
**Agricultural specialist input for a
Part 1 Environmental Authorisation amendment
to extend the validity of the Environmental Authorisation
for the
proposed 75MW Droogfontein Photovoltaic (PV) Solar Energy Facility (SEF)
located near Kimberly in the Northern Cape**

1 Project description

South Africa Mainstream Renewable Power Droogfontein PV 3 (Pty) Ltd (hereafter referred to as “Mainstream”) was issued with an Environmental Authorisation (EA) for the proposed 75MW Droogfontein Photovoltaic (PV) Solar Energy Facility (SEF), located in Kimberly within the Sol Plaatjie Local Municipality, Frances Baard District Municipality in the Northern Cape Province of South Africa on September 2012 (DFFE Reference No.: 12/12/20/2024/1/1).

Subsequent to the issuing of the original EA in September 2012, the following amendments have been undertaken and granted for the authorised SEF:

- The EA was amended on 19 September 2013 to change the details of the Environmental Authorisation holder (DFFE Reference No.: 12/12/20/2024/1/1/AM1).
- The EA was amended on 19 of June 2015 to extend the validity period of the EA and to change the contact details of the EA holder (DFFE Reference No.: 12/12/20/2024/1/1/AM2).
- The EA was amended on 11 August 2017 in order to extend the validity of the EA (DFFE Reference No.: 12/12/20/2024/1/1AM3).
- The EA was amended on 02 September 2020 in order to extend the validity of the EA (DFFE Reference No.: 12/12/20/2024/1/1AM4).

The Droogfontein Photovoltaic (PV) Solar Energy Facility is to be constructed within the project site which comprises the following farm portion:

- Portion 1 of the farm Droogfontein No. 62

The following infrastructure have been authorised by the DFFE:

- Photovoltaic (PV) panels array with a maximum 320 000 panels
- Concrete or screw pile foundations used to support the panel arrays
- The panel arrays (between 5m and 10m high) footprint of approximately 15m x 4m in area
- A single storey building with warehouse / workshop space & access (eg. 8m high, 20m long, 20m wide)
- The distribution substation of approximately 90m x 120m in size and inverters between 75 and 93
- An access road with a gravel surface from the public road onto the site
- A 5m high permanent solar resource measuring station which will measure 100m² to measure incoming solar radiation levels on site.
- A lay down area of maximum of 10000m² adjacent to the site or access route and a contractors site offices which will require a maximum of 5000m²

2 Proposed amendment

The developer is now making a Part 1 amendment application to extend the validity of the Environmental Authorisation for three years.

3 Terms of reference

The terms of reference for this specialist input are to provide:

- A detailed motivation as to why the Department should extend the commencement period of the authorised development, including the advantages and disadvantages associated with the approval or refusal to the request for extension.
- The status (baseline) of the environment (social and biophysical) that was assessed during the initial assessment (by the relative specialist, if applicable);
- The current status of the assessed environment (social and biophysical) (by the relative specialist, if applicable).
- A review of all specialist studies undertaken, and a detailed assessment, including a site verification report providing an indication of the status of the receiving environment (by the relative specialist, if applicable);
- The terms of reference for the specialist reports and declaration of interest of each specialist must be provided.
- The report mentioned above, must indicate if the impact rating as provided in the initial assessment remains valid; if the mitigation measures provided in the initial assessment are still applicable; or if there are any new mitigation measures which need to be included into the EA, should the request to extend the commencement period be granted by the

Department.

- An indication if there are any new assessments/guidelines which are now relevant to the authorised development which were not undertaken as part of the initial assessment, must be taken into consideration and addressed in the report.
- A description and an assessment of any changes to the environment (social and biophysical) that has occurred since the initial EA was issued;
- A description and an assessment of the surrounding environment, in relation to new developments or changes in land use which might impact on the authorised project, the assessment must consider the following:
 - similar developments within a 30km radius.
 - Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e., hectares of cumulatively transformed land.
 - Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.
 - The cumulative impacts significance rating must also inform the need and desirability of the proposed development.
 - A cumulative impact environmental statement on whether the proposed development must proceed.

The rest of this letter provides the above information under separate headings.

4 Motivation

A motivation as to why the Department should extend the commencement period of the authorised development has nothing to do with agricultural impact and is therefore not addressed by this specialist, but addressed elsewhere in the application.

5 Agricultural baseline status as originally assessed

An agricultural impact assessment was not included in the original environmental impact assessment.

6 Current agricultural baseline status assessment and site sensitivity verification

The agricultural baseline status has not changed since the Environmental Authorisation was issued.

The verification of site sensitivity and the current agricultural baseline status relevant to an assessment of agricultural impact is described below.

A map of the proposed development area overlaid on the screening tool sensitivity is given in Figure 1.

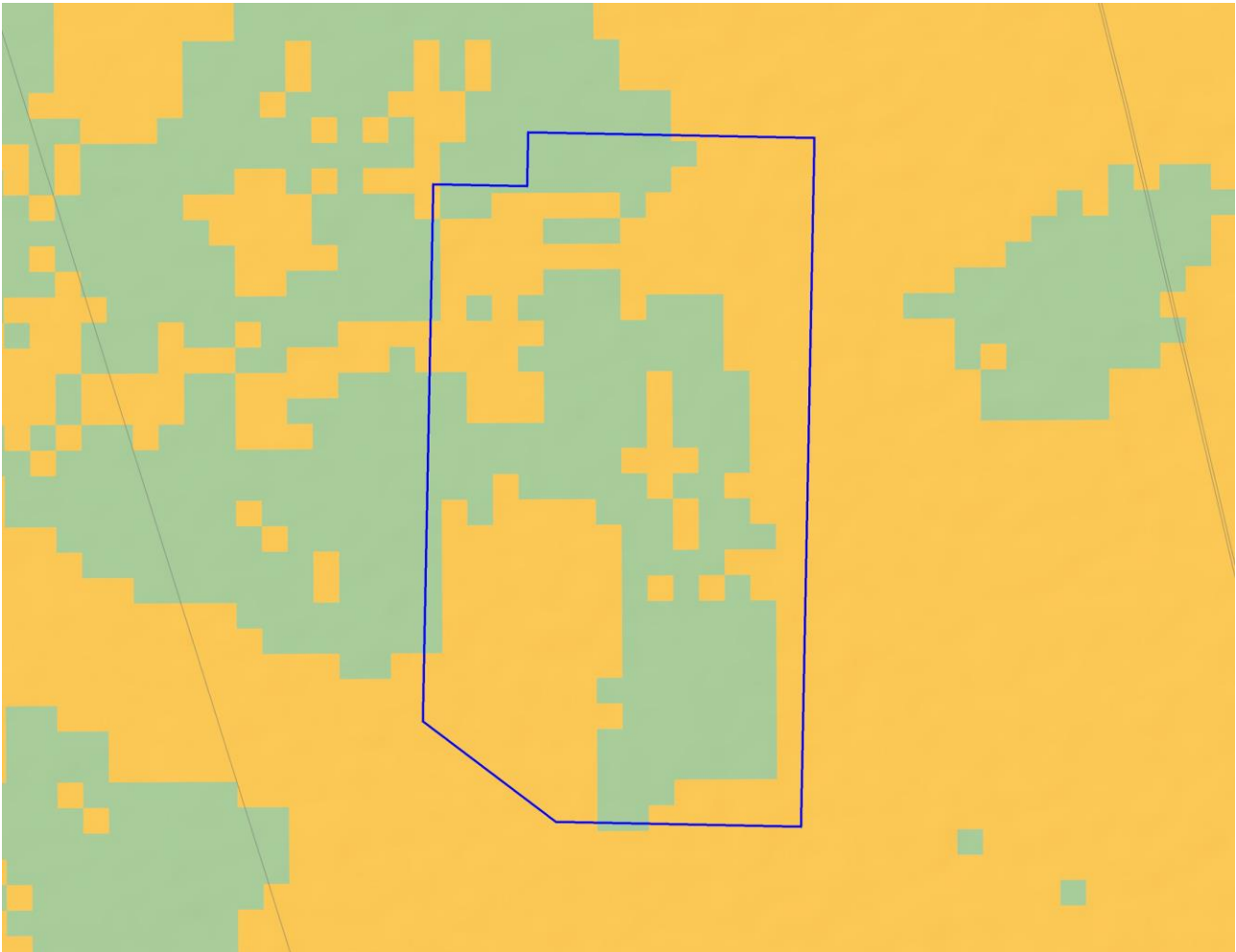


Figure 1. The proposed development area (blue outline) overlaid on agricultural sensitivity, as given by the screening tool (green = low; yellow = medium; red = high; dark red = very high)

None of the land is classified as cropland and agricultural sensitivity is therefore purely a function of land capability. The classified land capability of the site varies from 4 to 7. The small scale differences in the modelled land capability across the site are not very accurate or significant at this scale and are more a function of how the data is generated by modelling, than actual meaningful differences in agricultural potential on the ground. Values of 1 to 5 translate to a low agricultural sensitivity, and values of 6 to 8 translate to a medium agricultural sensitivity, although there is little real difference between low and medium agricultural sensitivity on the ground.

The agricultural sensitivity of the site, as identified by the screening tool, is confirmed by this assessment because the climate, terrain and soils correspond to the classified categories of land capability. Climate and soil limitations mean that the site is not suitable for crop production but is only suitable as grazing land.

The arid climate (low rainfall of approximately 362 mm per annum and high evaporation of approximately 1,610 mm per annum) (Schulze, 2009) is the limiting factor that controls production potential and all other agricultural potential parameters therefore become irrelevant under the dominant limitation of aridity. Moisture availability is very limiting to any kind of agricultural production.

The site is on flat terrain with a slope gradient of less than 2%. The geology is wind-blown sand of Tertiary to Recent age, with dolerite outcrops. Only a single land type, Ae15, extends across the site. Soils of this land type are dominated by deep, sandy soils of the Hutton soil form, but shallower soils limited by hardpan carbonate and by rock also occur. The agricultural potential of the site is limited by the aridity and the limited water holding capacity of the soils. As a result, agricultural land use is limited to grazing. The land has a long term grazing capacity of 12 hectares per large stock unit.

7 Impact assessment and recommended mitigation

7.1 Impact assessment

There is ultimately only ever a single agricultural impact of a development and that is a change to the future agricultural production potential of the land. In this case, a loss of future agricultural production potential is due to the occupation of the land by the infrastructure of the development. The extent and significance of the loss is a direct function of two things, firstly the amount of land that will be lost and secondly, the production potential of the land that will be lost. If land is not of sufficient land capability to support viable and sustainable crop production, as it is in this case, then it is considered to be below the threshold for being prioritised to be conserved as agricultural production land. Its loss as agricultural production land is therefore assessed as being of low significance.

7.2 Mitigation measures

Mitigation measures to prevent soil degradation are all inherent in the project design and / or are standard, best-practice for construction sites.

1. A system of storm water management, which will prevent erosion, will be an inherent part

of the engineering on site. Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.

2. Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface. Topsoil should only be stripped in areas that are excavated. Across the majority of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire cut surface. It will be advantageous to have topsoil and vegetation cover below the panels during the operational phase to control dust and erosion.

8 New assessments/guidelines

The protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more has come into effect since the original assessment was done. For compliance to the protocol, the following aspects are covered here.

8.1 Micro-siting to minimize fragmentation and disturbance of agricultural activities

The agricultural protocol requires confirmation that all reasonable measures have been taken through micro-siting to minimize fragmentation and disturbance of agricultural activities. The agricultural uniformity and low agricultural potential of the environment, means that the exact positions of all infrastructure will make no material difference to agricultural impacts and disturbance.

8.2 The development footprint

The agricultural protocol stipulates allowable development limits for renewable energy. Allowable development limits refer to the area of a particular agricultural sensitivity category that can be directly impacted (i.e. taken up by the physical footprint) by a renewable energy development. The agricultural footprint is defined in the protocol as the area that is directly occupied by all infrastructures, including roads, hard standing areas, buildings etc., that are associated with the renewable energy facility during its operational phase, and that result in the exclusion of that land from potential cultivation or grazing. It excludes all areas that were already occupied by roads and

other infrastructure prior to the establishment of the energy facility but includes the surface area required for expanding existing infrastructure (e.g. widening existing roads). It therefore represents the total land that is actually excluded from agricultural use as a result of the renewable energy facility.

For a solar energy facility, the footprint is considered to be the total area inside the security fence of the facility.

The allowable development limit on land of less than high agricultural sensitivity, as this site has been verified to be, is 2.5 ha per MW. This would allow a 75 MW facility to occupy 187.5 hectares. This facility occupies 173 hectares. It is therefore confirmed that the development footprint is in line with the allowable development limits contained in the agricultural protocol.

9 Cumulative impact

All renewable energy developments within 30 km of the development being assessed are taken into account in order to assess the cumulative impact. These are listed in Table 1 below.

All of these projects have the same agricultural impacts in an almost identical agricultural environment, and therefore the same mitigation measures apply to all.

In quantifying the cumulative impact, the area of land taken out of grazing as a result of all the developments (total generation capacity of 673 MW) will amount to a total of approximately 1,683 hectares. This is calculated using the industry standards of 2.5 and 0.3 hectares per megawatt for solar and wind energy generation respectively, as per the Department of Environmental Affairs (DEA) Phase 1 Wind and Solar Strategic Environmental Assessment (SEA) (2015). As a proportion of the total area within a 30km radius (approximately 282,700 ha), this amounts to 0.60% of the surface area. That is well within an acceptable limit in terms of loss of low potential agricultural land which is only suitable for grazing, and of which there is no scarcity in the country. This is particularly so when considered within the context of the following point.

In order for South Africa to develop the renewable energy generation that it urgently needs, agriculturally zoned land will need to be used for renewable energy generation. It is far more preferable to incur a cumulative loss of lower potential agricultural land in a region which has been designated as a REDZ, than to lose agricultural land that has a higher potential, and that is much scarcer, to renewable energy development elsewhere in the country.

Table 1. Projects taken into account for cumulative impact.

DFFE Reference	Technology	Status	Capacity (MW)
12/12/20/2024	Solar	Approved	200
12/12/20/2024/1/1	Solar	Approved	75
12/12/20/2024/2	Solar	Approved	48
12/12/20/2148	Solar	Approved	5
12/12/20/2251/1	Solar	Approved	75
12/12/20/2251/2	Solar	Approved	100
14/12/16/3/3/1/505	Solar	Approved	20
14/12/16/3/3/2/257/2	Solar	In process	75
14/12/16/3/3/2/307	Solar	Approved	75
Grand Total			673

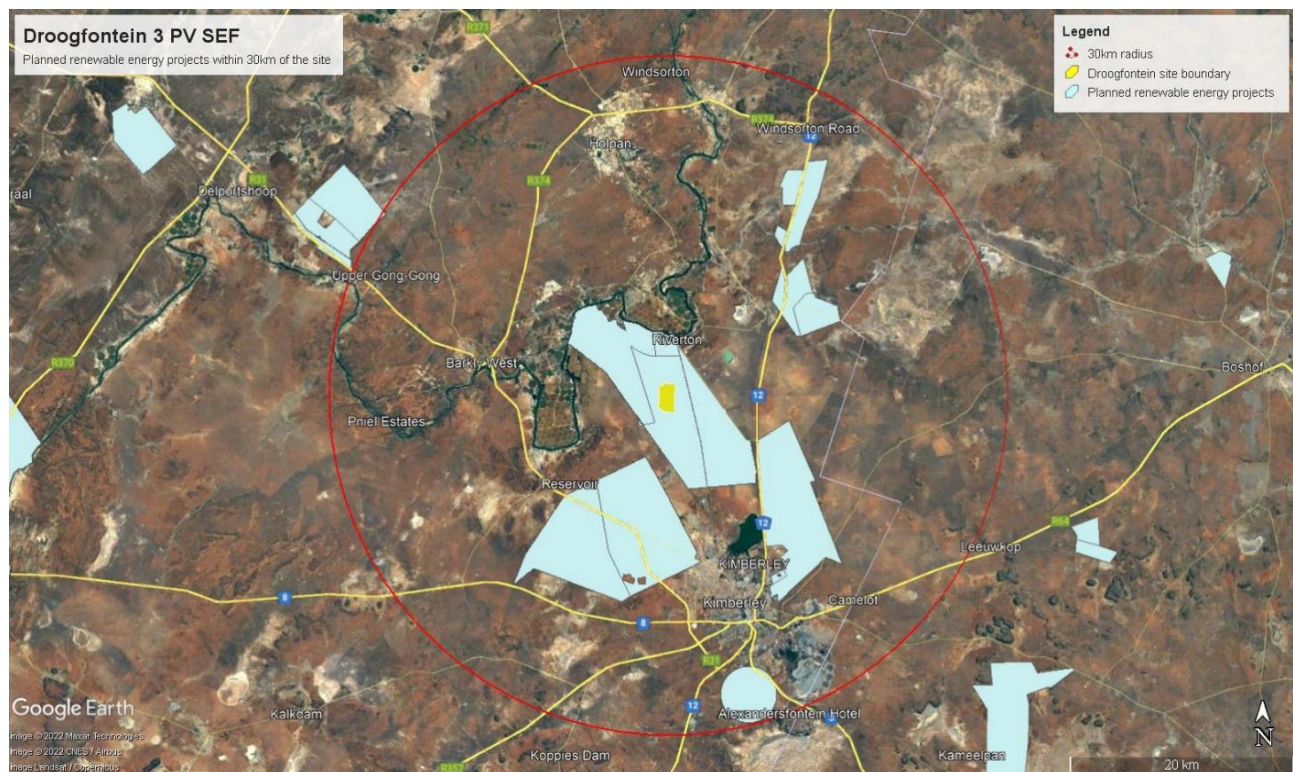


Figure 1. Map showing all renewable energy applications taken into account for cumulative impact.

Due to all of the considerations discussed above, the cumulative impact of loss of future agricultural production potential will not have an unacceptable negative impact on the agricultural production capability of the area. The proposed development is therefore acceptable in terms of cumulative impact, and it is therefore recommended that it be approved.

A handwritten signature in black ink, appearing to read 'J. Lanz', with a stylized, sweeping horizontal stroke above the name.

Johann Lanz (Pr. Sci. Nat.)

17 October 2022

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*.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Appendix 2: Details of the specialist, declaration of interest and undertaking under oath

File Reference Number:

NEAS Reference Number:

Date Received:

(For official use only)

DEA/EIA/

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)

PROJECT TITLE

Proposed 75MW Droogfontein Photovoltaic (PV) Solar Energy Facility (SEF) located near Kimberly in the Northern Cape

Kindly note the following:

- This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
- This form is current as of 01 September 2018. 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.environment.gov.za/documents/forms>.
- A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
- All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
- All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address: Department of Environmental Affairs, Attention: Chief Director: Integrated Environmental Authorisations, Private Bag X447, Pretoria, 0001

Physical address: Department of Environmental Affairs, Attention: Chief Director: Integrated Environmental Authorisations, Environment House, 473 Steve Biko Road, Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

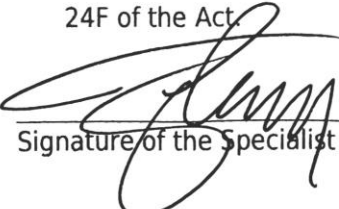
SPECIALIST INFORMATION

Specialist Company Name:	Johann Lanz – Soil Scientist		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition
Specialist name:	Johann Lanz		
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		
Postal code:	7800	Cell:	082 927 9018
Telephone:	082 927 9018	Fax:	Who still uses a fax? I don't
E-mail:	johann@johannlanz.co.za		

2. DECLARATION BY THE SPECIALIST

I, **Johann Lanz**, declare that -

- I act as the independent specialist in this application;
- 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 Act.


Signature of the Specialist

Johann Lanz – Soil Scientist (sole proprietor)

Name of Company:

5 September 2022
Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

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


Signature of the Specialist

Johann Lanz – Soil Scientist (sole proprietor)

Name of Company

5 September 2022
Date


Signature of the Commissioner of Oaths

2022-09-05
Date

