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**SITE SENSITIVITY VERIFICATION
AND
AGRICULTURAL COMPLIANCE STATEMENT
FOR A PROSPECTING RIGHT APPLICATION WITHOUT BULK SAMPLING
ON PORTIONS 6 AND 7 OF THE FARM GAMS NO. 367
NEAR UPINGTON, NORTHERN CAPE PROVINCE**

**Report by
Johann Lanz**

30 May 2023

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1 INTRODUCTION

Environmental authorisation is being sought for a prospecting right application without bulk sampling on Portions 6 and 7 of the farm Gams no. 367 near Upington, Northern Cape Province (see location in Figure 1). In terms of the National Environmental Management Act (Act No 107 of 1998 - NEMA), an application for environmental authorisation requires an agricultural assessment. In this case, based on the verified low to medium agricultural sensitivity of the site (see Section 7), the level of agricultural assessment required is an Agricultural Compliance Statement.



Figure 1. Locality map of the property (dark blue outline) north-west of the town of Upington.

The purpose of the agricultural component in the environmental assessment process is to preserve agricultural production potential by ensuring that development does not unnecessarily exclude existing or potential agricultural production from land, or unnecessarily impact agricultural land to the extent that its production potential is reduced. The primary focus is on preservation of the agricultural production potential of scarce, arable land. The most important part of an agricultural impact assessment is therefore assessing how much existing or potential agricultural production land will be lost as a result of the proposed activity and assessing whether that land has economically viable future cropping potential or not (for more detail see Section 9). This site however has no crop production potential and is therefore not considered a priority for preserving as agricultural production land.

2 PROJECT DESCRIPTION

The proposed project involves drilling up to 100 cores of up to 500 meters deep across the prospecting area. All associated infrastructure is temporary and will move from drill site to drill site as prospecting progresses. This infrastructure includes site camp, ablution facility, accommodation, equipment storage, sample storage, site office, and access roads. Water boreholes are also proposed to provide water for drilling.

3 TERMS OF REFERENCE

The terms of reference for this study is to fulfill the requirements of the *Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources*, gazetted on 20 March 2020 in GN 320 (in terms of Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

The terms of reference for an Agricultural Compliance Statement, as stipulated in the agricultural protocol, are listed below, and the section number of this report which fulfils each stipulation is given after it in brackets.

1. The Agricultural Compliance Statement must be prepared by a soil scientist or agricultural specialist registered with the South African Council for Natural Scientific Professions (SACNASP) (**Appendix 3**).
2. The compliance statement must:
 1. be applicable to the preferred site and proposed development footprint (**Figures 1 to 2**);
 2. confirm that the site is of “low” or “medium” sensitivity for agriculture (**Section 7**); and
 3. indicate whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site (**Section 10**).
3. The Agricultural Compliance Statement must contain, as a minimum, the following information:
 1. details and relevant experience as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the statement including a curriculum vitae (**Appendix 1**);
 2. a signed statement of independence by the specialist (**Appendix 2**);
 3. a map showing the proposed development footprint (including supporting infrastructure) with a 50 m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool (**Figure 2**);
 4. confirmation from the specialist that all reasonable measures have been taken through micro-siting to avoid or minimize fragmentation and disturbance of agricultural activities (**not applicable**);

5. 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 **(Section 10)**;
6. any conditions to which this statement is subjected **(Section 10)**;
7. 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)**;
8. where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr **(Section 9.1)**; and
9. a description of the assumptions made and any uncertainties or gaps in knowledge or data **(Section 5)**.

4 METHODOLOGY OF STUDY

The assessment was based on a verification of current agricultural land use on the site and was informed by existing soil and agricultural potential data for the site. The following sources of existing data were used:

- Soil data was sourced from the land type data set, of the Department of Agriculture, Forestry and Fisheries (DAFF). This data set originates from the land type survey that was conducted from the 1970's until 2002. It is the most reliable and comprehensive national database of soil information in South Africa and although the data was collected some time ago, it is still entirely relevant as the soil characteristics included in the land type data do not change within time scales of hundreds of years.
- Land capability data was sourced from the 2017 National land capability evaluation raster data layer produced by the DAFF, Pretoria.
- The spatial demarcation of Protected Agricultural Areas was obtained from the National Department of Agriculture, Land Reform and Rural Development (DALRRD).
- Field crop boundaries were sourced from Crop Estimates Consortium, 2019. Field Crop Boundary data layer, 2019. Pretoria. Department of Agriculture, Forestry and Fisheries.
- Rainfall and evaporation data was sourced from the SA Atlas of Climatology and Agrohydrology (2009, R.E. Schulze) available on Cape Farm Mapper. Note that Cape Farm Mapper includes national coverage of climate, grazing and certain other data.
- Grazing capacity data was sourced from the 2018 DAFF long-term grazing capacity map for South Africa, available on Cape Farm Mapper.
- Current and historical satellite imagery of the site and surrounds was sourced from Google Earth.

This level of agricultural assessment is considered entirely adequate for an understanding of on-site agricultural production potential for the purposes of this assessment.

5 ASSUMPTIONS, UNCERTAINTIES OR GAPS IN KNOWLEDGE OR DATA

There are no specific assumptions, uncertainties or gaps in knowledge or data that affect the findings of this study.

6 APPLICABLE LEGISLATION AND PERMIT REQUIREMENTS

All approvals for prospecting are obtained in terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002). Rehabilitation after disturbance to agricultural land is managed by the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA).

7 SITE SENSITIVITY VERIFICATION

Agricultural sensitivity is a direct function of the capability of the land for agricultural production. The agricultural sensitivity of the site, as given by the web-based environmental screening tool, is shown in Figure 2. The screening tool classifies agricultural sensitivity according to only two independent criteria, both of which are indicators of the land's agricultural production potential – whether the land is cropland or not, and what its land capability rating is. Land capability is defined as the combination of soil, climate and terrain suitability factors for supporting rain-fed agricultural production. It is rated by the Department of Agriculture's updated and refined, country-wide land capability mapping, released in 2016. The higher land capability values (≥ 8 to 15) are likely to be suitable as arable land for crop production, while lower values (< 8) are only likely to be suitable as non-arable grazing land. The direct relationship between land capability rating and agricultural sensitivity is shown in Table 1.

Table 1. Relationship between land capability and agricultural sensitivity as given by the screening tool.

Land capability value	Agricultural sensitivity
1 - 5	low
6 - 8	medium
9 - 10	high
11 - 15	very high

Because the land capability data is generated by GIS modelling and because it is applicable at a fairly small scale (1:50 000 to 1:100 000) it is not necessarily accurate for a specific site and

therefore needs verification. Because crop boundaries change over time, they also need verification.

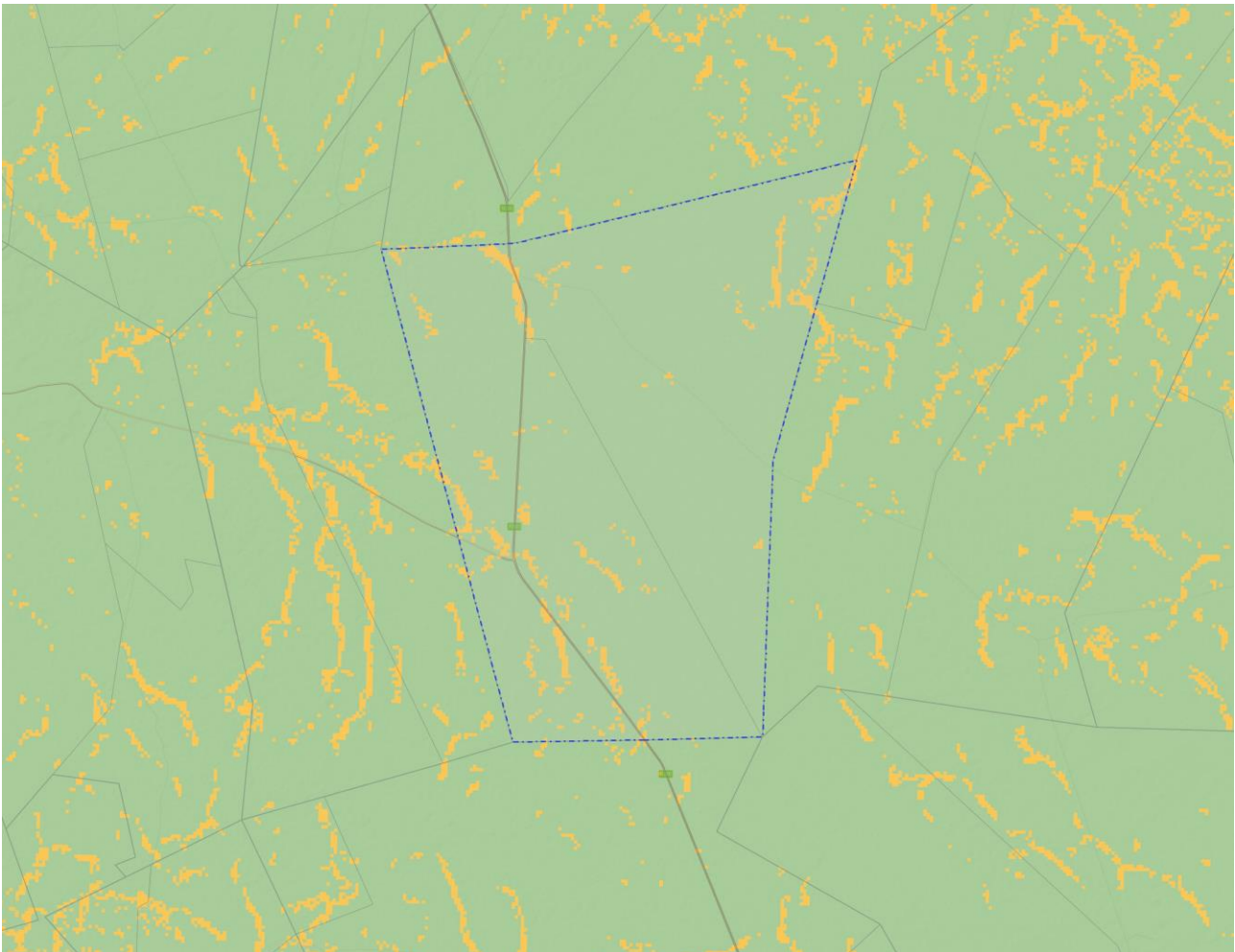


Figure 2. The proposed prospecting area overlaid on agricultural sensitivity, as given by the screening tool (green = low; yellow = medium; red = high; dark red = very high). This screening tool sensitivity is confirmed by this assessment.

The screening tool rating of the agricultural sensitivity of the assessment area is a minimum of low, an average of low, and a maximum of medium because it is not within crop boundaries and has a land capability of minimum 3, average 5, and maximum 6. This assessment verifies that the site is not within crop boundaries and verifies the classified land capability, based on the assessment of the cropping potential of the site in this report (see Section 8). This assessment therefore confirms the rating of the sensitivity by the screening tool and verifies the assessment area as being of minimum low, average low, and maximum medium agricultural sensitivity.

8 BASELINE DESCRIPTION OF THE AGRO-ECOSYSTEM

The purpose of this section of the report is to present the baseline information that controls the

agricultural production potential of the site so that an assessment of that potential can be made. Agricultural production potential is one of the main factors that determines the significance of the agricultural impact.

The arid climate (the Köppen-Geiger climate classification is: Arid, desert, hot) with a low mean annual rainfall of approximately 160 mm (Schulze, 2009) is the limiting factor for land capability, regardless of the soil and terrain capability. Moisture availability is very limiting to any kind of agricultural production, including grazing and is completely insufficient for rain-fed crop production. The climate constraints mean that the site has very low agricultural potential and its agricultural use is limited to grazing only. The land has a long term grazing capacity of 28 hectares per large stock unit, which can be described as moderate-high within the range of grazing capacities across South Africa. Because climate is the limiting factor that controls production potential, it is the only aspect of the agro-ecosystem description that is required for assessing the agricultural impact of this development. All other agricultural potential parameters become irrelevant under the dominant limitation of aridity.

The site falls outside of an area that is classified as a Protected Agricultural Area. A Protected Agricultural Area is a demarcated area in which the climate, terrain, and soil are generally conducive for agricultural production and which, historically, has made important contributions to the production of the various crops that are grown across South Africa. Within Protected Agricultural Areas, the protection, particularly of arable land, is considered a priority for the protection of food security in South Africa, but the protection of land outside of these areas is not considered a food security priority.

9 ASSESSMENT OF THE AGRICULTURAL IMPACT

An agricultural impact is a temporary or permanent change to the future agricultural production potential of land. The significance of the agricultural impact is directly proportional to the extent of the change in production potential, which is a function of:

1. the length of time for which the change in production potential lasts
2. the total footprint of land whose production potential will be changed
3. the baseline production potential (particularly cropping potential) of that land

The most significant agricultural impact possible is therefore a permanent loss of a large area of high yielding cropland and the least significant impact is a short-term loss of a small area of low carrying capacity grazing land.

In this case, the impact is temporary. Disturbance to the land as a result of the prospecting activity will reduce plant cover and consequently grazing capacity in places but the land is likely to recover

in time. The total footprint of land whose production potential will be changed will be minimal as it will only be on widely distributed, small drill sites and newly created access roads. The baseline production potential of the land is low and its agricultural use is limited to grazing only. The temporary loss of small, widely distributed patches of grazing land, of which there is no scarcity in the country, represents very minimal loss of agricultural production potential, both for the affected farmer and in terms of national food security. Due to the fact that all three significance factors are low, the agricultural impact of the proposed prospecting is assessed here as being of low significance.

Specialist assessments for environmental authorisation are required to assess cumulative impacts. The cumulative impact of a development is the impact that development will have when its impact is added to the incremental impacts of other past, present or reasonably foreseeable future activities that will affect the same environment. In areas where there is high demand on agricultural production land from competing land uses, for example close to urban areas, or in heavily mined areas, the cumulative loss of agricultural production land can be significant. The proposed prospecting is not, however located in such an area and cumulative impact is not therefore significant.

Specialist assessments for environmental authorisation are also required to assess the impact of the no-go alternative. The no-go alternative considers impacts that will occur to the agricultural environment in the absence of the proposed development. There are no agricultural impacts of the no-go alternative. Even though the impacted land has low agricultural production potential, the negative agricultural impact of the prospecting is more significant than that of the no-go alternative, and so from an agricultural impact perspective, the no-go alternative is the preferred alternative.

9.1 Mitigation measures

The only possible mitigation is that the footprint of disturbance is minimised as far as possible and that, as part of this, the creation of new access roads to drill sites is minimised and existing roads are used instead, wherever possible.

10 CONCLUSION: AGRICULTURAL COMPLIANCE STATEMENT

The site has low agricultural potential and no cropping potential because of climate constraints. As a result of the constraints, agricultural production is limited to grazing. The land across the site is verified in this assessment as being of low to medium agricultural sensitivity.

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Although the prospecting will impact land that is currently zoned for agriculture, it will lead to minimal loss of both current production and of future agricultural production potential. The agricultural impact of the proposed development is assessed as being of low significance and as acceptable. From an agricultural impact point of view, it is recommended that the proposed prospecting be approved. The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions, other than recommended mitigation.

11 REFERENCES

Crop Estimates Consortium, 2019. *Field Crop Boundary data layer, 2019*. Pretoria. Department of Agriculture, Forestry and Fisheries.

Department of Agriculture Forestry and Fisheries, 2018. Long-term grazing capacity map for South Africa developed in line with the provisions of Regulation 10 of the Conservation of Agricultural Resources Act, Act no 43 of 1983 (CARA), available on Cape Farm Mapper. Available at: <https://gis.elsenburg.com/apps/cfm/>

Department of Agriculture, Forestry and Fisheries, 2017. National land capability evaluation raster data layer, 2017. Pretoria.

Department of Agriculture, Forestry and Fisheries, 2002. National land type inventories data set. Pretoria.

Department of Agriculture, Land Reform and Rural Development. 2020. Protected agricultural areas – Spatial data layer. 2020. Pretoria.

Schulze, R.E. 2009. SA Atlas of Climatology and Agrohydrology, available on Cape Farm Mapper.

Available at: <https://gis.elsenburg.com/apps/cfm/>

APPENDIX 1: SPECIALIST CURRICULUM VITAE

Johann Lanz Curriculum Vitae

Education

M.Sc. (Environmental Geochemistry)	University of Cape Town	1996 - 1997
B.Sc. Agriculture (Soil Science, Chemistry)	University of Stellenbosch	1992 - 1995
BA (English, Environmental & Geographical Science)	University of Cape Town	1989 - 1991
Matric Exemption	Wynberg Boy's High School	1983

Professional work experience

I have been registered as a Professional Natural Scientist (Pri.Sci.Nat.) in the field of soil science since 2012 (registration number 400268/12) and am a member of the Soil Science Society of South Africa.

Soil & Agricultural Consulting Self employed 2002 - present

Within the past 5 years of running my soil and agricultural consulting business, I have completed more than 170 agricultural assessments (EIAs, SEAs, EMPRs) in all 9 provinces for renewable energy, mining, electrical grid infrastructure, urban, and agricultural developments. I was the appointed agricultural specialist for the nation-wide SEAs for wind and solar PV developments, electrical grid infrastructure, and gas pipelines. My regular clients include: Zutari; CSIR; SiVEST; SLR; WSP; Arcus; SRK; Environamics; Royal Haskoning DHV; ABO; Enertrag; WKN-Windcurrent; JG Afrika; Mainstream; Redcap; G7; Mulilo; and Tiptrans. Recent agricultural clients for soil resource evaluations and mapping include Cederberg Wines; Western Cape Department of Agriculture; Vogelfontein Citrus; De Grendel Estate; Zewenwacht Wine Estate; and Goedgedacht Olives. In 2018 I completed a ground-breaking case study that measured the agricultural impact of existing wind farms in the Eastern Cape.

Soil Science Consultant Agricultural Consultants International (Tinie du Preez) 1998 - 2001

Responsible for providing all aspects of a soil science technical consulting service directly to clients in the wine, fruit and environmental industries all over South Africa, and in Chile, South America.

Contracting Soil Scientist De Beers Namaqualand Mines July 1997 - Jan 1998

Completed a contract to advise soil rehabilitation and re-vegetation of mined areas.

Publications

- Lanz, J. 2012. Soil health: sustaining Stellenbosch's roots. In: M Swilling, B Sebitosi & R Loots (eds). *Sustainable Stellenbosch: opening dialogues*. Stellenbosch: SunMedia.
- Lanz, J. 2010. Soil health indicators: physical and chemical. *South African Fruit Journal*, April / May 2010 issue.
- Lanz, J. 2009. Soil health constraints. *South African Fruit Journal*, August / September 2009 issue.
- Lanz, J. 2009. Soil carbon research. *AgriProbe*, Department of Agriculture.
- Lanz, J. 2005. Special Report: Soils and wine quality. *Wineland Magazine*.

I am a reviewing scientist for the *South African Journal of Plant and Soil*.

APPENDIX 2: DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I, **Johann Lanz**, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
 - other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
 - ~~am not independent, but another specialist that meets the general requirements set out in Regulation 13 have been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~
- in terms of the remainder of the general requirements for a specialist, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- have disclosed/will disclose, to the applicant, the Department and interested and affected parties, all material information that have or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of regulation 48 of the 2014 NEMA EIA Regulations.

Signature of the specialist:



Date: **30 May 2023**

Name of company: **Johann Lanz – soil scientist (sole proprietor)**

herewith certifies that

Johan Lanz

Registration Number: 400268/12

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Soil Science (Professional Natural Scientist)

Effective **15 August 2012**

Expires **31 March 2024**



Chairperson

Chief Executive Officer

