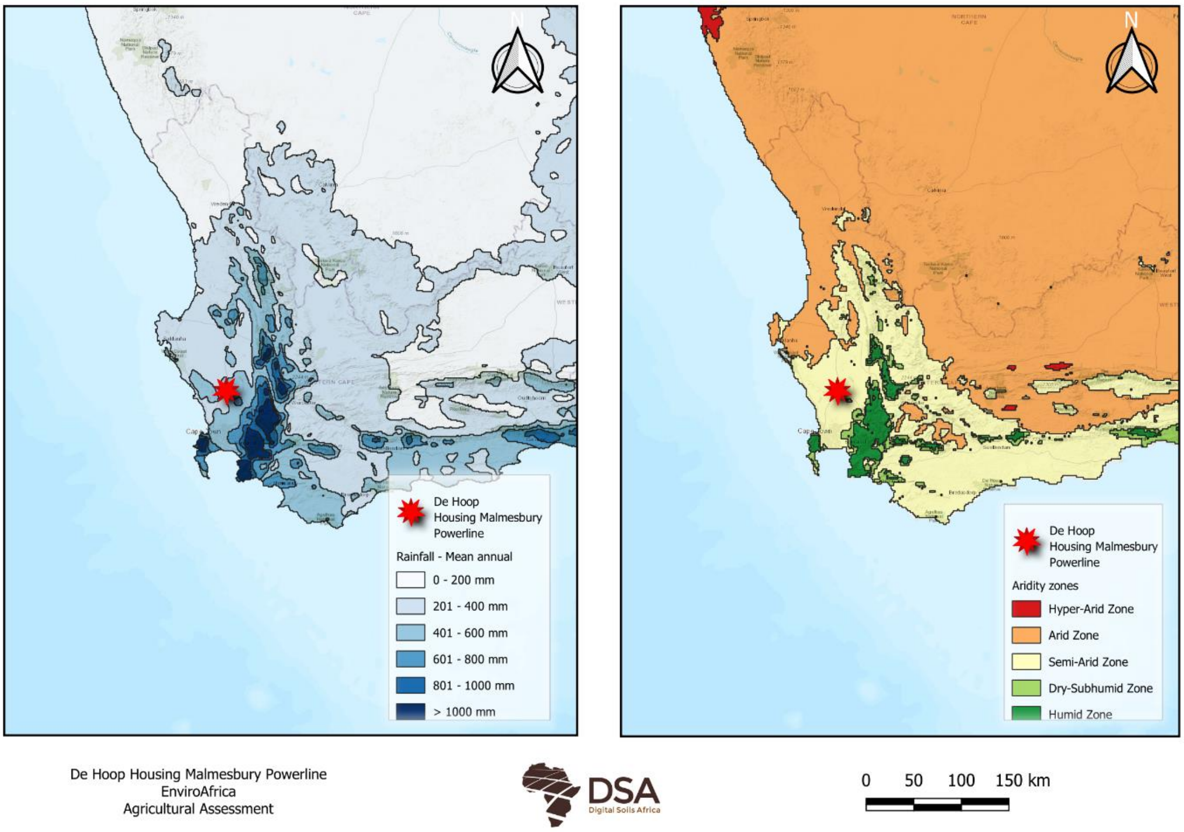


FIGURE 6: CLIMATE OF THE SITE AND THE SURROUNDING AREA (SCHULZE, 2007).

TABLE 1: CLIMATIC PROPERTIES OF MALMESBURY (CLIMATE-DATA.ORG).

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C	23 °C	23 °C	21.2 °C	18 °C	14.5 °C	11.4 °C	10.7 °C	11.3 °C	13.2 °C	16.5 °C	18.9 °C	21.5 °C
Min. Temperature °C	16.5 °C	16.7 °C	15.2 °C	12.4 °C	9.6 °C	6.5 °C	5.7 °C	6.2 °C	7.7 °C	10.5 °C	12.5 °C	15.1 °C
Max. Temperature °C	30.1 °C	30.2 °C	28.3 °C	24.7 °C	20.5 °C	17.1 °C	16.6 °C	16.7 °C	18.9 °C	22.9 °C	25.6 °C	28.4 °C
Precipitation / Rainfall mm	14	14	16	46	71	109	96	83	54	34	29	18
Humidity(%)	52%	54%	56%	62%	72%	77%	78%	79%	73%	63%	56%	53%
Rainy days (d)	2	2	2	4	6	7	7	7	6	4	4	3
avg. Sun hours (hours)	11.2	10.6	9.7	8.4	6.9	6.4	6.7	6.6	7.5	9.3	10.4	11.3

Climate capability is the highest weighted factor (40%) in the calculation of the Land capability (DAFF, 2017) which is used in the Screening Tool to determine the agricultural sensitivity. Soil capability (30%) and Terrain capability (30%) contribute the remaining considerations. The climate capability consists of 9 values, with 1 being the lowest value and 9 being the highest value (There is however no evaluation value of 1 & 2).

The Climate capability determined by the following factors:

- Moisture supply capacity (50%)
- Physiological capacity (20%)
- Climatic constraints (30%)

The climate capability according to the Department of Agriculture, Forestry and Fisheries, 2017, is a value of 5 (Figure 7). This is considered a moderate climate capability.

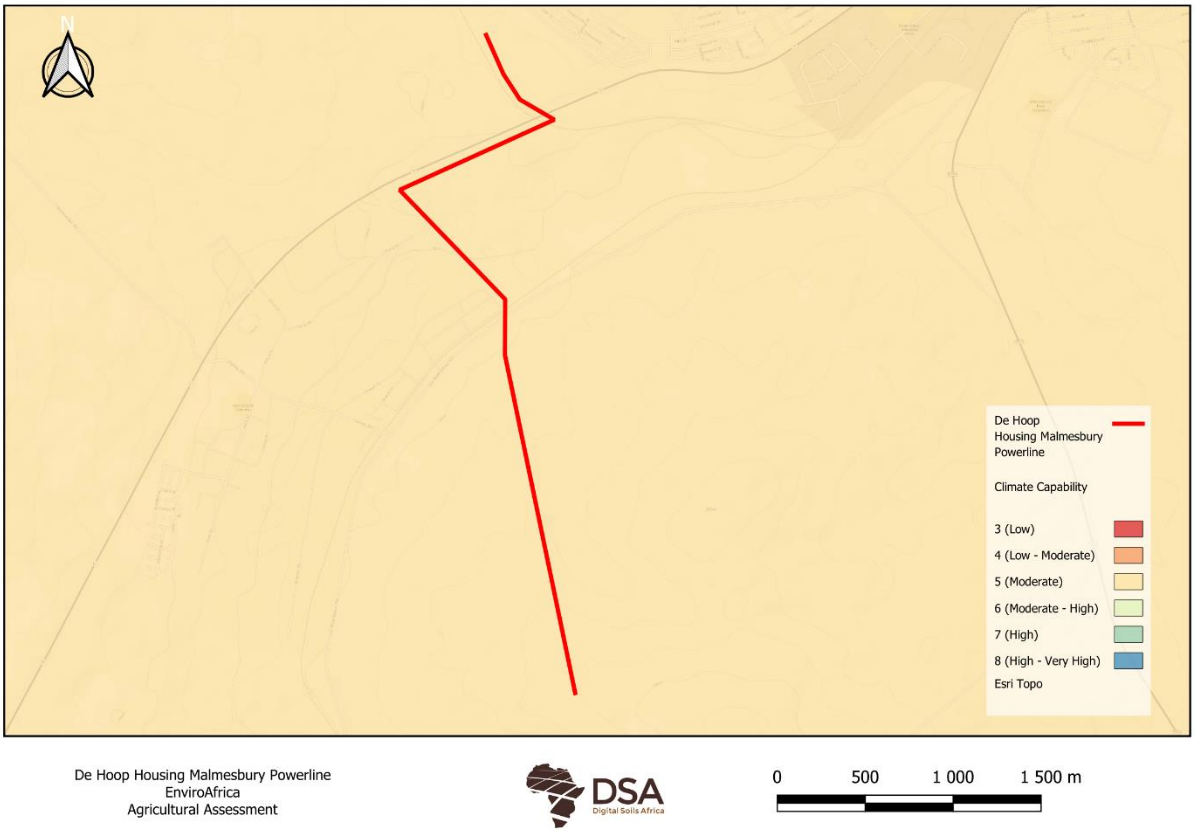


FIGURE 7: THE CLIMATE CAPABILITY OF THE SITE AND SURROUNDING AREA (DAFF, 2017).

SOIL

LANDTYPE

A land type is an area which can be demarcated at a scale of 1:250 000 with similar soil forming factors and therefore soil distribution patterns. A land type does therefore not represent uniform soil polygons, but rather information regarding the occurrence of different soils on different terrain units can be obtained from the land type inventory. Landtype data was used in calculating the soil capability (DAFF, 2017), and therefore, indirectly used in the Screening tool for estimating the agricultural sensitivity.

The study area covers land types of the Ac, Db and Fa (Land Type Survey Staff, 1972 – 2002) (Figure 8). Ac land types comprise of Freely drained, red and yellow, dystrophic/mesotrophic, apedal soils comprise >40% of the land type (red and yellow soils each >10%), while Db land types comprise of Duplex soils (sandier topsoil abruptly overlying more clayey subsoil) comprise >50% of land type; <50% of duplex soils have non-red B horizons and Fa comprises of Shallow soils (Mispah & Glenrosa forms) predominate; little or no lime in landscape.

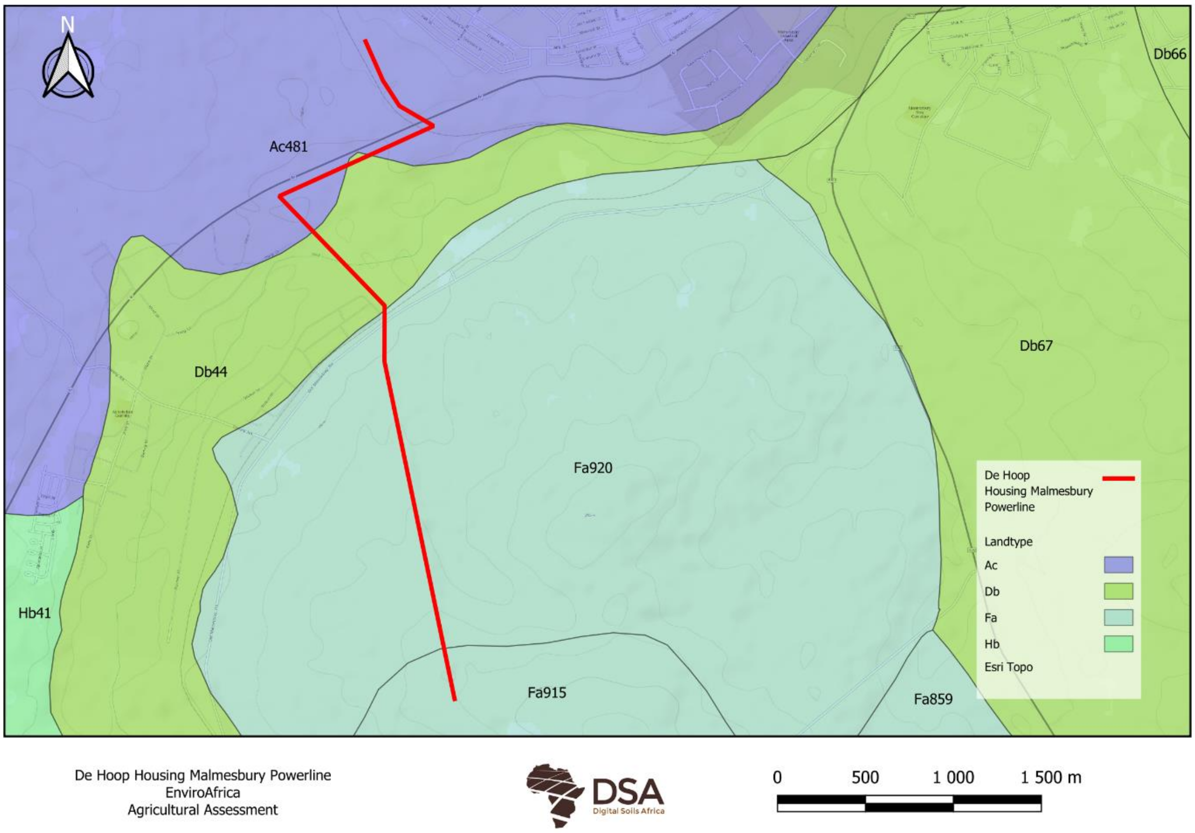


FIGURE 8: LANDTYPES FOUND IN THE STUDY AREA AND THE SURROUNDING AREA (LAND TYPE SURVEY STAFF, 1972 – 2002).

SOIL CAPABILITY

The Soil capability consists of 9 values, with 1 being the lowest value and 9 being the highest value. The main factors contributing to the Soil capability consist of:

- Plan available water (80%)
- Soil sensitivity (17%)
- Soil fertility (3%)

The overall soil capability according to the DAFF (2017), ranges from a value of 4-5 (Figure 9). A large portion along the study area has a soil capability that is moderate, while some portions of approximately 1 to 3 pixels have a low - moderate soil capability.

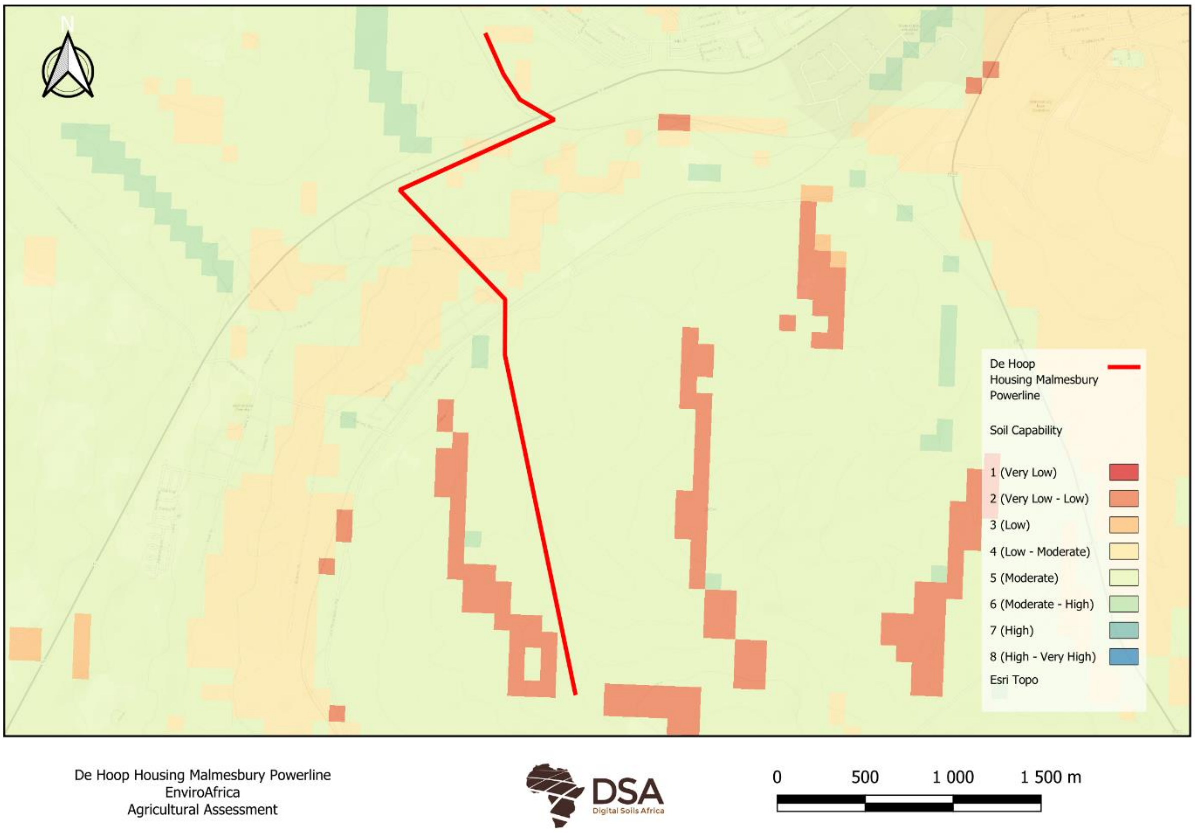


FIGURE 9: THE SOIL CAPABILITY OF THE SITE AND SURROUNDING AREA (DAFF, 2017).

TERRAIN CAPABILITY

Terrain plays an important role in a plants' physiological growth requirements, and from a sensitivity and accessibility perspective, Therefore, the two terrain modelling concerns included in the terrain capability modelling exercise were plant physiology and terrain sensitivity. The Terrain capability consists of 9 values, with 1 being the lowest value and 9 being the highest value.

The terrain capability according to the DAFF (2017), has a value of 4 (Low to moderate), 5 (Moderate), 6 (Moderate to high) and 7 (High). This is considered a Low to High terrain capability that is scattered along the study area.

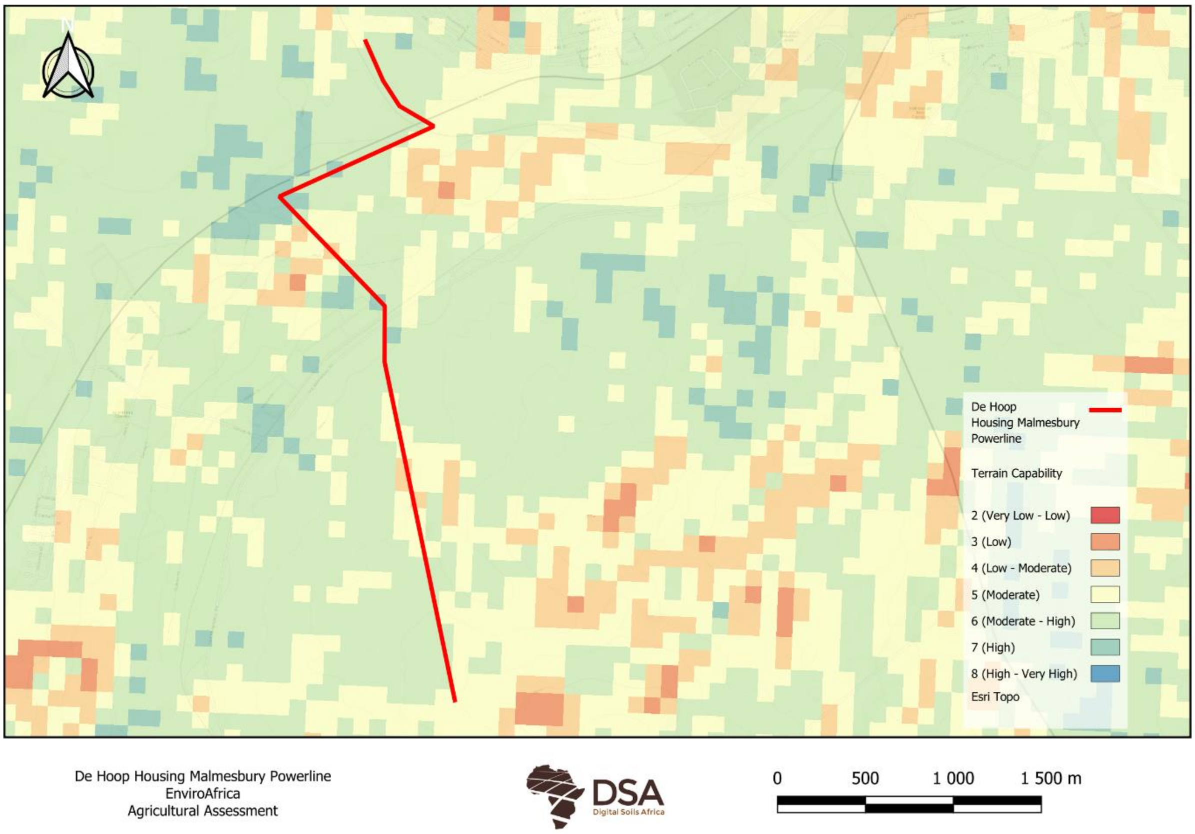


FIGURE 10: THE TERRAIN CAPABILITY OF THE SITE AND SURROUNDING AREA (DAFF, 2017).

LAND CAPABILITY

The new Land capability (Department of Agriculture, Forestry and Fisheries, 2017) has fifteen classes, as opposed to the eight classes described by Schoeman et al. (2002). The data is usable on a scale of 1:50 000 – 1: 100 000, therefore, not suitable for farm scale recommendations. Classes 1 to 7 are of low land capability and only suitable for wilderness or grazing. Classes 8 to 15 are considered to have arable land capability with the potential for high yields increasing with the land capability class number.

TABLE 2: LAND CAPABILITY CLASS AND THE DESCRIPTION OF THE CLASS

Land Capability Class	Description	
1-2	Very Low	Not arable
3-4	Very Low to Low	Not arable
5	Low	Not arable
6-7	Low to Moderate	Not arable
8	Moderate	Arable
9-10	Moderate to High	Arable
11	High	Arable
12-13	High to Very High	Arable
14-15	Very High	Arable

The Land capability values ranges from 6 (Low - Moderate) to 9 (Moderate – High), with only a few pixels having a 6 (low to moderate) land capability, which due to the majority of the values considers the study area as arable (Figure 11).

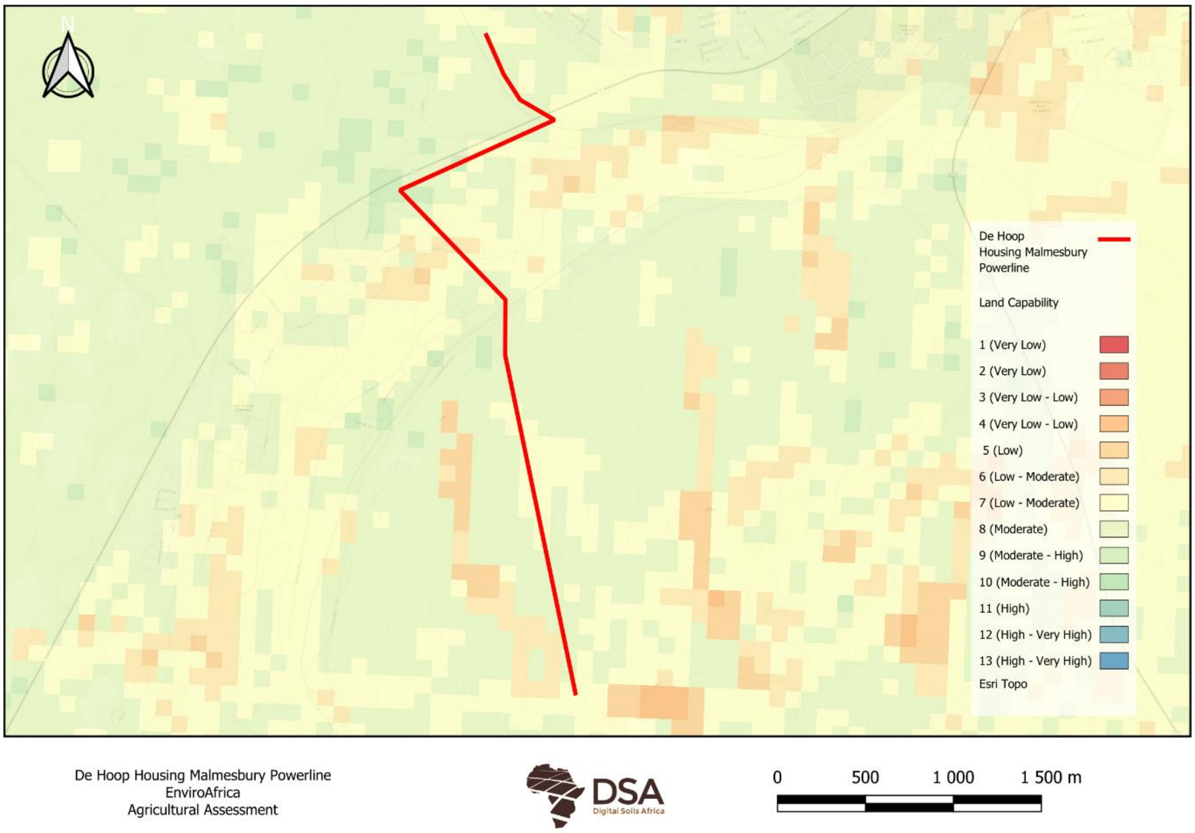


FIGURE 11: LAND CAPABILITY CLASS MAP OF THE STUDY AREA (DAFF, 2017).

GRAZING CAPACITY

The unit used in the grazing capacity is hectares per large stock unit (ha/LSU). The site has a moderate grazing capacity of 36 ha/LSU (Figure 12). A homogeneous unit of vegetation expressed as the area of land required (in hectares) to maintain a single animal unit (LSU) over an extended number of years without deterioration to vegetation or soil. Where an LSU = An animal with a mass of 450 kg and which gains 0.5 kg per day on forage with a digestible energy of 55%. (Trollope et. Al., 1990).

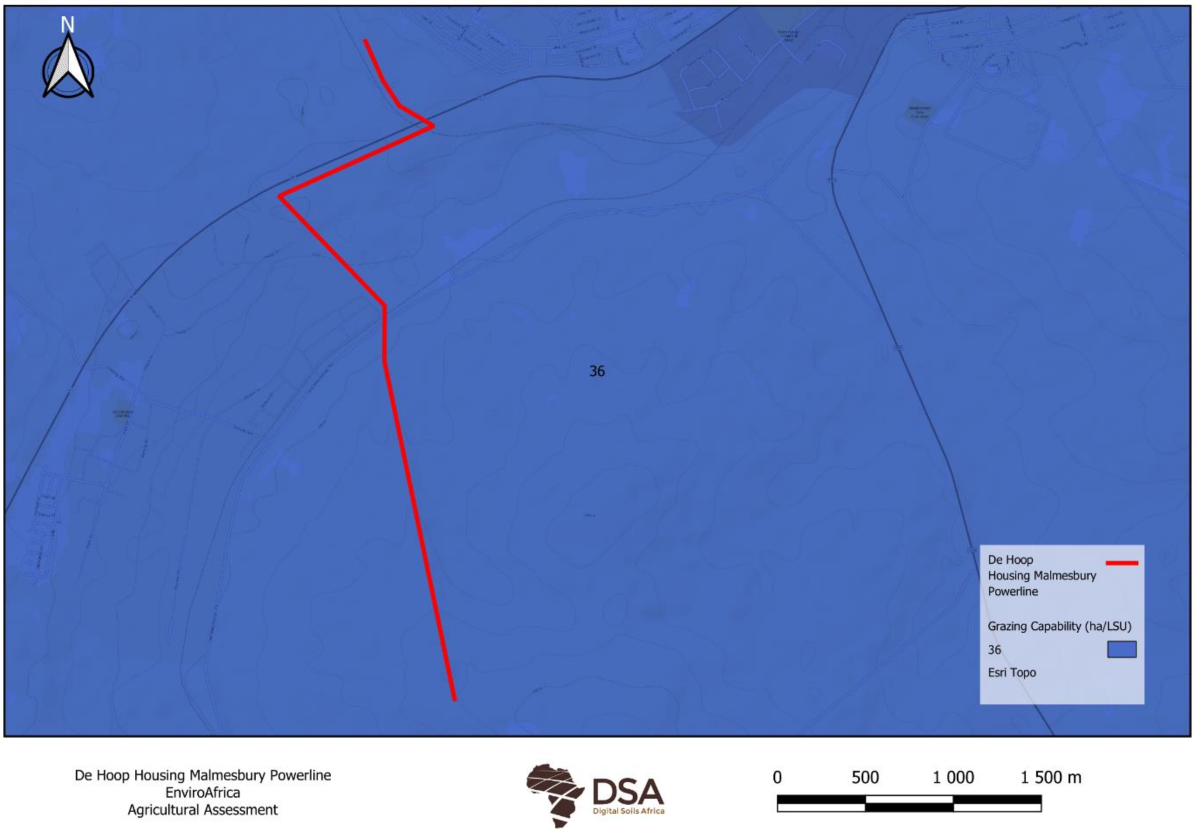


FIGURE 12: GRAZING CAPACITY FOR THE SITE AND THE SURROUNDING AREA (DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES, 2016).

LAND USE

South African National Land-Cover 2020 (SANLC 2020) (GeoTerraImage, 2020) was compared to the 2014 Land Cover to determine if there was a land use change since 2014. The SANLC 2020 classifies the area as 9 (Low Shrubland (Fynbos)) and 46 (Fallow Land & Old Fields (Low Shrub)) with the class names listed in the Table 3 below.

TABLE 3: LEGEND TO FIGURE 13

No.	Class Name	Class Definition
3	Dense Forest & Woodland	Natural tall woody vegetation communities, with canopy cover ranging between 35 - 75%, and canopy heights exceeding 2.5 metres. Typically represented by dense bush, dense woodland and thicket communities.
9	Low Shrubland (Fynbos)	This is the same as class 8, Low Shrubland, but now represents low, indigenous karoo-type vegetation communities, which have been identified using image-based spectral models, but which fall spatially inside the SANBI defined boundaries for Fynbos vegetation communities.
13	Natural Grassland	Natural and/or semi-natural indigenous grasslands, typically devoid of any significant tree or bush cover, and where the grassland component is typically dominant over any adjacent bare ground exposure. Typically representative of low, grass-dominated vegetation communities in the Grassland and Savanna Biomes.
23	Herbaceous Wetlands	Natural or semi-natural wetlands covered in permanent or seasonal herbaceous vegetation. The mapped wetland extent represents the surface wetland extent detectable from image detectable surface vegetation characteristics, (which may differ from soil-profile based wetland delineations). This wetland class represents wetlands identified in the current national land-cover modelling. The class represents primarily riparian wetland areas, but can also include emergent aquatic vegetation in pans.
40	Cultivated Commercial Annuals Non-Pivot / Non-Irrigated	Active or recently active cultivated lands used for the production of agricultural crops, in this case specifically associated with commercial annual crops, The plants only remain in the field for one growing seasons and one harvest, and are grown non-irrigated, rainfed fields.
44	Fallow Land & Old Fields (Grass)	Long-term, non-active, previously cultivated lands that are now overgrown with grass dominated woody vegetation. Typically the cultivated land unit is no longer image detectable. Historical field boundaries (supplied by SANBI) have been mapped from archival topographical 1:50,000 maps circa 1950's-70's. This class is only represented if it has not been modified to a more recent, alternative land-cover or land-use class.
46	Fallow Land & Old Fields (Low Shrub)	Long-term, non-active, previously cultivated lands that are now overgrown with tree-dominated low shrub vegetation. Typically the cultivated land unit is no longer image detectable. Historical field boundaries (supplied by SANBI) have been mapped from archival topographical 1:50,000 maps circa 1950's-70's. This class is only represented if it has not been modified to a more recent, alternative land-cover or land-use class.

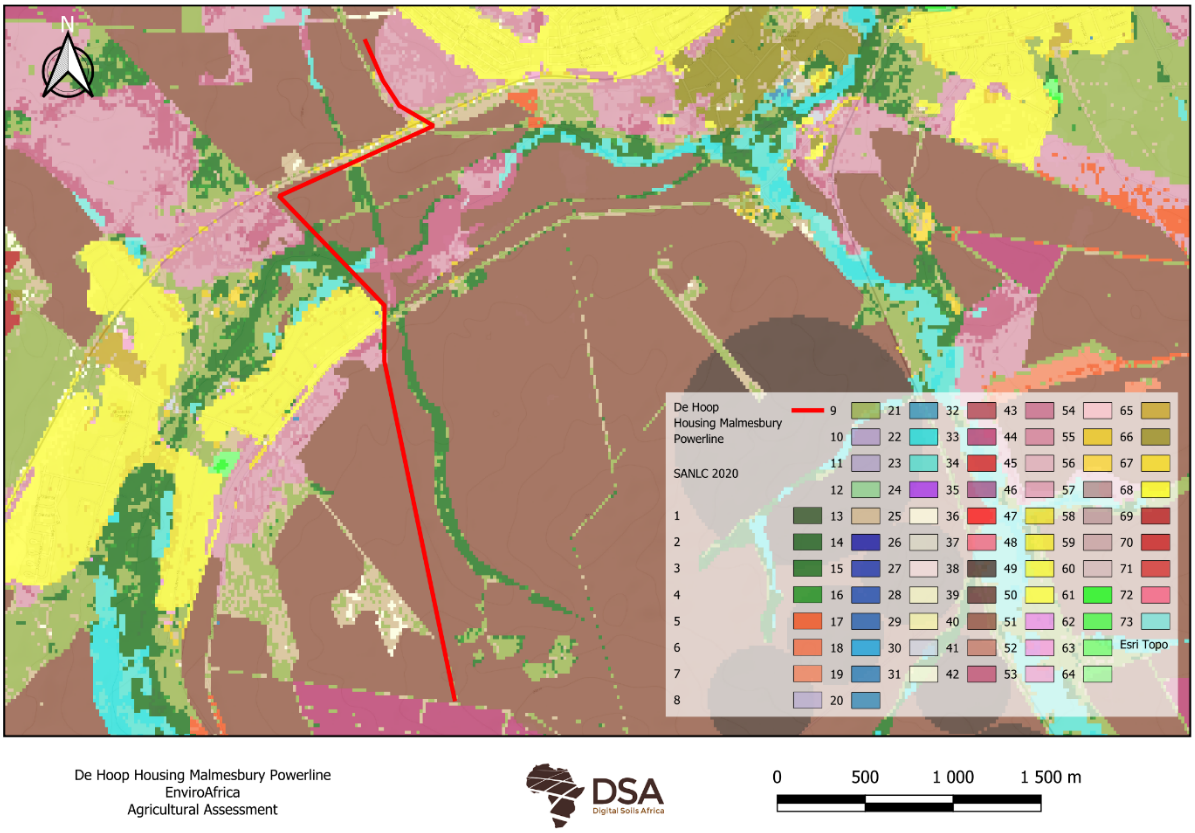


FIGURE 13: SOUTH AFRICAN NATIONAL LAND-COVER 2020 (SANLC 2020).

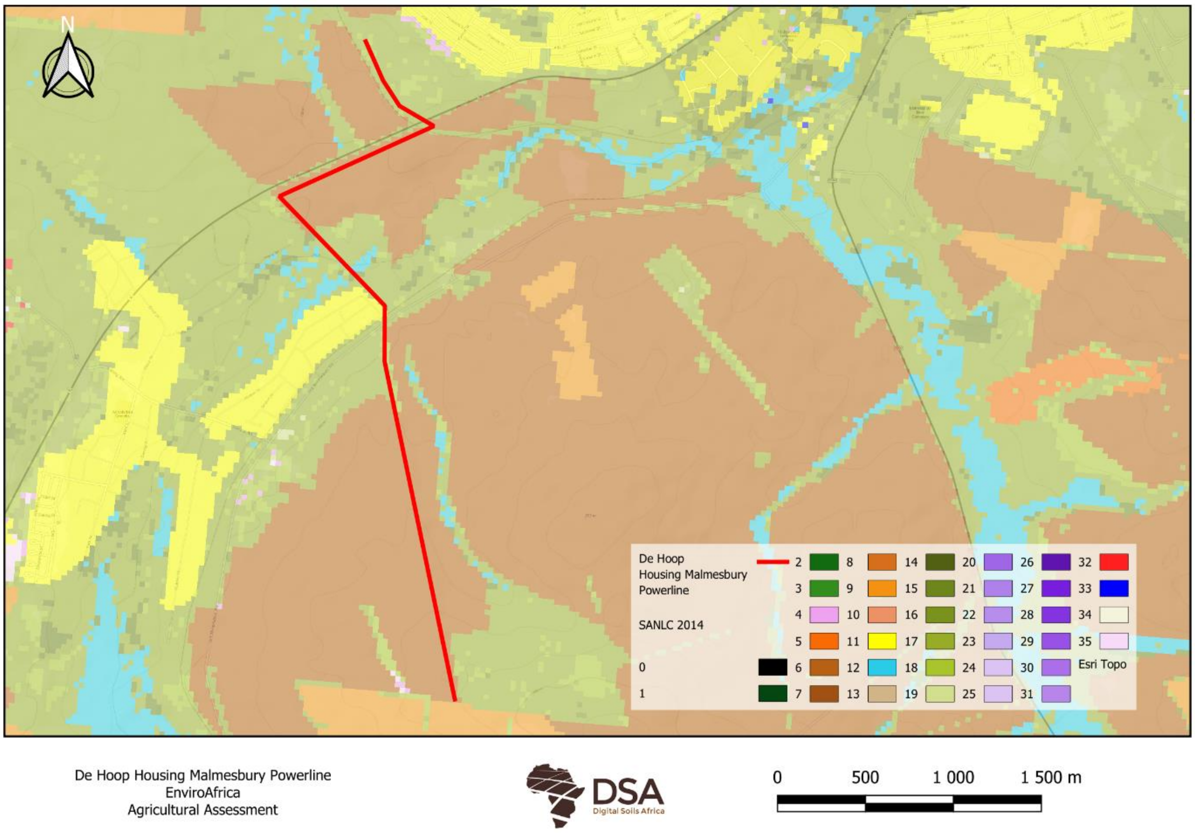


FIGURE 14: SOUTH AFRICAN NATIONAL LAND-COVER 2014 (SANLC 2014).

The Google satellite images in Figure 15 suggest that the landuse within the study site has not changed over the years (2014 -2023) within the buffer zone that the proposed powerline will cover.

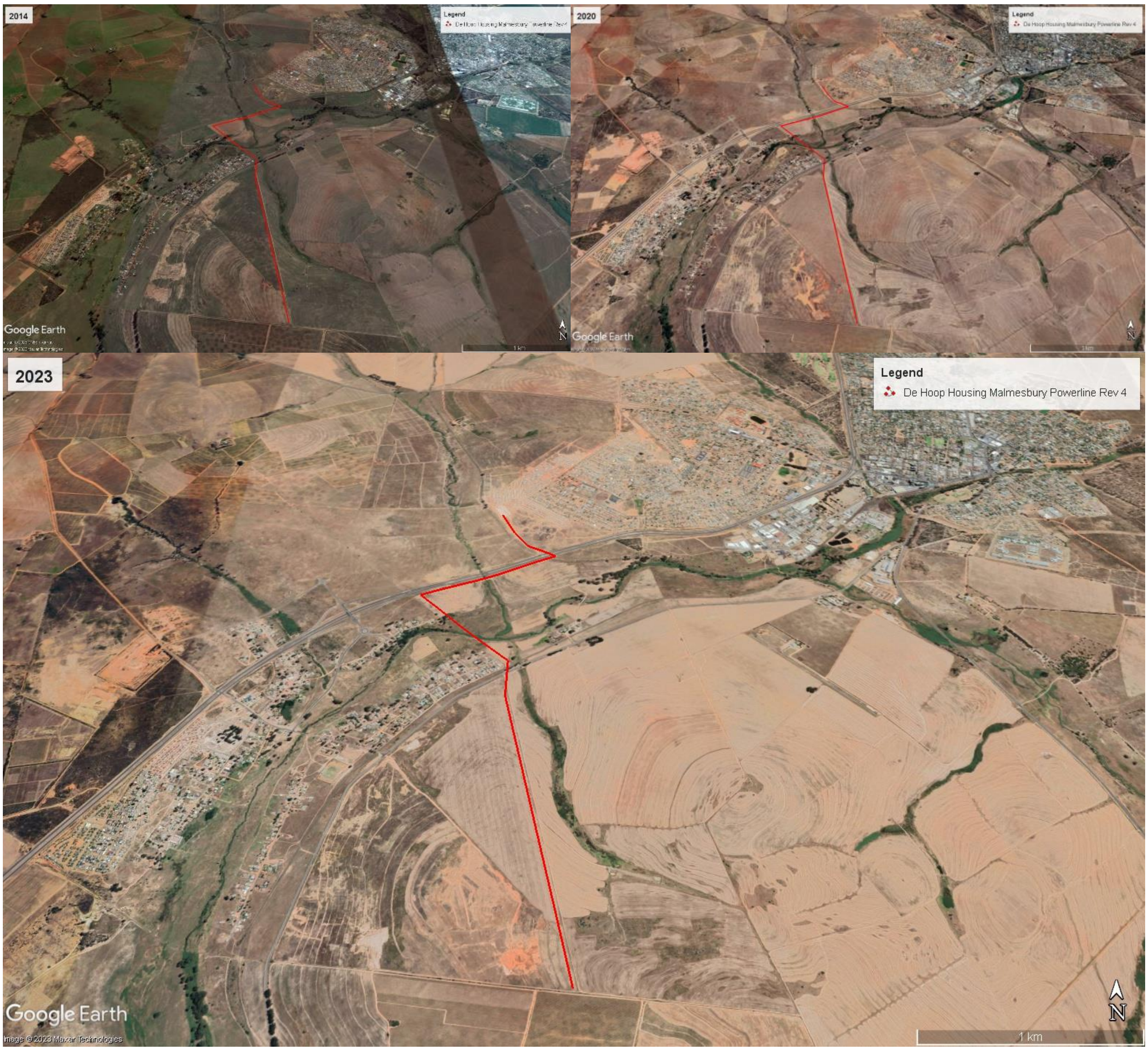


FIGURE 15: GOOGLE SATELITE IMAGES SHOWING MAJOR LAND USE CHANGES FROM 2014 TO 2023.

COMPLIANCE STATEMENT

This Agricultural Compliance Statement conforms with the Environmental Authorization requirements stipulated by the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"). The Environmental Screening Report (ESR) generated through the National Web-based Screening Tool identifies the study area as having a high sensitivity according to the Agricultural theme.

Findings from the desktop assessment:

- The study area is partially situated within a Western Cape Protected Agricultural Area.
- A portion of field crop boundaries are recorded in the study area.
- The climate capability of the area was classified as moderate due to the very low mean annual rainfall and arid environment.
- The Ac, Db and Fa broad land types. A large portion along the study area has a soil capability that is moderate, while some portions of approximately 1 to 3 pixels have a low - moderate soil capability.
- Area had a Low to High terrain capability that is scattered along the study area.
- The overall land capability ranges from Low - Moderate to Moderate – High, with only a few pixels having a low to moderate land capability.
- The grazing capacity of the study area was moderate (36 ha/LSU).

Therefore, the desktop assessment aligns with the screening tool of high agricultural sensitivity. Due to the linear nature and low impact on existing agricultural activities, it is the specialist's opinion that the development continues, provided the following conditions are met:

1. Good fencing is used during construction.
2. Minimal footprint inside agricultural lands.

The development will not have a significant impact on agricultural activities in the area and poses no threat to food security. In terms of agricultural sensitivity, the development should thus be allowed to proceed.

APPENDIX 1: SPECIALIST CV

DR DARREN BOUWER

EDUCATION

PhD Soil Science	University of the Free State	2018
M.Sc. Soil Science	University of the Free State	2013
B.Sc. Soil Science (Hon)	University of the Free State	2009
B.Sc. Soil Science	University of the Free State	2008
Matric certificate	Queens College	2005

PROFESSIONAL AFFILIATIONS

- SACNASP- Pri Nat Sci 400081/16
- Member of the Soil Science Society of South Africa
- Member of the Soil Classification Work Group
- Member of South African Soil Surveyors Organisation

WORK EXPERIENCE

- **Digital Soils Africa** / Soil Scientist - May 2012 – Present
- **Ghent University** / Researcher- January 2016 - December 2016
- **University of the Free State**/ Assistant Researcher- January 2011- December 2015

PUBLICATIONS

Total consultancy reports: >120

Total Publications: 5

Most relevant:

Bouwer, D., Le Roux, P. A., van Tol, J. J., & van Huyssteen, C. W. (2015). Using ancient and recent soil properties to design a conceptual hydrological response model. Geoderma, 241, 1–11.

Van Zijl, G. M., Bouwer, D., van Tol, J. J., & le Roux, P.A.L. (2014). Functional digital soil mapping: A case study from Namarroi, Mozambique. Geoderma, 219-220, 155–161.

SPECIALIST DECLARATION

I, Darren Bouwer, declare that –

- I act as the independent specialist in this application;
- I regard the information contained in this report to be true and correct;
- I do not have a conflict of interest in this project;
- I will conduct the work relating to the project in an objective manner.

Dr Darren Bouwer
PhD Soil Science
Pri Nat Sci 400081/16