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**SITE SENSITIVITY VERIFICATION
AND
AGRICULTURAL COMPLIANCE STATEMENT
FOR
A SAND MINING PERMIT APPLICATION
ON FARM 155, RHENOSTERKOP
NEAR BEAUFORT WEST, WESTERN CAPE**

**Report by
Johann Lanz**

29 April 2025

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1 INTRODUCTION

Environmental authorisation is being sought for a sand mining permit application on farm 155, Rhenosterkop near Beaufort West, Western Cape (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 medium agricultural sensitivity of the site (see Section 8), the level of agricultural assessment required by NEMA's agricultural protocol is an Agricultural Compliance Statement.



Figure 1. Locality map of the proposed mine site and access road, northeast of Beaufort West.

The main purpose of an agricultural assessment for mining is to determine whether or not the proposed mining will cause a significant, long-term reduction in agricultural production potential. This is done in Section 9 of this report. To achieve this, it is first necessary for the assessment to determine the existing agricultural production potential of the land that will be impacted, and specifically whether it is viable crop production land or not (Section 7). In addition, the assessment must recommend mitigation and rehabilitation measures that will minimise any impact on agricultural production potential (Section 10).

2 PROJECT DESCRIPTION

The proposed mining area is approximately 5 ha in extent and will be developed over an undisturbed and inactive area of the farm. The applicant, intends to obtain material from the area for at least 2 years with a possible 3-year extension. The proposed sand mine will appoint ±6 employees, and due to the small scale of the operation no infrastructure, other than a chemical toilet, must be established within the mining footprint. The proposed mining area will be reached via an existing farm road that will be upgraded and maintained for the duration of the operational phase.

The sand extracted from the sand mine will be used for the construction industry in the surrounding area. The proposed sand mine will contribute to the upgrading / maintenance of road infrastructure, renewable energy projects and building contracts in and around the Beaufort West area.

The proposed operation is representative of the small-scale mining industry where the mineral (sand) is loaded with a Front-End-Loader (FEL) directly from the mining footprint area to the stockpile area, following standard practices in the small-scale mining sector. If necessary, the sand will be screened before being stockpiled. Once ready for distribution, a front-end loader will load the sand onto trucks for delivery to customers. No washing of sand will be required. All mining related activities will be contained within the limits of the authorized mining permit.

3 TERMS OF REFERENCE

The terms of reference for this study are 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 2 and 5**);
 2. confirm that the site is of “low” or “medium” sensitivity for agriculture (**Section 8**); and

3. indicate whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site **(Section 11)**.
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 5)**;
 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 **(Section 11)**;
 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 11)**;
 6. any conditions to which this statement is subjected **(Section 11)**;
 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 relevant)**;
 8. where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr **(Section 10 and 11)**; 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 an on-site investigation conducted on 4 April 2025. It was also informed by existing climate, soil, and agricultural potential data for the site (see references). The aim of the on-site assessment was to verify current cropping status, agricultural land use, and agricultural conditions across the site in order to assess and determine the cropping potential across the site. An assessment of long-term agricultural potential is in no way affected by the season in which the assessment is made, and therefore the date on which this assessment was done has no bearing on its results. The 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 assumptions, uncertainties or gaps in knowledge or data that affect the findings of this assessment.

6 APPLICABLE LEGISLATION AND PERMIT REQUIREMENTS

This section identifies all applicable agricultural legislation and permit requirements over and above what is required in terms of NEMA. In the case of a mining right or permit application, there are no additional approvals required in terms of agriculture. Rehabilitation after disturbance to agricultural land must meet the requirements stipulated in the Conservation of Agricultural Resources Act (Act 43 of 1983 - CARA).

7 BASELINE DESCRIPTION OF THE AGRO-ECOSYSTEM

The purpose of this section is firstly to present the baseline information that controls the agricultural production potential of the site and then, most importantly, to assess that potential. Agricultural production potential, and particularly cropping potential, is one of three factors that determines the significance of an agricultural impact, together with size of footprint and duration of impact. Cropping potential also directly determines the true agricultural sensitivity of the land and therefore informs the site sensitivity verification.

The climate is classified as arid (Beck et al, 2018) with a mean annual rainfall of 215mm and evaporation of 1390mm (Schulze, 2009). Climate is therefore 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 24 hectares per large stock unit (DAFF, 2018). 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.

A map of the development site is given in Figure 2 and photographs of site conditions are shown in Figures 3 to 5.



Figure 2. Satellite image map of the mine permit application area and proposed access road. The purple line illustrates the proposed access, and the green line illustrates an alternative route when the dam is at capacity.



Figure 3. *Typical site conditions showing proposed mining permit area*



Figure 4. Typical site conditions showing proposed access road area.



Figure 5. Typical site conditions showing proposed access road area.

8 SITE SENSITIVITY VERIFICATION

A specialist agricultural assessment is required to include a verification of the agricultural sensitivity of the development site as per the sensitivity categories used by the web-based environmental screening tool of the Department of Forestry, Fisheries and the Environment (DFFE). The screening tool's classification of sensitivity is merely an initial indication of what the sensitivity of a piece of land might be, as indicated by the only data that is available. What the screening tool attempts to indicate is whether the land is suitable for crop production (high and

very high sensitivity) or unsuitable for crop production (low and medium sensitivity). To do this, the screening tool uses three independent criteria, from three independent data sets, which are all indicators of suitability for crop production but are limited and were not designed for this purpose. The three criteria are:

1. Whether the land is classified as cropland or not on the field crop boundary data set (Crop Estimates Consortium, 2019). All classified cropland is, by definition, either high or very high sensitivity.
2. Its land capability rating as per the Department of Agriculture's updated and refined, country-wide land capability mapping (DAFF, 2017). Land capability is defined as the combination of soil, climate, and terrain suitability factors for supporting rain-fed agricultural production. The direct relationship between land capability rating, agricultural sensitivity, and rain-fed cropping suitability is summarised by this author in Table 1.
3. Whether the land is classified as a protected agricultural area (PAA) or not (DALRRD, 2020). All classified PAAs are, by definition, either high or very high sensitivity.

The limitations for determining cropping suitability based on these data are as follows:

1. The field crop boundary data set used by the screening tool is very outdated
2. Land capability mapping is fairly coarse, modelled data which is not accurate at site scale.
3. PAAs are demarcated broadly, not at a fine scale, and there is therefore much variation of cropping suitability within a PAA. All land within these demarcated areas is not necessarily of sufficient agricultural potential to be suitable for crop production, due to finer scale terrain, soil, and other constraints.

These three inputs operate independently, and the screening tool's agricultural sensitivity is simply determined by whichever of these gives the highest sensitivity rating. The agricultural sensitivity of the site, as classified by the screening tool, is shown in Figure 6.

Table 1: Relationship between land capability, agricultural sensitivity, and rain-fed cropping suitability.

Land capability value	Agricultural sensitivity	Rain-fed cropping suitability	
		Summer rainfall areas	Winter rainfall areas
1 - 5	Low	Unsuitable	Unsuitable
6	Medium		Suitable
7			
8 - 10	High		
11 - 15	Very High		

The true agricultural sensitivity of any land is equivalent to its actual suitability for crop production on the ground, rather than being determined by a parameter that serves as a proxy for crop suitability in a dataset, which is how the screening tool determines sensitivity. The land's suitability for cropping directly determines how important it is to conserve that land as agricultural production land. To determine suitability for crop production, and hence sensitivity, requires a site-specific assessment, as has been conducted in this assessment, rather than a reliance on data sets that have significant limitations.

Despite the detail in this section above, the determinants of agricultural sensitivity are actually very straightforward and may be summed up as follows. If land is suitable for viable crop production - that is if it has the capability to deliver an above break-even crop yield on a sustainable basis - then it is of high or very high agricultural sensitivity. If it has limitations that prevent it from being able to deliver an above break-even crop yield on a sustainable basis, then it is of medium or low agricultural sensitivity.

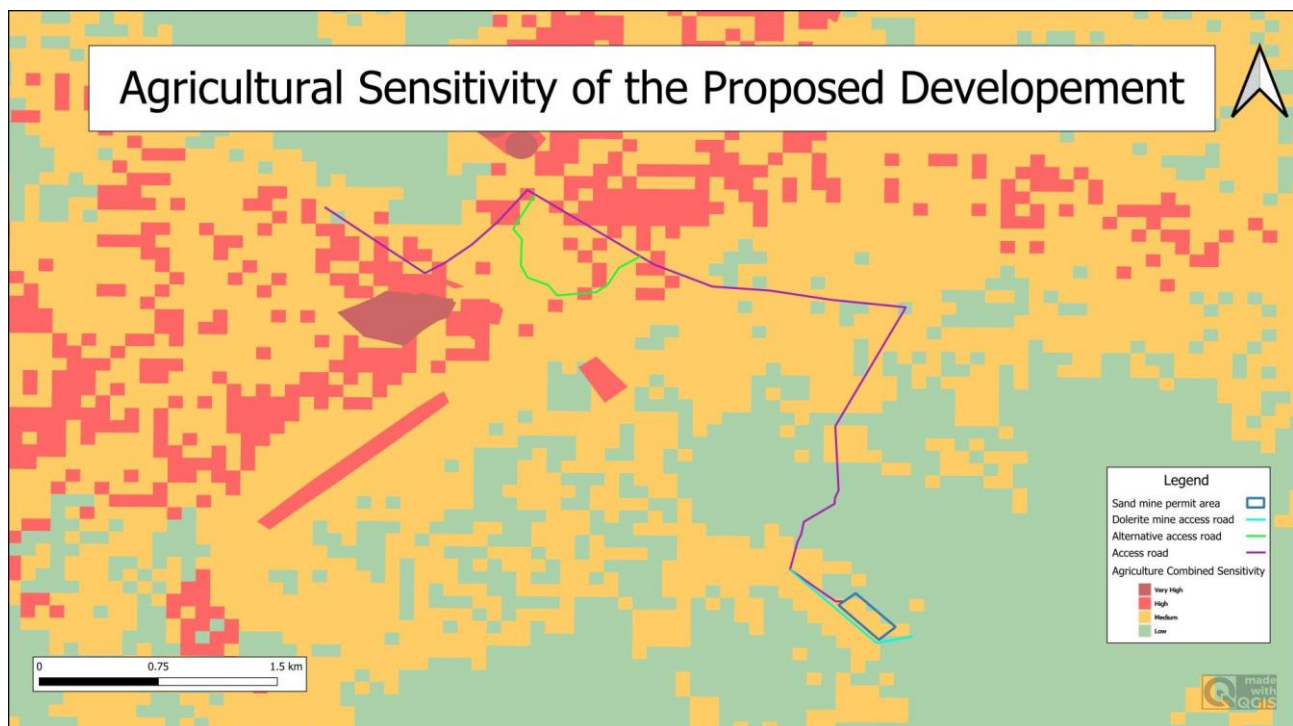


Figure 6. The proposed mining permit area and access road overlaid on agricultural sensitivity, as classified by the screening tool (green = low; yellow = medium; red = high; dark red = very high). The screening tool's high sensitivity is disputed by this assessment, which rates the entire assessed area as being of low agricultural sensitivity.

The screening tool classifies the sand mining area as medium agricultural sensitivity. As is shown in Section 7, the site is not at all suitable for viable crop production and its true sensitivity, as assessed on the ground, is therefore low. This assessment therefore disputes the medium sensitivity classification by the screening tool and verifies it as medium because of the site's

assessed cropping potential.

The access road crosses areas that are rated by the screening tool as high agricultural sensitivity. These areas have the same cropping potential as the sand mining area. The high sensitivity is therefore disputed, and the sensitivity of the entire road is verified as medium due to its cropping potential. Furthermore, much of the road is on an existing road. Note that there is no real difference between low and medium agricultural sensitivity and whether land is low or medium, has no implications for agricultural impact.

9 THE IMPACTS OF MINING ON AGRICULTURAL RESOURCES AND PRODUCTION

Mining can have both direct and indirect impacts on agricultural potential. Direct impacts are those that change the soil potential on site in terms of growing agricultural crops. Indirect impacts are those that do not directly affect plant growth, but that might impact the ability of farmers in the area to successfully run their agricultural enterprises.

9.1 Indirect impacts

The following potential indirect impacts are identified.

9.1.1 Alteration of the agricultural sense of place

Mining is an intrusive activity of an industrial nature that, during its operational phase, can alter the agricultural sense of place in a farming area. This is only relevant to an agricultural assessment if it affects surrounding agricultural revenue generation. If it does not, it is a social issue that is beyond the relevance and scope of an agricultural impact assessment. In this case, the alteration of agricultural sense of place is not considered likely to affect surrounding agricultural revenue generation.

9.1.2 Dust deposition on surrounding crops

Mining can result in dust on surrounding crops. There are not dust sensitive agricultural crops that could be impacted, but dust should still be mitigated by means of damping down surfaces when required. The significance of this impact is low.

9.2 Direct impacts

There is ultimately only ever a single direct agricultural impact of mining and that is a change to the future agricultural production potential of the land. This impact can occur by way of different mechanisms. There will be a temporary cessation of agricultural production for the duration of mining activity on the site, but the potential impact of major concern is a reduction in the long-term agricultural production potential of the site. In this case, this assessment finds that there is

unlikely to be a significant long-term reduction in the agricultural production potential of the site provided that effective rehabilitation is implemented. This is because the site has low pre-mining cropping potential anyway and retention of sufficient topsoil will retain the existing agricultural potential of the site.

Mining with well managed and effectively implemented rehabilitation will therefore have an impact of low significance on agricultural resources. However, without effective mitigation, there may be some long-term reduction in soil and production potential and the impact on agricultural resources will therefore be higher.

10 RECOMMENDED MITIGATION AND REHABILITATION PLAN

A very important factor affecting the success of rehabilitation, and consequently the significance of all direct impacts, is the level of care that is taken to rehabilitate effectively. This is dependent on the level of environmental management of all mining activities that can impact on rehabilitation, both during the mining process and during the rehabilitation phase.

The following is the sequence of recommended rehabilitation steps:

1. The upper 30 cm of soil must first be stripped and stockpiled before mining.
2. Topsoil is a valuable and essential resource for rehabilitation, and it should therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
3. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high.
4. Mining should be done to a maximum depth of 3 metres.
5. After mining, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography.
6. The stockpiled topsoil must then be evenly spread across the entire mining area. The depth should be monitored during spreading to ensure that coverage is adequate and even. A slope must be maintained so that ponding of water does not occur on the surface.
7. The rehabilitated area must be monitored for erosion, and appropriately stabilised if any erosion occurs.

11 CONCLUSIONS

The conclusion of this assessment is that the proposed mining will not significantly reduce the future agricultural production potential of the site, which is already low, if effective rehabilitation is implemented. The proposed mine is therefore acceptable, and, from an agricultural impact point of view, it is recommended that it be approved.

The agricultural protocol requires confirmation that all reasonable measures have been taken through micro-siting to minimize fragmentation and disturbance of agricultural activities. The mining area will not cause unacceptable fragmentation and disturbance of agricultural activities.

The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is subject to the following conditions:

Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are:

1. that the topography and surface has been sufficiently smoothed without steep excavation edges;
2. that topsoil has been spread on the surface;
3. that there is a potential rooting depth of at least 30 cm of soil that is suitable for root growth above any existing depth limitation, across the entire mining area;
7. that there is no visible erosion across the area, or down-slope of it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion;
8. that soil conditions are suitable for natural revegetation to take place.
9. that there is no invasive alien vegetation within the mining area.

12 REFERENCES

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

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

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

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

Schulze, R.E. 2009. South African Atlas of Agrohydrology and Climatology, available on Cape Farm Mapper. Available at: <https://gis.elsenburg.com/apps/cfm/>

Soil Classification Working Group. 2018. Soil Classification: A Natural and Anthropogenic System for South Africa. ARC-Institute for Soil, Climate and Water, Pretoria.

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 23 years of running my soil and agricultural consulting business, I have completed more than 1000 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; SRK; Environamics; Royal Haskoning DHV; ABO; Enertrag; WKN-Windcurrent; JG Afrika; Mainstream; Redcap; G7; Mulilo; and Tiptrans. 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*.



forestry, fisheries & the environment

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APPENDIX 2: SPECIALIST DECLARATION FORM AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE: A SAND MINING PERMIT APPLICATION ON FARM 155, RHENOSTERKOP NEAR BEAUFORT WEST, WESTERN CAPE

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.dffe.gov.za/documents/forms>.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with 'the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020', where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	Agricultural Assessment
Specialist Company Name	SoilZA – sole proprietor
Specialist Name	Johann Lanz
Specialist Identity Number	6607045174089
Specialist Qualifications:	M.Sc. (Environmental Geochemistry)
Professional affiliation/registration:	Registered Professional Natural Scientist (Pr.Sci.Nat.) Reg. no. 400268/12 Member of the Soil Science Society of South Africa
Physical address:	1a Wolfe Street, Wynberg, Cape Town, 7800
Postal address:	1a Wolfe Street, Wynberg, Cape Town, 7800
Telephone	Not applicable
Cell phone	+27 82 927 9018
E-mail	johann@soilza.co.za

2. DECLARATION BY THE SPECIALIST

I, **Johann Lanz** declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. “the Protocols”) and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
 - any decision to be taken with respect to the application by the competent authority; and;
 - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.



Signature of the Specialist

SoilZA (sole proprietor)

Name of Company:

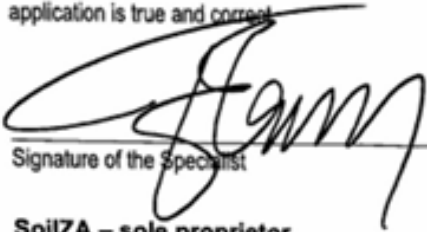
7 April 2025

Date

SPECIALIST DECLARATION FORM – AUGUST 2023

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, **Johann Lanz**, swear under oath that all the information submitted or to be submitted for the purposes of this application is true and correct.



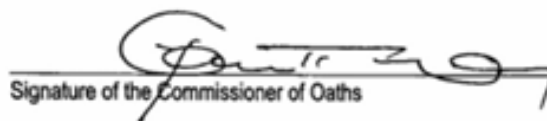
Signature of the Specialist

SoilZA – sole proprietor

Name of Company

7 April 2025

Date

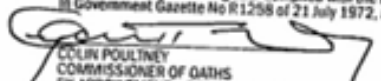


Signature of the Commissioner of Oaths

07/04/2025

Date

I certify that the DEPONENT has acknowledged that he/she knows and understands the content of this affidavit; that he/she does not have any objection to taking the oath, and that he/she considers it to be binding on his/her conscience, and which was sworn to and signed before me at **ST-BARTHA** on the **07** day of **APRIL 2025** and that the administering oath complied with the regulations contained in Government Gazette No R1258 of 21 July 1972, as amended.


COLIN POULTNEY
COMMISSIONER OF OATHS
BY APPOINTMENT – REPUBLIC OF SA
POSTNET CONSTANTIA, SHOP 6, OLD VILLAGE S/C,
MAIN ROAD, CONSTANTIA, 7806
TEL: 021 794 0447



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 2026



Chairperson

Chief Executive Officer

