AGRICULTURAL ASSESSMENT FOR FARM 136 PTN 38-TERGNIET, WESTERN CAPE PROVINCE

PREPARED FOR

DIGITAL SOILS AFRICA

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BACKGROUND TO THE STUDY

Digital Soils Africa (Pty) LTD (DSA) were tasked to undertake and prepare an Agricultural Assessment 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.

The Agricultural Assessment 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).

SITE LOCATION

The proposed Farm 136 Pnt 38 is located in the coastal village of Tergniet found between Klein Brakrivier and Groot Brakrivier and is considered a suburb of Mossel Bay, Western Cape province, South Africa (Figure 1).

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

The proposed site covers approximately 6 ha of land (Figure 2).

FIGURE 2: THE LAYOUT OF THE PROPOSED DEVELOPMENT SITE (FOCUS AREA).

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 very high sensitivity for the *Agricultural* theme.

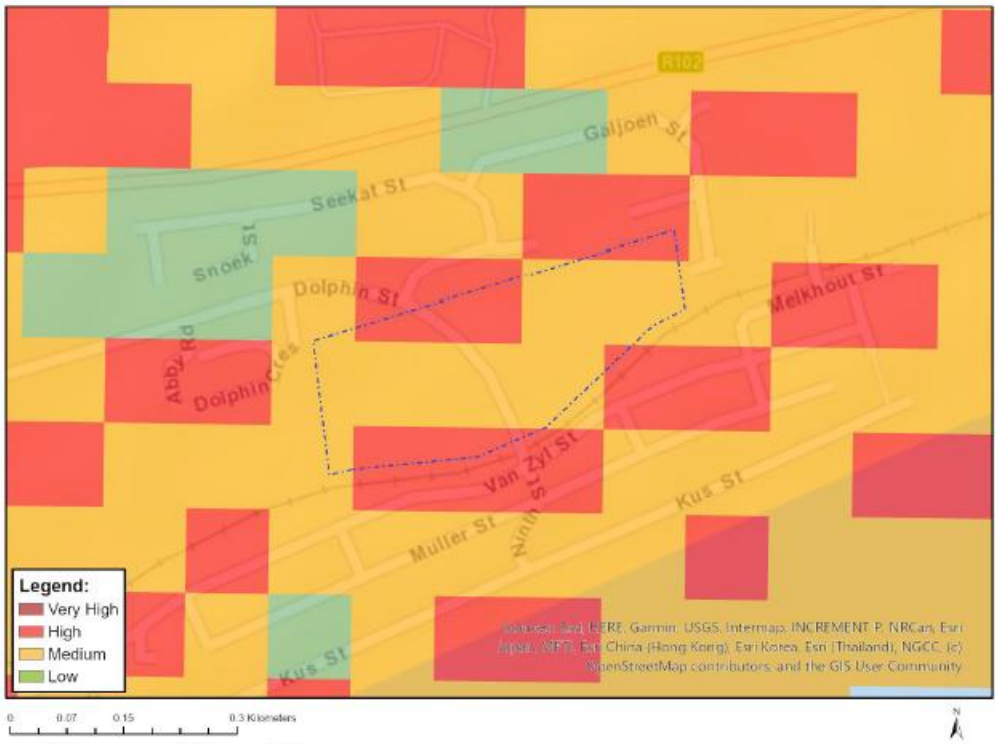
Agricultural sensitivity, as reported in the screening tool, is based upon the land use (SANLC, 2014) and land capability (Department of Agriculture, Forestry and Fisheries, 2017, also referred to as DAFF, 2017).

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 land use (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 all the study area as high agricultural sensitivity (Figure 3). The land capability (DAFF, 2017) classifies the soils as having medium to high land capability (Figure 4). There are no cultivated crops in the area (Figure 5).



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	08. Moderate
High	09. Moderate-High
Medium	06. Low-Moderate
Medium	07. Low-Moderate

FIGURE 3: RESULTS FROM THE ENVIRONMENTAL SCREENING TOOL.

FIGURE 4: RESULTS FROM THE ENVIRONMENTAL SCREENING TOOL.

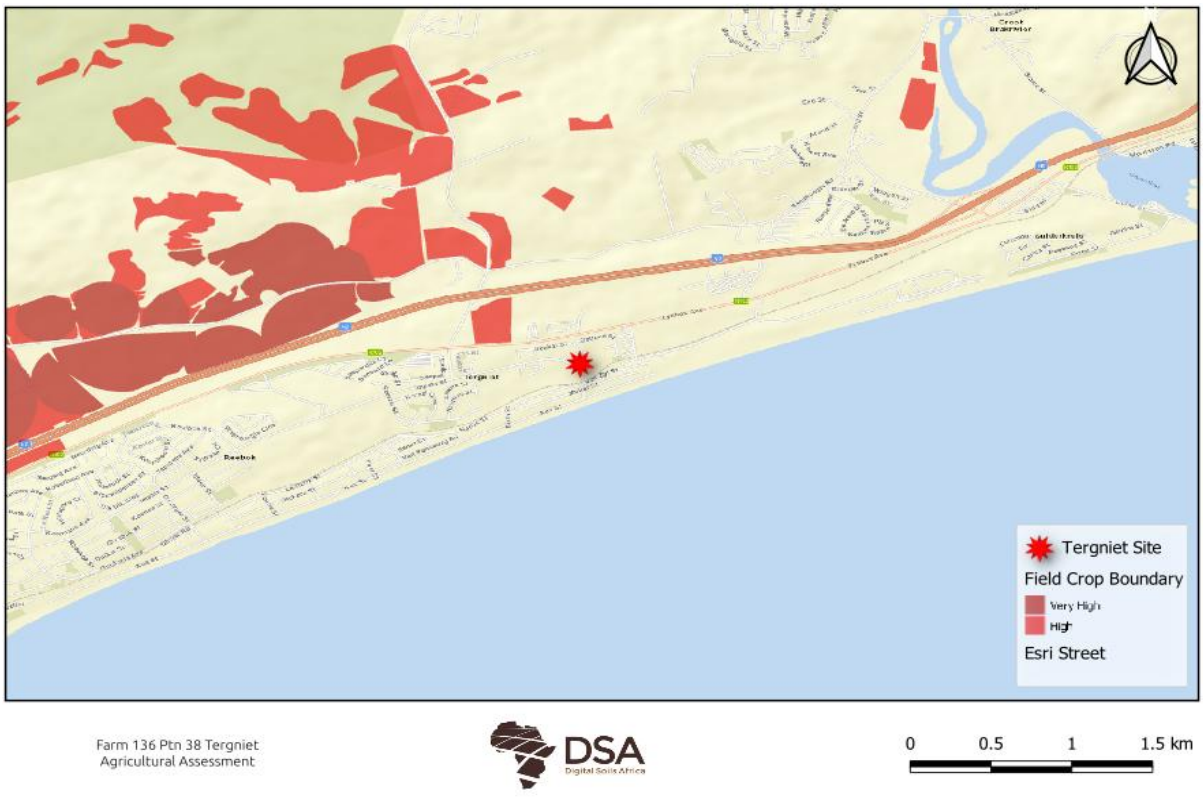


FIGURE 5: THE FIELD CROP BOUNDARIES AS USED IN THE SCREENING TOOL.

The Preservation and Development of Agricultural Land Framework Act (PD-ALF) is South Africa's new overarching policy framework to replace the Subdivision of Agricultural Land Act (SALA 70 of 1970). The Bill was first tabled in 2015 and was passed by Parliament in 2023. As of 2025, the Act has been signed into law, but the detailed regulations and institutional arrangements required for implementation are still in the process of being finalised. The PD-ALF introduces a national system for the classification and zoning of agricultural land, with particular focus on identifying and protecting Priority Agricultural Areas (PAAs).

The study area is not situated within a Protected Agricultural Area (Figure 6).

FIGURE 6: THE PROTECTED AGRICULTURAL AREAS FOR THE STUDY AREA.

DATA LIMITATIONS, ASSUMPTIONS AND STUDY GAPS

It is assumed that the data used in the desktop is correct.

METHODOLOGY

DESKTOP STUDY

A desktop study was being conducted to determine the climate, agricultural potential, soil land-use from the best available sources.

- Climate (Climate.data.org).
- Agricultural potential from the Land Type Survey Staff (1972-2006).
- The Refined Land Capability Evaluation Raster Data for South Africa that was developed using a spatial evaluation modelling approach (DALRRD, 2016).
- Land-use from South African National Land Cover (Geo Terra Image, 2018).
- Long Term Grazing Capacity for South Africa from Department of Agriculture, Forestry and Fisheries (2016).
- Historical imagery (Google earth pro).

DESKTOP RESULTS

CLIMATE CAPABILITY

Tergniet's climate is a warm and temperate climate. There is a considerable amount of rainfall even during months that typically experience dry weather. The climate here is classified as Cfb by the Köppen-Geiger. The temperature here averages 17.0 °C. Each year, there is an approximate 562 mm of precipitation that occurs. The site also has a Semi-Arid climate (Figure 7).

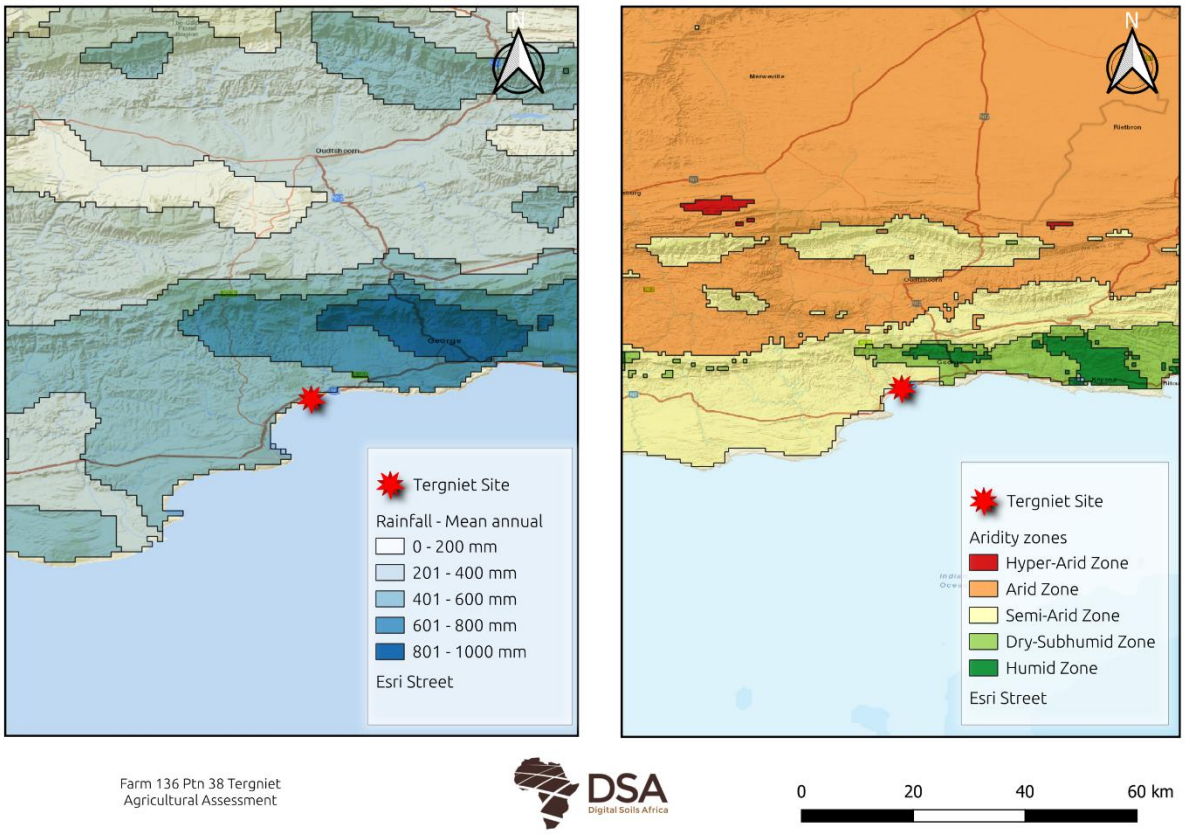


FIGURE 7: CLIMATE OF THE SITE AND THE SURROUNDING AREA (SCHULZE, 2007).

TABLE 1: CLIMATIC PROPERTIES OF TERGNIET, WESTERN CAPE (CLIMATE-DATA.ORG)

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C	20.8 °C	21 °C	19.9 °C	17.9 °C	16 °C	13.8 °C	13.2 °C	13.6 °C	14.6 °C	16.4 °C	17.7 °C	19.7 °C
Min. Temperature °C	17 °C	17.3 °C	16.2 °C	13.9 °C	11.9 °C	9.3 °C	8.7 °C	9.1 °C	10.2 °C	12.3 °C	13.7 °C	15.8 °C
Max. Temperature °C	25.3 °C	25.5 °C	24.5 °C	22.6 °C	20.9 °C	18.8 °C	18.3 °C	18.8 °C	19.6 °C	21.1 °C	22.2 °C	24.3 °C
Precipitation / Rainfall mm (in)	45	39	52	52	44	38	38	49	40	56	64	45
Humidity (%)	72%	73%	74%	73%	70%	68%	68%	69%	70%	71%	71%	71%
Rainy days (d)	7	6	7	6	5	5	5	6	6	6	7	7
avg. Sun hours (hours)	9.0	8.5	8.0	7.7	7.6	7.4	7.4	7.8	8.1	8.5	9.2	9.4

Climate capability is 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 of the study area according to the Department of Agriculture, Forestry and Fisheries, 2017, has a value of 6, which is considered a moderate to high climate capability (Figure 8).

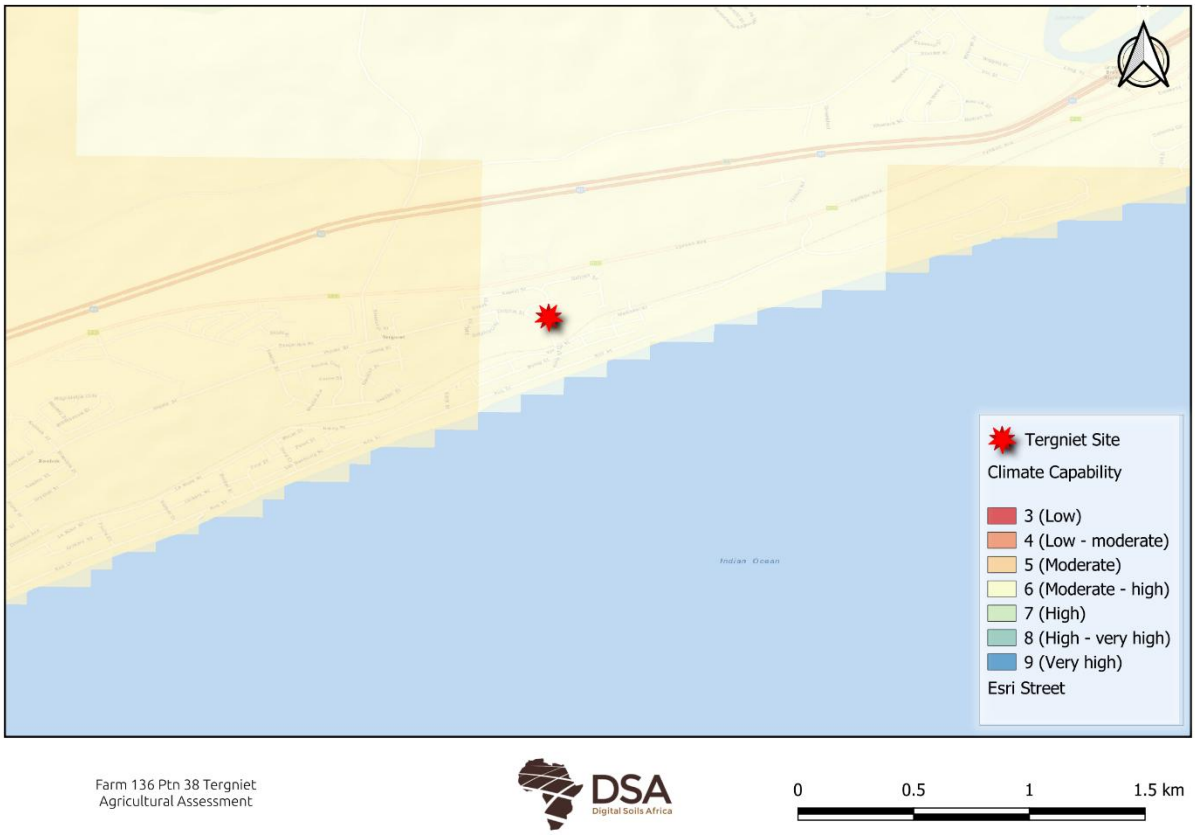


FIGURE 8: THE CLIMATE CAPABILITY OF THE SITE AND SURROUNDING AREA (DAFF, 2017).

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. Land type data was used in calculating the soil capability (DAFF, 2017), and therefore, indirectly used in the Screening tool for estimating the agricultural sensitivity.

The Tergniet proposed development area is entirely situated upon the Hb broad land type (Land Type Survey Staff, 1972 – 2002) (Figure 9). Hb land types are characterised by sub dominant deep grey sands which comprise >20% of the land type.

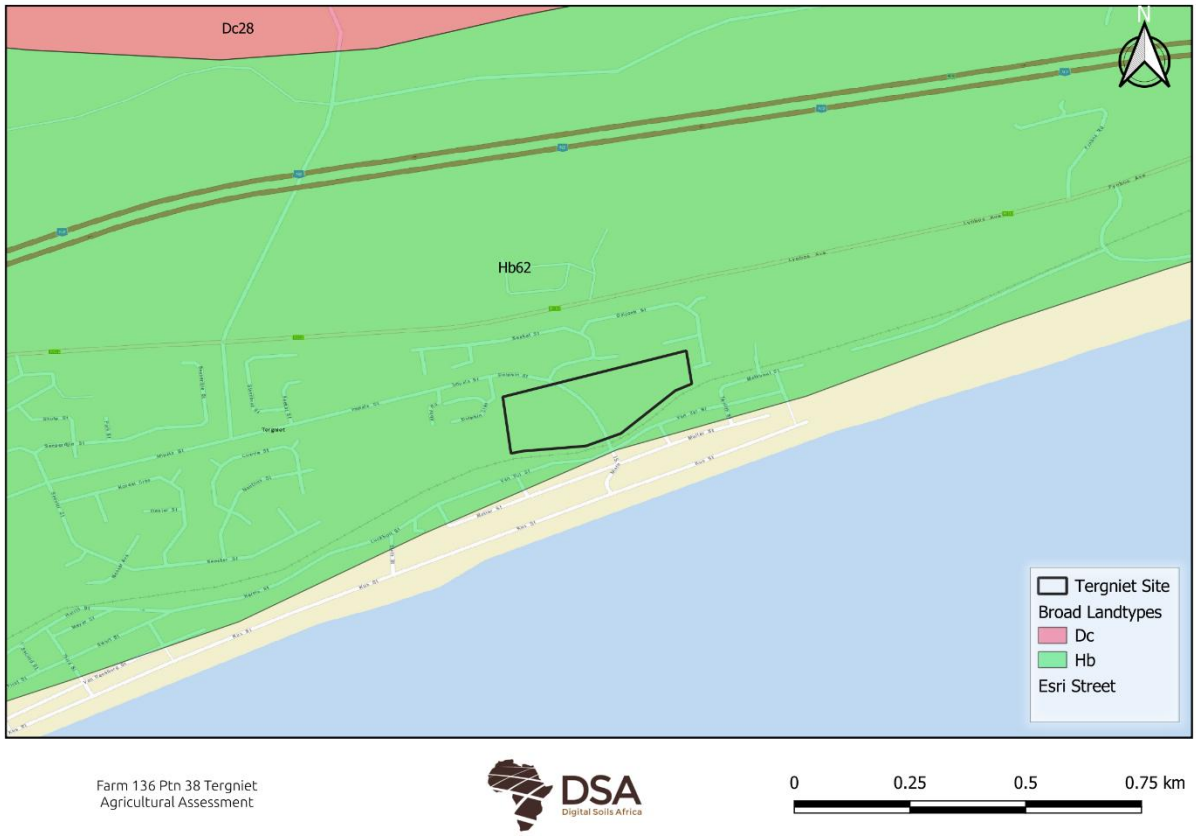


FIGURE 9: LANDTYPES FOUND IN THE STUDY AREA AND THE SURROUNDING AREA (LAND TYPE SURVEY STAFF, 1972 – 2002).

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 soil capability of the study area, according to the DAFF (2017), has a value of 6 (Moderate – high) (Figure 10).

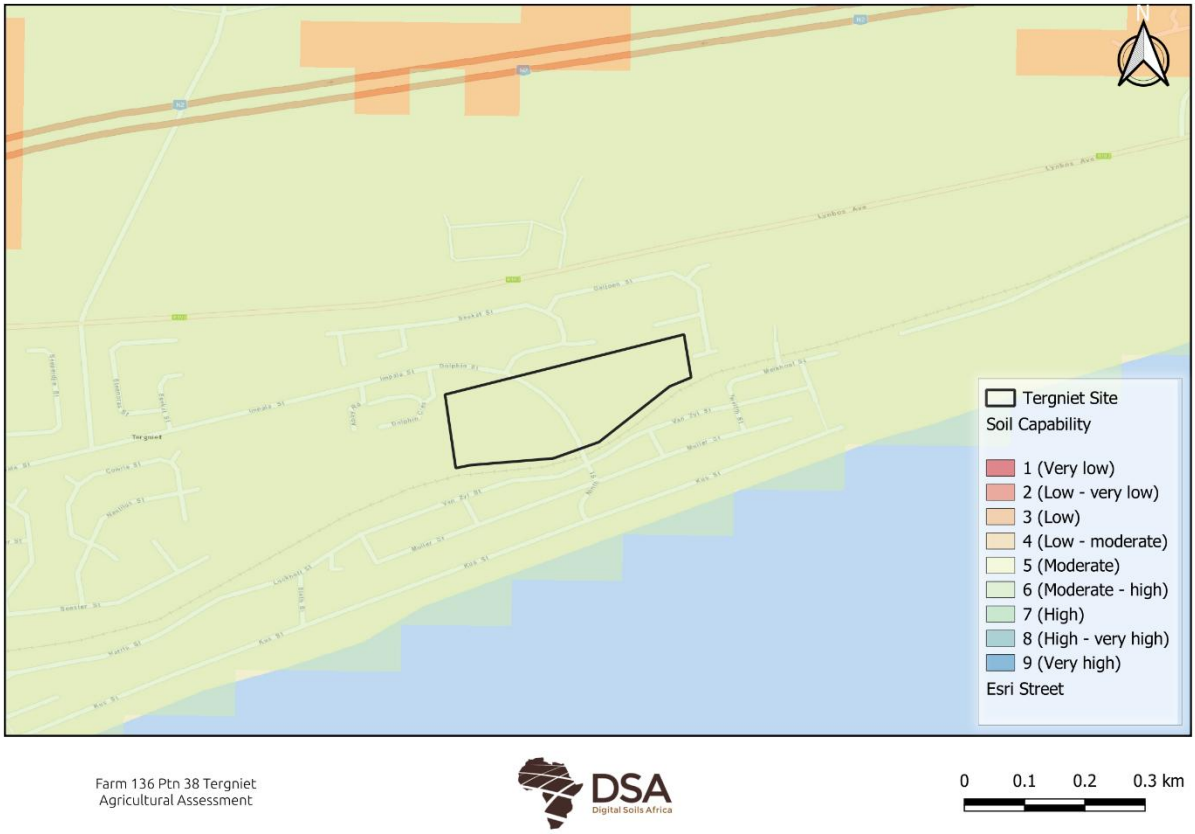


FIGURE 10: THE SOIL CAPABILITY OF THE SITE AND SURROUNDING AREA (DAFF, 2017).

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 of the proposed development area, according to the DAFF (2017), has a range between 3 (Low) to 6 (Moderate – high) (Figure 11). Overall, the study area has a low to high terrain capability.

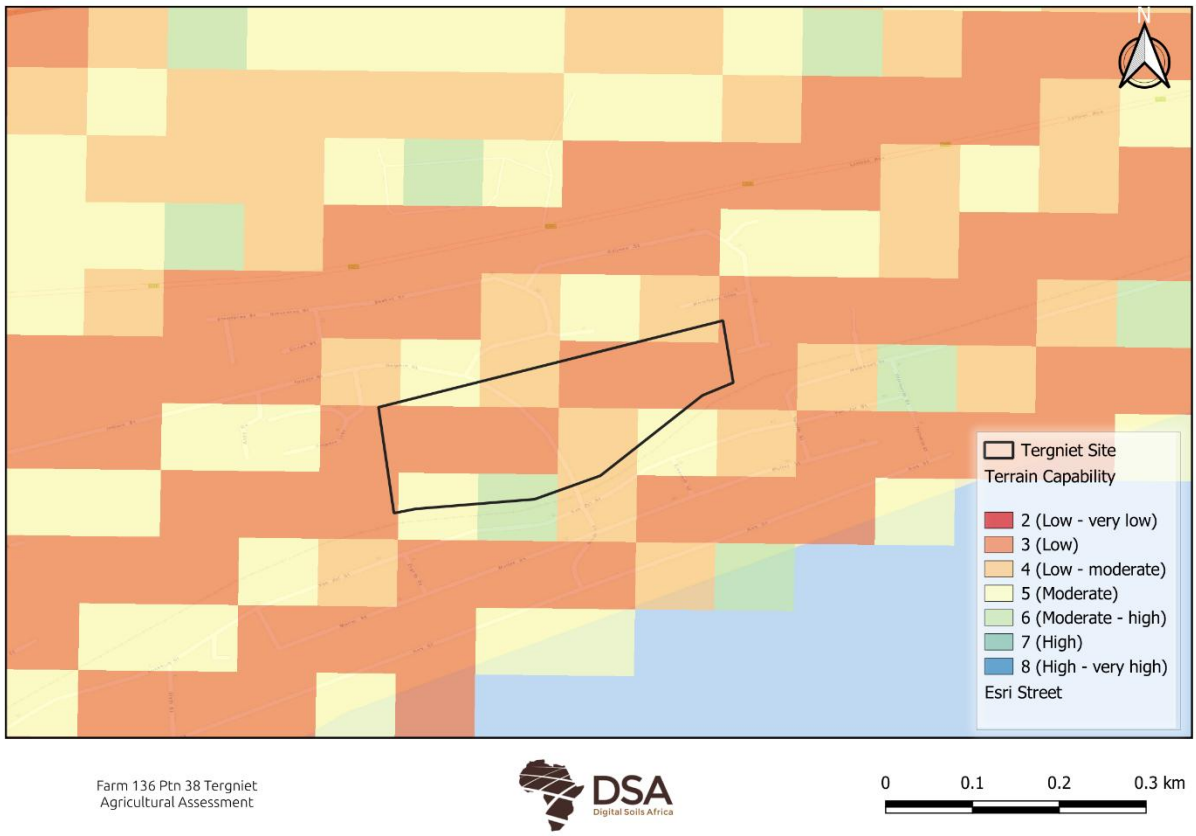


FIGURE 11: THE TERRAIN CAPABILITY OF THE SITE AND SURROUNDING AREA (DAFF, 2017).

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	
5	Low	
6-7	Low to Moderate	
8	Moderate	Arable
9-10	Moderate to High	
11	High	
12-13	High to Very High	
14-15	Very High	

The Land capability values of the proposed development area are between 6 (Low to moderate) and 9 (Moderate to high) (Figure 12). Overall, the Land capability of the proposed development area is Low to high, which is considered as arable and not arable.

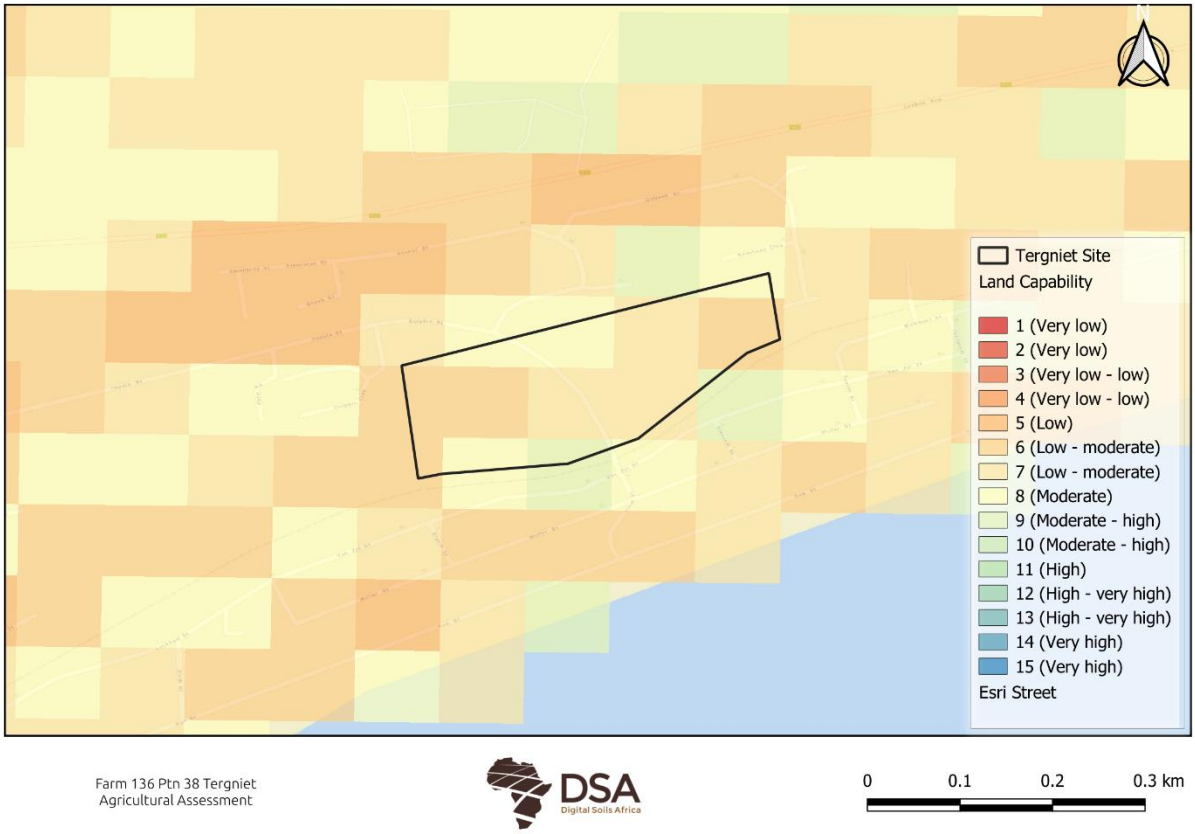


FIGURE 12: LAND CAPABILITY CLASS MAP OF THE STUDY AREA (DAFF, 2017).

GRAZING CAPACITY

The unit used in the grazing capacity is hectares per large stock unit (ha/LSU). The study site has a low grazing capacity 35 ha/LSU (Figure 13). 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 13: 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, and there was conflicting classification in the study area, with most of the site being predominately classified as 9 (Low shrubland (Fynbos)) (SANLC 2014) to 2 (Contiguous Low Forest & Thicket), 3 (Dense Forest & Woodland), 9 (Low Shrubland (Fynbos)) and 47 (Residential Formal (Tree)) and 49 (Residential Formal (low veg / grass)) (SANLC 2020) (Figure 14) with the classes described in the **Error! Reference source not found.** below.

TABLE 3: LEGEND TO FIGURE 14

No.	Class Name	Class Definition
2	Contiguous Low Forest & Thicket	Natural tall woody vegetation communities, with 75% or more canopy cover, and canopy heights exceeding 6 metres. Typically representative of tall, indigenous forests.
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.
47	Residential Formal (Tree)	Built-up areas primarily containing formally planned and constructed residential structures and associated utilities. The dominant vegetation (in gardens etc) is tree-based.
49	Residential Formal (low veg / grass)	Built-up areas primarily containing formally planned and constructed residential structures and associated utilities. The dominant vegetation (in gardens etc) is grass and/or low shrub based.

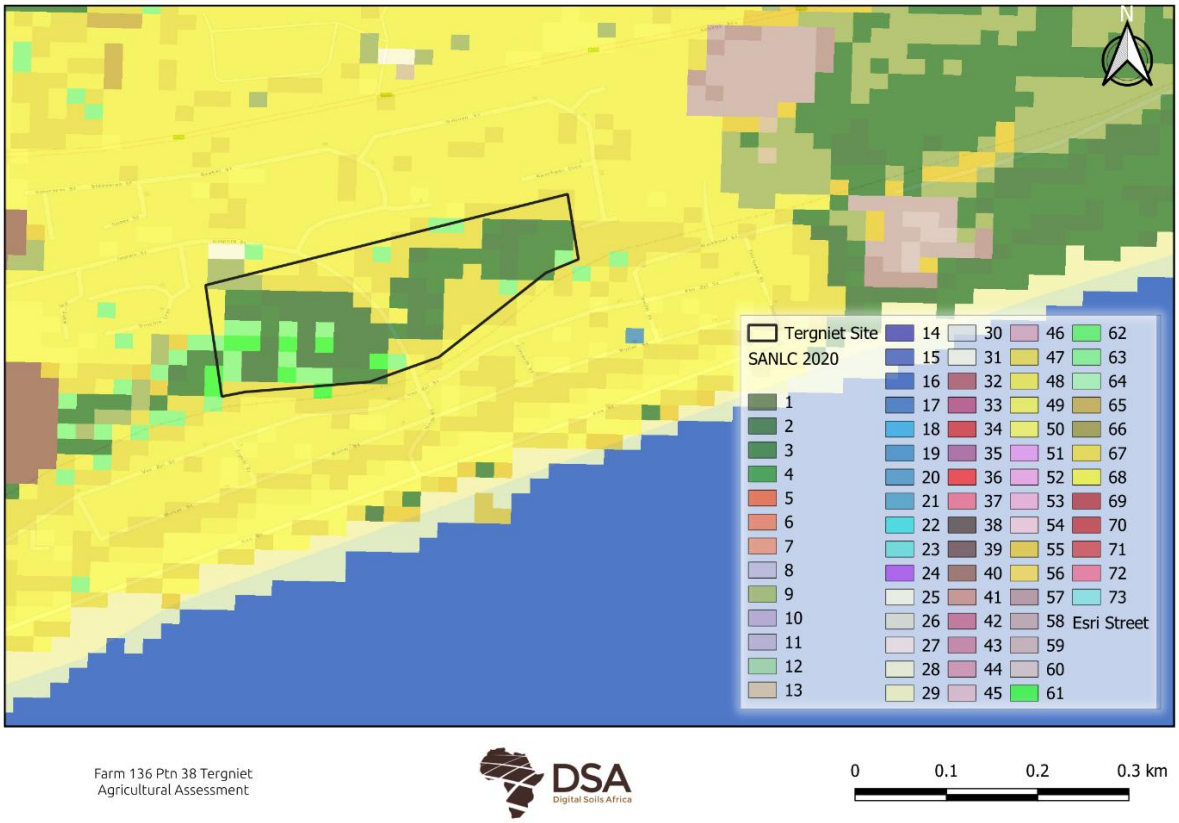


FIGURE 14: SOUTH AFRICAN NATIONAL LAND-COVER 2020 (SANLC 2020).

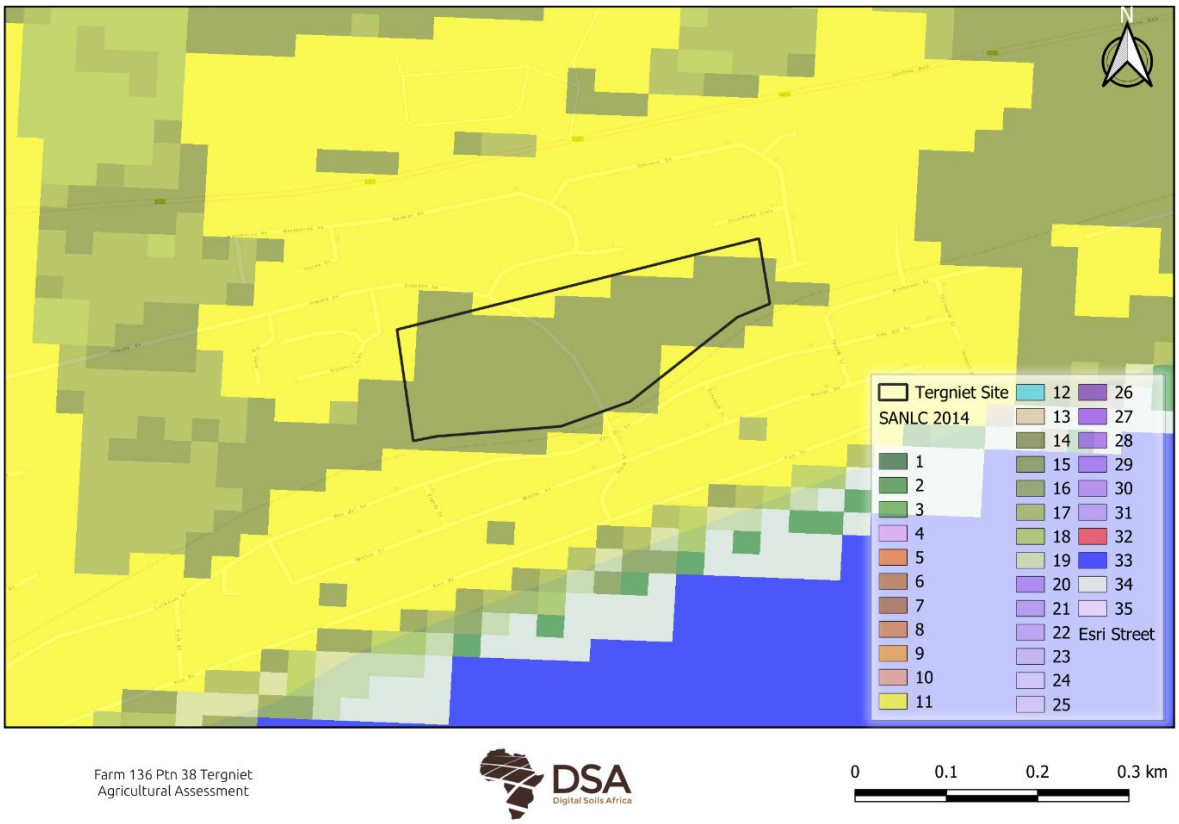


FIGURE 15: SOUTH AFRICAN NATIONAL LAND-COVER 2014 (SANLC 2014).

The Google satellite images suggest that the landuse surrounding the development site has not changed (2014 – 2025) (Figure 16 to Figure 19). The land cover classification in the SANLC 2020 agrees with the observed satellite imagery.

FIGURE 16: GOOGLE SATELLITE IMAGE OF THE TERGNIET FARM (2014).

FIGURE 17: GOOGLE SATELLITE IMAGE OF THE TERGNIET FARM (2018).

FIGURE 18: GOOGLE SATELLITE IMAGE OF THE TERGNIET FARM (2022).

FIGURE 19: GOOGLE SATELLITE IMAGE OF THE TERGNIET FARM (2025).

CONCLUSION

This Agricultural Assessment 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 focus area as having high sensitivity due to a medium to high land capability.

Findings from the desktop assessment for the study site:

- The development area is not situated within a Protected Agricultural Area.
- No historical field-crop were mapped in SANLC 2014 and 2020.
- The site falls within a moderate climate capability zone (value = 6).
- The area is located within the Hb land type, associated with deep grey sands.
- Soil capability from national datasets indicates Low (3) to Moderate (6) capability.
- Terrain capability is Low (3) to High (6) across most of the development area.
- Land capability from DAFF (2017) suggests Low (LC 6) to High land capability (LC 9).
- The grazing capacity is 35 ha/LSU, consistent with low-productivity semi-arid grassland on sandy soils.
- SANLC 2020 identifies the area as Contiguous Low Forest & Thicket, Dense Forest & Woodland, Low Shrubland (Fynbos) Residential Formal (Tree) and 49 Residential Formal (low veg / grass), with no evidence of cultivation.

Based on the desktop assessment undertaken in accordance with the *Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Agricultural Resources* (GN 320 of 2020), it is the specialist's opinion that the proposed land-use change at Farm 136 Portion 38, Tergniet, will not result in a meaningful loss of agricultural resources. Although national datasets classify portions of the site as having moderate to high land capability, the area is fully embedded within an established urban matrix, with surrounding land uses dominated by formal residential development and associated infrastructure, and no evidence of historical or current cultivation.

The site is not located within a Protected Agricultural Area, exhibits a low grazing capacity, and is constrained by its isolation from viable agricultural production units. As such, the land no longer functions as part of an agricultural system, nor does it contribute to regional agricultural productivity. In this context, the proposed development will not compromise sustainable agricultural land use, food production potential, or the broader agricultural economy.

Accordingly, it is concluded that the proposed development is agriculturally acceptable and compliant with the intent and requirements of GN 320 (2020), and that the change in land use will not have a significant negative impact on agricultural resources.

APPENDIX 1: SPECIALIST CV

DR DARREN BOUWER

EDUCATION

PhD Soil Science	University of the Free State	2018
M.Sc. Soil Science (Cum Laude)	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: >160 **Total Publications: 6**

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