info@soilza.co.za
www.soilza.co.za
1A Wolfe St Wynberg
Cape Town, 7800
South Africa

SITE SENSITIVITY VERIFICATION
AND
AGRICULTURAL AGRO-ECOSYSTEM SPECIALIST ASSESSMENT
FOR A MIXED-USE DEVELOPEMNT ON
ERF RE/21 AND 266
IN RIVERSDALE, WESTERN CAPE

Report by
Johann Lanz

14 May 2025

Table of Contents

EXECUTIVE SUMMARY

Although there are soil constraints (limited soil depth, limited drainage, high stone content, low water and nutrient holding capacity) on the site, the land is still suitable and has been used in the past for the production of small grains. It is not high potential cropland for the area, but it can nevertheless be viably cropped. This assessment disputes the very high agricultural sensitivity classification of the site by the screening tool and verifies the entire site as being of high agricultural sensitivity because of its assessed cropping potential.

The single, direct agricultural impact of this development is the total loss of agricultural production potential due to the permanent exclusion of agriculture from the development site. The entire development footprint is considered to be above the threshold of being worthy for conservation as agricultural production land because its agricultural potential makes it suitable as viable cropland. The proposed development will result in the permanent loss of this land to agriculture, which will result in a loss of future agricultural production potential in terms of national food security. The overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of medium significance. The factors that lessen the significance of the agricultural impact, making it medium and not higher, are that the soils are not rated as high potential soils, and that the development will not lead to fragmentation of agricultural land.

The acceptability and ultimate approval of the development cannot be based purely on its agricultural impact but requires the weighing of many diverse factors, which include satisfying the demand for urban expansion and that the site is logically located to satisfy that demand. Such a weighing is far beyond the scope and expertise of an agricultural impact assessment, which cannot therefore conclude on the overall acceptability of the development and make a recommendation in that regard. It can only conclude that if the development goes ahead it will result in the loss of 56 hectares of viable, small grain cropland.

1 INTRODUCTION

Environmental and change of land use authorisation is being sought for a mixed-use development project in Riversdale (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, because of the verified high agricultural sensitivity of the site (see Section 8), the level of agricultural assessment required by NEMA's agricultural protocol is an Agricultural Agro-Ecosystem Specialist Assessment.

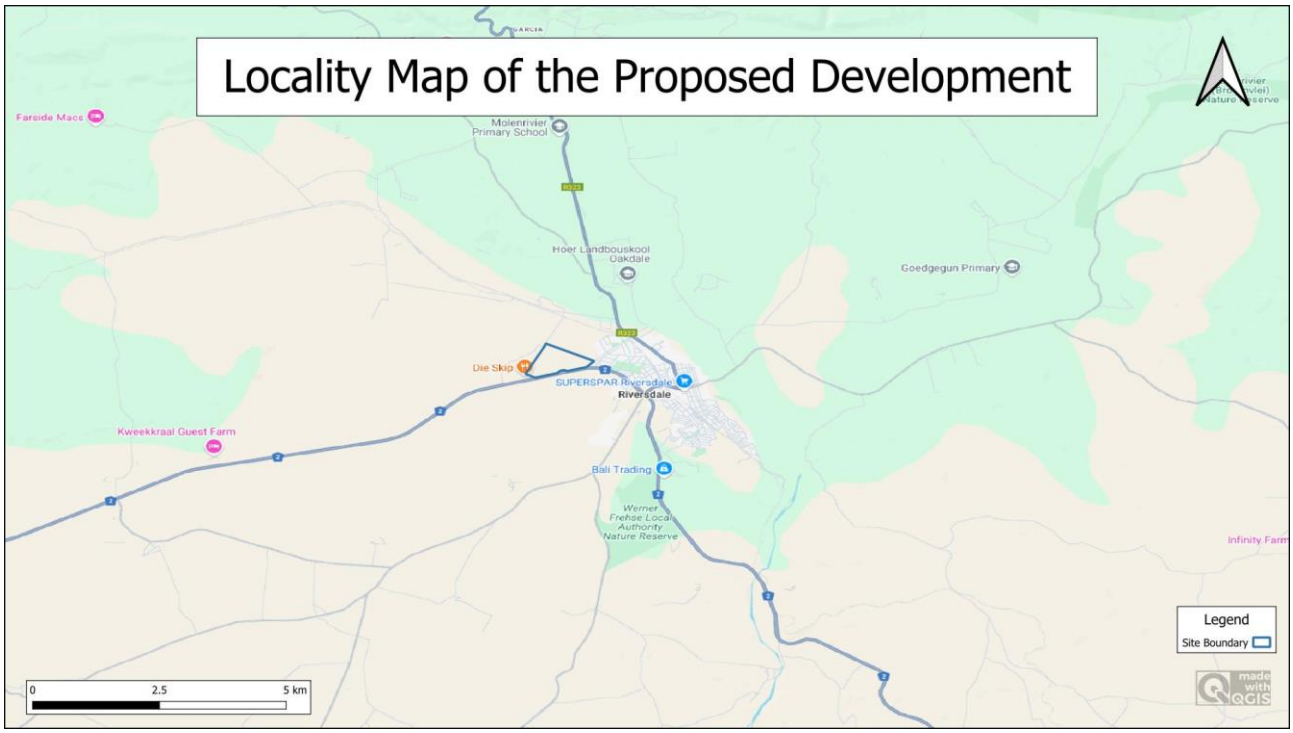

Figure 1. Locality map of the development (blue outline) west of Riversdale

The purpose of an agricultural assessment is to answer the question:

> Will the proposed development cause a significant reduction in future agricultural production potential, and most importantly, will it result in a loss of arable land?

Section 9 of this report unpacks this question, particularly with respect to what constitutes a significant reduction. To answer the above question, it is necessary to determine the existing agricultural production potential of the land that will be impacted, and specifically whether it is viable arable land or not. This is done in Section 7 of this report. Sections 7 and 9 of this report directly address the above question and therefore contain the essence and most important part of the agricultural impact assessment.

2 PROJECT DESCRIPTION

The layout plan of the mixed-use development is shown in **Figure 2**. The project is likely to cause the permanent exclusion of any potential, future, commercial, agricultural production from the entire site. Although part of the development includes an agricultural zone, these are 1 hectare stands that are suited to and likely to be used as lifestyle residential properties rather than for agricultural production. Once agriculture is excluded from the site, there can be no further on-site agricultural impact. There is also no off-site agricultural impact. The design and layout of the development within the site is therefore of no relevance to agricultural impacts and it is unnecessary to consider it any further in this assessment. All that is of relevance is the loss of the total site (56 hectares) to potential future agricultural production.

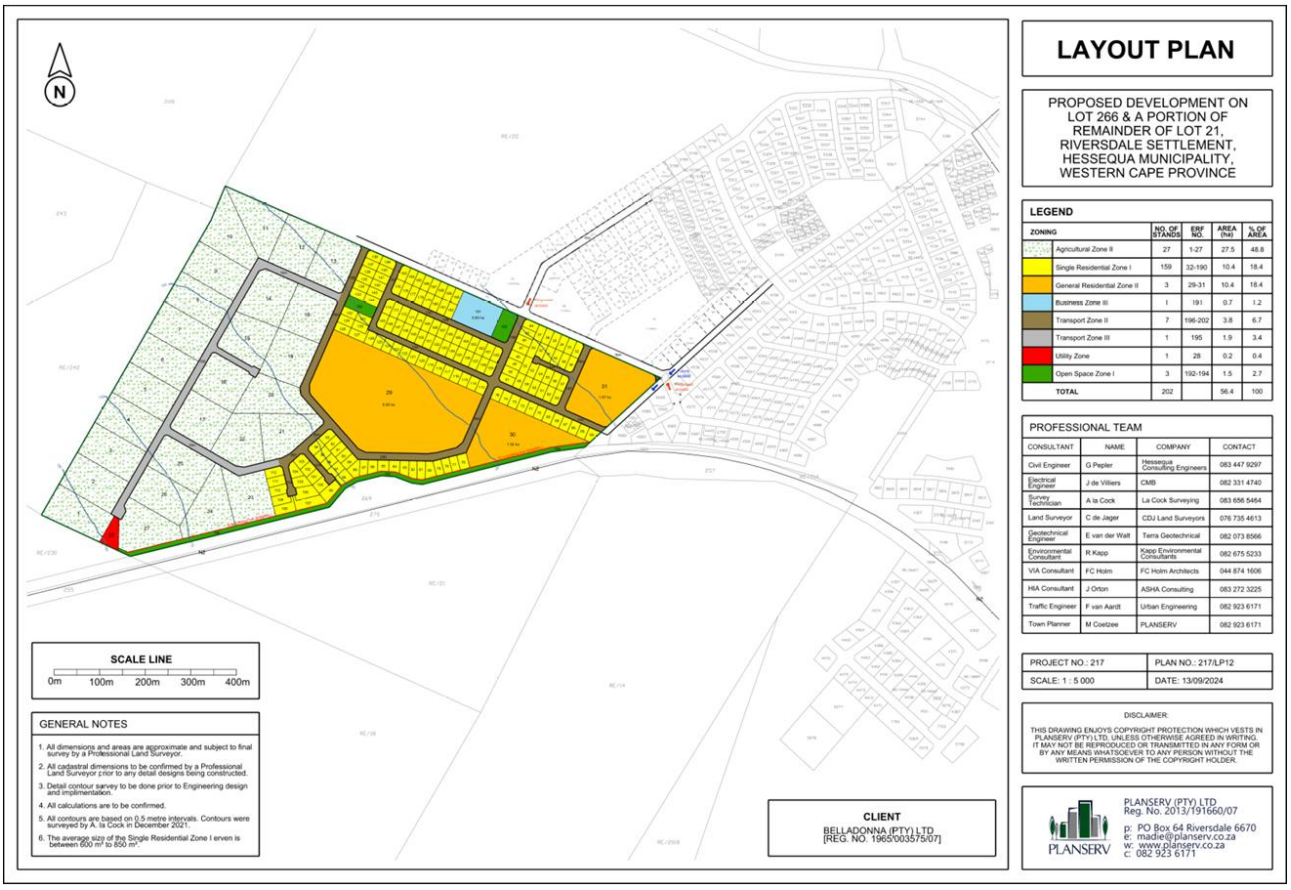

Figure 2. *Layout plan of development.*

Note that the development also includes the following off-site infrastructure: water pipeline, electrical line, external sewer, and external stormwater.

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 Agro-Ecosystem Specialist Assessment, as copied exactly from the protocol, are listed in the table below, and included, is the place in this report where each is addressed.

Table 1. Reporting requirements as per NEMA's Agricultural Protocol.

Number	Requirement	Where it is addressed
2.	Agricultural Agro-Ecosystem Specialist Assessment	
2.1	The assessment must be undertaken by a soil scientist or agricultural specialist registered with the South African Council for Natural Scientific Professionals (SACNASP).	Appendix 3
2.2	The assessment must be undertaken on the preferred site and within the proposed development footprint.	Figure 2
2.3	The assessment must be undertaken based on a site inspection as well as an investigation of the current production figures, where the land is under cultivation or has been within the past 5 years, and must identify:	Section 4
2.3.1	the extent of the impact of the proposed development on the agricultural resources; and	Section 9.1
2.3.2	whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site, and in the event where it does, whether such a negative impact is outweighed by the positive impact of the proposed development on agricultural resources.	Section 12
2.4	The status quo of the site must be described, including the following aspects which must be considered as a minimum in the baseline description of the agro-ecosystem:	Section 7
2.4.1	the soil form/s, soil depth (effective and total soil depth), top and sub-soil clay percentage, terrain unit and slope;	Section 7 & Appendix 4
2.4.2	where applicable, the vegetation composition, available water sources as well as agro-climatic information;	Section 7
2.4.3	the current productivity of the land based on production figures for all agricultural activities undertaken on the land for the past 5 years, expressed as an annual figure and broken down into production units;	Section 7
2.4.4	the current employment figures (both permanent and casual) for the	Section 7

	land for the past 3 years, expressed as an annual figure; and	
2.4.5	existing impacts on the site, located on a map (e.g. erosion, alien vegetation, non-agricultural infrastructure, waste, etc.).	Section 7
2.5	Assessment of impacts, including the following aspects which must be considered as a minimum in the predicted impact of the proposed development on the agro-ecosystem:	Section 9.1
2.5.1	change in productivity for all agricultural activities based on the figures of the past 5 years, expressed as an annual figure and broken down into production units;	Section 9.1
2.5.2	change in employment figures (both permanent and casual) for the past 5 years expressed as an annual figure; and	Section 9.1
2.5.3	any alternative development footprints within the preferred site which would be of “medium” or “low” sensitivity for agricultural resources as identified by the screening tool and verified through the site sensitivity verification.	There are no such footprints
2.6	The findings of the Agricultural Agro-Ecosystem Specialist Assessment must be written up in an Agricultural Agro-Ecosystem Specialist Report.	
2.7	This report must contain the findings of the agro-ecosystem specialist assessment and the following information, as a minimum:	
2.7.1	details and relevant experience as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the assessment including a curriculum vitae;	Appendix 1
2.7.2	a signed statement of independence by the specialist;	Appendix 2
2.7.3	the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 4
2.7.4	a description of the methodology used to undertake the on-site assessment inclusive of the equipment and models used, as relevant;	Section 4
2.7.5	a map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool;	Figure 6
2.7.6	an indication of the potential losses in production and employment from the change of the agricultural use of the land as a result of the proposed development;	Section 9.1
2.7.7	an indication of possible long term benefits that will be generated by the project in relation to the benefits of the agricultural activities on the affected land;	Section 11.3
2.7.8	additional environmental impacts expected from the proposed development based on the current status quo of the land including	Section 11.4

	erosion, alien vegetation, waste, etc.;	
2.7.9	information on the current agricultural activities being undertaken on adjacent land parcels;	Section 7
2.7.10	an identification of any areas to be avoided, including any buffers;	Section 8
2.7.11	a motivation must be provided if there were development footprints identified as per paragraph 2.5.3 above that were identified as having a "medium" or "low" agriculture sensitivity and that were not considered appropriate;	Not applicable
2.7.12	confirmation from the soil scientist or agricultural specialist that all reasonable measures have been considered in the micro-siting of the proposed development to minimise fragmentation and disturbance of agricultural activities;	Section 11.1
2.7.13	a substantiated statement from the soil scientist or agricultural specialist with regards to agricultural resources on the acceptability or not of the proposed development and a recommendation on the approval or not of the proposed development;	Section 12
2.7.14	any conditions to which this statement is subjected;	No conditions
2.7.15	where identified, proposed impact management outcomes or any monitoring requirements for inclusion in the Environmental Management Programme (EMPr); and	None required
2.7.16	a description of the assumptions made and any uncertainties or gaps in knowledge or data.	Section 5
2.8	The findings of the Agricultural Agro-Ecosystem Specialist Assessment must be incorporated into the Basic Assessment Report or Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which are to be contained in the EMPr.	

4 METHODOLOGY OF STUDY

The assessment was based on an on-site investigation of the soils and agricultural conditions conducted on 2 April 2025. It was also informed by existing climate, soil, and agricultural potential data for the site, including a previous investigation of test pits across the site (see references). The aim of the on-site assessment was to assess and determine the cropping potential across the site. Soils were assessed based on the investigation of test pits in combination with existing soil exposures and indications of the surface conditions and topography. Soils were classified according to the South African soil classification system (Soil Classification Working Group, 2018).

An assessment of soils and 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 specific assumptions, uncertainties or gaps in knowledge or data that affect the findings of this study.

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.

The project is likely to require agricultural approval as part of the required approval in terms of applicable municipal land use legislation, as well as in terms of the Subdivision of Agricultural Land Act (Act 70 of 1970 - SALA), if the property is currently zoned for agriculture.

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 four factors that determines the significance of an agricultural impact, together with magnitude of impact, size of footprint, and duration of impact. (see Section 9). Cropping potential also directly determines the true agricultural sensitivity of the land and therefore informs the site sensitivity verification.

All the important parameters that control the agricultural production potential of the site are given in Table 1. Soil data are given in Appendix 4. A map of the development site is given in Figure 2 and photographs of site conditions are shown in Figures 3 to 5.

It is not necessary to consider climate and terrain in an assessment of the cropping potential of the site because the suitability of both for grain production is indisputable given that the area has been and is currently used extensively for successful grain production. This section therefore focuses on the on-site soil suitability. A satellite image map of the development site is given in Figure 3 and photographs of soil profiles are shown in Figures 4 to 5. Parameters that control the agricultural production potential of the site are given in Table 2.

Table 2. Parameters relevant to the agricultural production potential of the site.

	Parameter	Value
Soil	Geology (DAFF, 2002)	Conglomerate, sandstone and mudstone of the Uitenhage Group as well as shale of the Bokkeveld Group, occasionally overlain by Tertiary silcrete.
	Land type (DAFF, 2002)	Dc32 and Fb31
	Description of the soils	Shallow to deep, medium textured, imperfectly drained soils with a high stone content, on underlying, dense clay.
	Dominant soil forms	Klapmuts, Sepane
	Soil capability classification (out of 9) (DAFF, 2017)	3 (low to 5 (moderate)
	Soil limitations	High stone content, drainage limitations, shallow depth in places
Land use	Agricultural land use in the surrounding area	Predominantly small grain farming, but includes residential and uncultivated agricultural land
	Agricultural land use on the site	Small grain cultivation
General	Land capability classification (out of 15) (DAFF, 2017)	6 (low-moderate) to 9 (moderate-high)
	Within Protected Agricultural Area (DALRRD, 2020)	Category B, rainfed

Figure 3. *Satellite image map of the development properties, showing the positions of all investigated test pits.*

The site falls within 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.

The soils have formed on an old alluvial terrace and the upper soil horizons all contain a high proportion of rounded river stone of various sizes. Soils are sandy loams with a topsoil clay content of between 10 and 20 percent. The soils are limited by high stone content, drainage limitations, and shallow depth in places but are nevertheless suitable for the grain production that takes place on the site. There is not significant variation in agricultural production potential across the site and the whole site is considered suitable for cropping. The soils on site are rated, in the ten-point system of soil capability used in the Western Cape, as being between 5 and 6 so are not high potential soils but are suitable for viable cropping of small grains.

Figure 4. *Examples of soil profiles, test pit number 5 on the left and 7 on the right.*

Figure 5. *Examples of soil profiles, test pit number 21 on the left and 22 on the right.*

Figure 6. View across the site showing the very stony surface of the soils.

The agricultural protocol requires the current productivity of the land based on detailed production figures and it requires the current employment figures. However, yield details are notoriously hard to get and are not available for this site. However, yield and employment details are not considered necessary for this assessment of agricultural impact. What is relevant is simply that the site is suitable and has been used for viable small grain production, regardless of what yields have been, and the loss of the site is therefore a loss of future potential for small grain production.

There are no existing impacts on the site that are relevant to this assessment of agricultural impact.

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 to 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 2.
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 always 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, and therefore not all land within a PAA necessarily deserves to be classified as more than medium agricultural sensitivity.

These three inputs operate independently, and the screening tool's agricultural sensitivity is 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 2: Relationship between land capability, agricultural sensitivity, and rain-fed cropping suitability.

<table>
<tr><th rowspan="2">Land capability value</th><th rowspan="2">Agricultural sensitivity</th><th colspan="2">Rain-fed cropping suitability</th></tr>
<tr><th>Summer rainfall areas</th><th>Winter rainfall areas</th></tr>
<tr><td>1 - 5</td><td>Low</td><td rowspan="3">Unsuitable</td><td rowspan="2">Unsuitable</td></tr>
<tr><td>6</td><td rowspan="2">Medium</td></tr>
<tr><td>7</td><td rowspan="4">Suitable</td></tr>
<tr><td>8</td><td rowspan="2">High</td><td rowspan="3">Suitable</td></tr>
<tr><td>9 - 10</td></tr>
<tr><td>11 - 15</td><td>Very High</td></tr>
</table>

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.

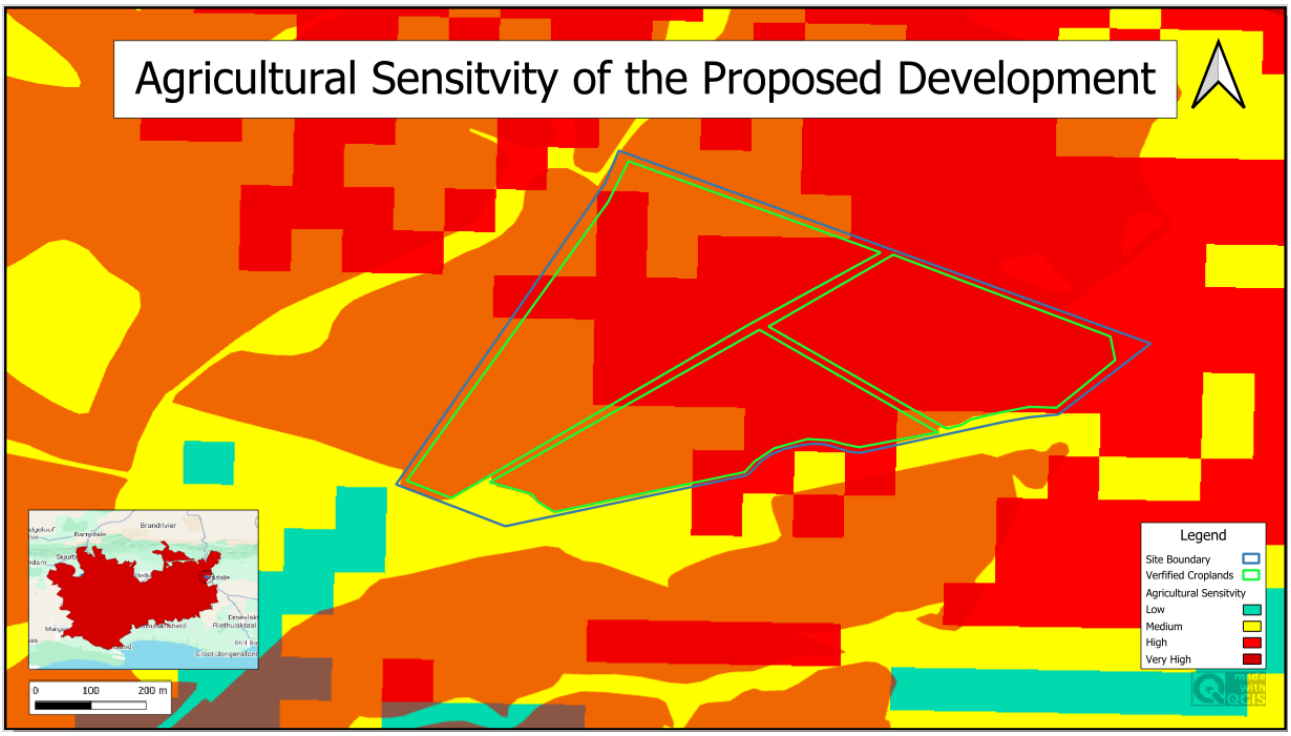

Figure 7. *The development site overlaid on agricultural sensitivity, as given by the screening tool. The PAA, as shown in the insert map, includes the whole site and means that the screening tool sensitivity is very high.*

The screening tool classifies the assessed site as being entirely very high agricultural sensitivity. The very high sensitivity classification by the screening tool is due to the PAA status of the site. The underlying high sensitivity classification by the screening tool is due to a combination of some land being classified as cropland (high sensitivity) and some land being classified as high sensitivity because of its land capability rating of 8 to 9. As has been shown in Section 7, the site is suitable for crop production, and it is verified as high sensitivity according to its cropping potential. This assessment therefore disputes the very high agricultural sensitivity classification of the site by the

screening tool and verifies the entire site as being of high agricultural sensitivity because of its assessed cropping potential.

9 ASSESSMENT OF THE AGRICULTURAL IMPACT

9.1 Impact identification and assessment

The single, direct agricultural impact of this development is the total loss of agricultural production potential due to the permanent exclusion of agriculture from the development site. The significance of this loss is a direct function of the following factors:

1. the size of the footprint of land from which agriculture will be excluded
2. the baseline production potential (particularly cropping potential) of that land

The most significant loss of potential, for any development anywhere in the country, is on high yielding cropland, and the least significant possible, is on low carrying capacity grazing land. Cropping potential is highlighted in factor 2, above, because the threshold, above which it is a priority to conserve land for agricultural production, is determined by the scarcity of arable crop production land in South Africa (approximately only 13% of the country's surface area) and the relative abundance of the rest of agricultural land across the country that is only good enough to be used for grazing. If land can support viable and sustainable crop production, then it is considered to be above the threshold and is a priority for being conserved as agricultural production land. If land is unable to support viable and sustainable crop production, then it is considered to be below the threshold and of much lower priority for being conserved.

In this case, the entire development footprint of 56 hectares is considered to be above the threshold for needing to be conserved as agricultural production land because of its agricultural potential that makes it suitable as viable cropland.

An Agricultural Agro-Ecosystem Specialist Assessment is required by the agricultural protocol to identify the extent of the impact of the proposed development on agricultural resources. The assessment of impacts in an environmental impact assessment is done according to a prescribed, semi-quantitative rating methodology that is supposed to cover all specialist disciplines and allow comparison of the impacts across them. However, the system was designed for biological components of the ecosystem such as plants and animals and does not rate agricultural impacts in a sensible or particularly useful way. As has been discussed above, the significance of the agricultural impact is simply the degree to which the future agricultural production potential of the site will be changed and that is predominantly a function of the size of the area of land that is impacted and the production potential of that impacted land. Aspects of the prescribed methodology, such as probability, do not make sense and tend to skew the calculation of significance.

Taking all of the above into account, the overall negative agricultural impact of the development (permanent loss of future agricultural production potential) is assessed here as being of medium significance. The factors that lessen the significance of the agricultural impact, making it medium and not higher, are:

1. That the soils have limitations for crop production and are not rated as high potential soils.
2. That the site is adjacent to the town and an obvious area for urban expansion that does not fragment surrounding cropland.

The agricultural protocol requires an indication of the potential losses in production and employment from the change of the agricultural use of the land as a result of the proposed development. A total of 56 hectares of small grain cropland will be lost. The site has been municipally owned and rented as cropland. These 56 hectares are likely to make up a relatively small proportion of the farming enterprise that crops the land and its loss is therefore unlikely to affect agricultural employment within that farming enterprise.

The off-site infrastructure included in the development are a water pipeline, electrical line, external sewer, and external stormwater. The locations and linear nature of this infrastructure means that none of it leads to a loss of agricultural production land and the significance of the agricultural impact of all off-site infrastructure is therefore assessed as negligible.

9.2 Cumulative impact assessment

Specialist assessments for environmental authorisation are required to include an assessment of 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. The potential cumulative agricultural impact of importance is a regional loss of future agricultural production potential.

Agricultural land throughout South Africa is under inevitable pressure from various non-agricultural land uses, including urban expansion. The cumulative impact of agricultural land loss is significant, and this development will contribute to that. The cumulative agricultural impact of the proposed development is therefore assessed as being of medium significance. The rating is influenced by the same factors that influence the rating of the assessed significance of the development in the previous section.

9.3 Assessment of alternatives

Specialist assessments for environmental authorisation are required to include a comparative

assessment of alternatives, including the no-go alternative. As already noted, the exact nature and layout of the different infrastructure within the development site boundary have absolutely no bearing on the significance of agricultural impacts, because agriculture will be completely excluded from within the boundary, regardless of layout. Any alternative layouts within the boundary will have equal agricultural impact and are assessed as equally acceptable.

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, and it is therefore the preferred alternative if assessed purely from an agricultural impact perspective.

10 MITIGATION

No mitigation measures are required for the protection of agricultural production potential within the development because the entire site will be permanently excluded from agricultural land use. Erosion to surrounding farmland does not pose a threat or require specific mitigation because a sophisticated, engineered system for managing water runoff will be inherent in the engineering of such a development.

11 ADDITIONAL ASPECTS REQUIRED IN AN AGRICULTURAL ASSESSMENT

11.1 Micro-siting

The agricultural protocol requires confirmation that all reasonable measures have been taken through micro-siting to minimize fragmentation and disturbance of agricultural activities. Because agriculture will be permanently excluded from the entire site, micro-siting will make no material difference to agricultural impacts and disturbance.

11.2 Confirmation of linear activity exclusion

If linear infrastructure has been given exclusion from complying with certain requirements of the agricultural protocol because of its linear nature, the protocol requires confirmation that the land impacted by that linear infrastructure can be returned to the current state within two years of completion of the construction phase. No such exclusion applies to this project.

11.3 Long term benefits versus agricultural benefits

It is outside of the scope and expertise of an agricultural assessment to determine the value of the potential benefits that the proposed development will provide to the area in order to compare them to the value of the agricultural production.

11.4 Additional environmental impacts

There are no additional environmental impacts of the proposed development that are relevant to this assessment of agricultural impact.

12 CONCLUSION

Although there are soil constraints (limited soil depth, limited drainage, high stone content, low water and nutrient holding capacity) on the site, the land is still suitable and has been used in the past for the production of small grains. It is not high potential cropland for the area, but it can nevertheless be viably cropped. This assessment disputes the very high agricultural sensitivity classification of the site by the screening tool and verifies the entire site as being of high agricultural sensitivity because of its assessed cropping potential.

The single, direct agricultural impact of this development is the total loss of agricultural production potential due to the permanent exclusion of agriculture from the development site. The entire development footprint is considered to be above the threshold of being worthy for conservation as agricultural production land because its agricultural potential makes it suitable as viable cropland. The proposed development will result in the permanent loss of this land to agriculture, which will result in a loss of future agricultural production potential in terms of national food security. The overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of medium significance. The factors that lessen the significance of the agricultural impact, making it medium and not higher, are that the soils are not rated as high potential soils, and that the development will not lead to fragmentation of agricultural land.

The acceptability and ultimate approval of the development cannot be based purely on its agricultural impact but requires the weighing of many diverse factors, which include satisfying the demand for urban expansion and that the site is logically located to satisfy that demand. Such a weighing is far beyond the scope and expertise of an agricultural impact assessment, which cannot therefore conclude on the overall acceptability of the development and make a recommendation in that regard. It can only conclude that if the development goes ahead it will result in the loss of 56 hectares of viable, small grain cropland.

13 REFERENCES

Beck, H.E., N.E. Zimmermann, T.R. McVicar, N. Vergopolan, A. Berg, E.F. Wood. 2018. Present and future Köppen-Geiger climate classification maps at 1-km resolution, Nature Scientific Data. Available at: https://gis.elsenburg.com/apps/cfm/.

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

Department of Agriculture Forestry and Fisheries (DAFF). 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 (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 Consultors 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
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

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: AGRICULTURAL AGRO-ECOSYSTEM SPECIALIST ASSESSMENT FOR A MIXED-USE DEVELOPEMNT ON ERF RE/21 AND 266 IN RIVERSDALE, 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

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 solved before me at CAPE TOWN 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

APPENDIX 3: SACNASP REGISTRATION CERTIFICATE

SACNASP

South African Council for Natural Scientific Professions

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

To verify this certificate scan this code

APPENDIX 4: SOIL DATA

Table 3**:** Soil data from investigated test pits on site

Test pit number	Soil form	Family	Depth (mm)	Depth limiting layer
1	Glencoe	2110	600	Cemented hardbank
2	Klapmuts	1110	800	Dense clay
3	Swartland	2111	300	Dense clay
4	Glencoe	2110	1200	Cemented hardbank
5	Klapmuts	1110	700	Dense clay
6	Klapmuts	1110	600	Dense clay
7	Tukulu	1110	1000	Dense clay
8	Klapmuts	1110	700	Dense clay
9	Klapmuts	1110	500	Dense clay
10	Klapmuts	1210	500	Dense clay
11	Tukulu	1110	900	Dense clay
12	Klapmuts	1110	700	Dense clay
13	Tukulu	1110	1200	Dense clay
14	Klapmuts	1110	500	Dense clay
15	Klapmuts	1110	600	Dense clay
16	Sepane	2111	300	Dense clay
17	Sepane	2111	400	Dense clay
18	Sepane	2111	400	Dense clay
19	Tukulu	1110	1000	Dense clay
20	Glencoe	2110	500	Cemented hardbank
21	Sepane	2111	400	Dense clay
22	Klapmuts	1110	600	Dense clay
23	Klapmuts	1110	400	Dense clay
24	Tukulu	1110	700	Dense clay

Test pit number	Soil form	Family	Depth (mm)	Depth limiting layer
25	Sepane	2111	400	Dense clay
26	Klapmuts	1110	1000	Dense clay
27	Klapmuts	1110	1000	Dense clay
28	Klapmuts	1110	800	Dense clay
29	Sepane	2111	250	Dense clay
30	Klapmuts	1110	400	Dense clay
31	Sepane	2111	250	Dense clay