AGRICULTURAL IMPACT AND SITE SENSITIVITY ASSESSMENT, MITIGATION MEASURES AND RECOMMENDATIONS FOR THE PROPOSED INTERCHANGE ON THE R22 PROVINCIAL ROAD APPROXIMATELY 2KM NORTH OF THE TOWN HLUHLUWE, BIG 5 AND HLABISA LOCAL MUNICIPALITY, UMKHANYAKUDE DISCRICT MUNICIPALITY, PROVINCE OF KWAZULU NATAL. IN EXTENT LESS THAN 1 KM.

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1. INTRODUCTION AND BACKGROUND

The envisaged R22 interchange is part of a two-component project that serves a dual purpose. The first component is a bypass road from west of Hluhluwe town to the interchange. This component that will relieve current heavy congestion in Hluhluwe has already been approved and construction is under way. The proposed interchange that is located at the eastern end of the bypass will provide a safe crossing over a busy Transnet rail line that amongst other products carries rock phosphate from Phalaborwa to Richards Bay for conversion into valuable fertilizer for the local market and for export. The second high volume product is timber for conversion into paper and woodchip. These trains travel regularly and at high speed.

The soils over which the interchange will be constructed comprise of the Bonheim Soil Form, which is a dark, heavy soil that is widespread in this part of Zululand. The physical and chemical properties of soil will be described in more detail in both layman's and technical language elsewhere in this report.

Due to climate the choice of food crops along the entire Kwa Zulu Natal Coastal area are limited to sweet potatoes and subtropical fruit such as mangoes and bananas and pineapples, all of which require irrigation. The summers are too hot and there is insufficient winter rainfall for other fresh produce. There is no available or accessible irrigation water at this site.

In brief, the entire interchange area is covered by a good yield potential or High Sensitivity soil with a rating of 8 to 10 on a scale of 1 to 15. However, climate, especially rainfall and temperature reduce the target site to a non-arable yield potential of Land Capability Class VII (LCCVII), suitable for domestic livestock and wild game only on a scale of LCCI to LCCVIII. This translates to a Low Sensitivity soil recorded as 1 to 5 on a scale of 1 to 15.

This report is structured in such a manner that it can be used for project registration, a site sensitivity assessment and the final basic assessment for EIA approval.

1.1 The Objective

The objective behind this assessment has been to determine whether or not the soil quality and crop yield potential justify a change of land use from mixed savannah used for game farming to the proposed interchange.

1.2 Technical Competence

Since 2008 John Phipson has successfully completed over 150 agricultural and agribusiness impact assessments in all 9 Provinces. These have addressed township developments, *road upgrades,* wind, photo-voltaic and gas to power alternate energy installations, mining and borrow pits, underground pipelines and overhead power transmission lines. He has conducted Environmental Management Framework (EMF) studies and resource assessments in the Southern Kalagadi Province Botswana, the ZF Mgcawu and John Taolo Gaetsewe District Municipalities in the Northern Cape for the International Union for the Conservation of Nature (IUCN).

The same exercise has been undertaken for the John Taolo Gaetsewe District Municipality, the Waterberg District Municipality, the 250 000HA Maphungubwe buffer zone, the uThukela,

Zululand and umKanyakude District Municipalities as well as the Ray Nkonyeni Local Municipality on behalf of RSA State institutions.

Prior to focusing on environmental work and the rehabilitation of collapsed Land Restitution farms, he practiced as a crop production consultant, not only in RSA but also in Tanzania, Zambia, Mozambique, Malawi and Swaziland.

1.3 Experience of Road Upgrades

The specialist has successfully concluded the following road upgrades:

Cape Province

N2 upgrade Heidelburg to Riversdale

Wild Coast N2 Toll Highway Msikaba to Lusikisiki

N1 upgrade Hex River Valley to Worcester

Kwazulu-Natal

N2 upgrade Isipingo to old Durban airport

N2 upgrade Durban to Hilton

N2 upgrade Mtunzini to eMpangeni

Upgrade of gravel to permanent hard surfaces Isandlwana area. Approximately 100 km

N2 upgrade Pongola to the Mpumalanga border

Free State

New bridge and road upgrade Aliwal North

Limpopo

Several upgrades to the R101 north of Bela-Bela

2. LOCATION AND SITE DETAILs

The project interchange is located approximately 2 km north and northeast of the town of Hluhluwe in the Big 5 Hlabisa Local Municipality, umKhanyakude District Municipality, all on currently undeveloped land used for game farming.

2.1 Terms of Reference

Terms of reference relevant to a basic assessment were provided by the client, by the parameters laid down in relevant legislation and by the specialist's previous experience of similar changes of land use. The Terms of Reference relevant to a sensitivity and basic assessment for the study were as follows:

- Site Sensitivity verification and mapping
- Soil profiling to determine the soil forms, clay content, slope %, effective rooting depths, permeability, wetness, rockiness, aspect and terrain units at the target site
- Determination of Land Capability Class (LCC)
- Determination of impacts on agricultural resources due to the proposed change in land-use; and
- Identification of feasible measures to mitigate/manage/monitor identified agricultural impacts.
- Conversion of LCC to Agricultural Theme Sensitivity equivalent.

The report aims to comply with 'the Protocols' for specialist assessment and minimum report requirements for impacts on agricultural resources (with a sensitivity rating of 'Medium - High') as per the table below:

2.2 Agricultural Compliance Statement

Table 2-1: Agricultural Compliance Statement

Agricultural Compliance Statement		**Relevant Section of Report**
2.2.1	The Compliance Statement must be prepared by a soil scientist or agricultural specialist registered with SACNASP	SACNASP certificate constitutes appendix 9.7 hereto
2.2.2	The compliance statement must:	
	a) be applicable to the proposed site and development footprint.	It is applicable; refer section 2 and site map in section 5
	b) confirm the site is of good and medium sensitivity for agriculture	The interchange is located on intrinsically high sensitivity soils; However, climate reduces the agricultural potential of the land to a low sensitivity
	c) Indicate whether, or not the proposed development will have an unacceptable impact on agricultural production capability of the site.	The interchange portion is on undeveloped land and thus has no impact on the current use of the land as an extensive game farm. The few hundred m2 that will be used for the bypass are irrelevant in terms of the game farming exercise
2.2.3	The compliance statement must contain the following information:	

Agricultural Compliance Statement		Relevant Section of Report
	a) Contact details and relevant experience as well as SACNASP registration number of the specialist preparing the assessment, including a cross section of relevant CVs	Mr. John Phipson Cell: 082 944 8462 / Tel: 035 340 1940 Several relevant CVs constitute Appendix 9.7
	b) a signed statement of independence	Appendix 9.6
	c) 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;	See Section 5 The report goes further and provides a map reflecting a representative cross section of the profiles found at the interchange supported by a table giving the physical and chemical properties of the soils at each profile
	d) confirmation from the specialist that all reasonable measures have been taken through micro-sitting to avoid or minimize fragmentation and disturbance of agricultural activities;	There is no micro-siting or fragmentation. The entire site is one integrated concept that will enhance the safety of both pedestrians and motorists
	e) 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;	The specialist recommends approval, see section 7.4.
	f) any conditions to which the statement is subjected;	There are no conditions.
	g) 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;	During construction the footprint from the interchange be close to 100 metres wide but will be reduced to approximately 65 metres as soon as the service road is relinquished. The recovery period I for the service road is shortened by the fact that this is a sub-tropical area where vegetative growth continues during the winter months, albeit at a reduced rate.
	h) where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMP;	There are no required impact management outcomes outside of civil engineering good management standards. These are outside of the specialist's terms of reference.
	i) a description of the assumptions made, as well as any uncertainties or gaps in knowledge or data	There are no assumptions, uncertainties or gaps in knowledge or data. The Specialist has lived and worked within this area for the last 32 years. The specialist has regularly travelled along the old R22 when it was being macadamized by Reid Construction and subsequently thereto. All signs of the previous service road had disappeared within a few years. He

Agricultural Compliance Statement		Relevant Section of Report
		has no reservations whatsoever with regard to an unqualified approval of the proposed project.

Table 2-2: Properties Adjoining the Hluhluwe Interchange

Boundary	Description
West	Mixed Savanna Game Farms
North	Mixed Savanna Game Farms
East	Mixed Savanna Game Farms
South	Mixed Savanna Game Farms

2.3 Access, infrastructure and services

Access to the interchange is from the R22 north of the town. The only infrastructure is fences along the R22 where it passes through game farms

2.4 Proposed Activities for the Interchange and Bypass Road

The proposed activity is a measure to enhance the safety of both pedestrians and motor traffic in the town of Hluhluwe and its neighbourhood. It is understood by the specialist that normal good civil engineering practices will be followed

The map provided is a spatial presentation of a representative set of soil profiles in the interchange area. It also indicates the agricultural potential at each profile. It is the practice of the Specialist to indicate arable land with a green placemark, a yellow placemark for non-arable land and soils with wet feet with a blue placemark. This gives the person evaluating the application a comprehensive assessment of the agricultural potential of the site, at a glance.

Details of the physical and chemical properties at each profile are contained in Appendix E.

As the change of land use does not impact on the physical properties of the soil the decision on whether, or not to approve the change of land use should be based on the economic value of the output of the land to be used. The small area to be used for the interchange is miniscule in extent and will have no impact on the income derived from game farming.

2.5 Report Format

For ease of readability and internal flow the final draft of this report has been designed to be presented in six areas of relevance:

- ✓ An Introduction and Background
- ✓ A Desktop Study
- ✓ A Site Assessment
- ✓ An Evaluation of Opportunity Costs and the Economic Value of Ecosystem Services
- ✓ An Impact Assessment
- ✓ Site Technical Data and Photographs

2.6 Regulatory Framework

The most important pieces of legislation effecting land use management are:

- Subdivision of Agricultural Land Act 70 of 1970 (SALA)
- Conservation of Agricultural Resources Act 43 of 1983 (CARA)
- NEMA 107 of 1998
- National Water Act 36 of 1998
- Mineral and Petroleum Resources Act 28 of 2002
- EIA regulations of 2014, as amended
- Government Notice 320 of 20 March 2020

The planning regulations considered in this assessment include the following:

- National Development Plan (NDP)
- Kwa Zulu Natal Provincial Spatial Economic Development Strategy (PSEDS).

Furthermore, the assessment and documentation contained in this report was drawn mainly from data provided by KZN DARD Directorate of Natural Resources, SASRI, from Council for Geoscience as well as the Mucina and Rutherford publication “The Vegetation of South Africa, Swaziland and Lesotho”.

3. DESKTOP STUDY

The Desktop Study was based on the documentation in the preceding paragraph and the Specialists' knowledge of the area.

3.1 Climatic Desktop Data; Target Site

The table below provides a useful description of the 8 Climate Capability Categories

Table 3-1: Description of Climate Capability Classes

Climate Capability Class	Limitation Rating	Description: Scotney et Al. UKZN 1987
C1	None to slight	Local climate is favourable for good yields for a wide range of adapted crops throughout the year.
C2	Slight	Local climate is favourable for a wide range of adapted crops and a year-round growing season. Moisture stress and lower temperatures increase risk, and decrease yields relative to C1.
C3	Slight to Moderate	Slightly restricted growing season due to the occurrence of low temperatures and frost. Good yield potential for a moderate range of adapted crops.
C4	Moderate	Moderately restricted growing season due to low temperatures and severe frost.
C5	Moderate to Severe	Moderately restricted growing season due to low temperatures, frost and/or moisture stress. Suitable crops at risk of some yield loss.
C6	Severe	Moderately restricted growing season due to low temperatures, frost and/or moisture stress. Limited suitable crops which frequently experience yield loss.
C7	Severe to Very Severe	Severely restricted choice of crops due to heat, cold and/or moisture stress
C8	Very Severe	Very severely restricted choice of crops due to heat, cold and/or moisture stress. Suitable crops at high risk of yield losses.

Table 3-2: Climatic Data for the Study Area: Hluhluwe Town

This site falls into Mucina and Rutherford Vegetation Unit Svi23, Zululand Lowveld

Mean Annual Precipitation (MAP) 680 mm	This is not enough for arable crop cultivation but sufficient to support good quality grazing
Annual Precipitation Coefficient of Variation (APCV) 26%	Rainfall can vary seasonally between 856 mm and 503 mm.
Mean Annual Temperature (MAT)22.0 Deg.C	This high mean temperature means that the summers are too hot for arable crop cultivation. Winter rainfall is less than 200 mm which is far too little
Mean Frost Days 1 Day	See above
Mean Annual Evaporation (MAPE) 1808 mm	This is slightly more than mean for temperate fresh produce growing areas
Mean Annual Moisture Stress (MASMS) 75%	Crops planted will be subjected to lack of moisture stress. Pineapples are an exception

Due to a hostile climate the Climate Capability Rating is C7. It is this rating that converts the land use potential of the soils to a Low Sensitivity and Poor LCC

3.2 Soils Ecosystems

All agricultural soils, whether they be prime quality, high yield arable land or arid rangeland with a livestock carrying capacity of 1 ox per 50HA, they all have an economic value in terms of yield potential, which must be considered when assessing the impact of a change of land use. The other side of the coin is the economic value of the proposed change of land use. This evaluation applies even to soils as poor as regic sands. There are two fundamental exercises that need to be undertaken.

A. An Evaluation of Opportunity Cost

This exercise provides for a decision on whether, or not the proposed change of land use is beneficial or negative. In the latter case the recommendation would be to maintain the status quo.

The two most common applications for change of land use are for residential, commercial and industrial townships on the one hand and services such as roads, bulk water reticulation, power transmission networks and more recently the generation of alternate energy on the other hand.

Economic value of Ecosystem Services

Apart from the soil, other Ecosystem Services include water (both rainfall and stored, both surface and underground), temperature, seasonality and daylight hours. In this instance the Ecosystem Services are a moderate rainfall, a hostile sub-tropical climate and good quality agricultural soils. In this instance the use to which the good quality agricultural soils are put is a primary consideration. In the game farm areas, the soil is not cultivated so is valued at it carrying capacity of one large livestock unit per 5 to 7 ha. **The specialist clearly recalls reading an article published by KZN Department of Agriculture about 10 years ago to the effect that the population of domestic livestock between the Ubombo Mountains**

and the Umfolozi River had dropped from 64 000 to 4 000 due to theft and game farming being more profitable

Another very important consideration that is sometimes overlooked is the contribution of the change of land use to food security. Despite a popular perception that food security lies in the growing of food, even at a subsistence level, the reality is that the RSA total food requirement is produced by less than 36 000 commercial farmers, beyond which we must rely on imports, mainly luxury foods.

The obvious deduction from the foregoing sentence is that food security for the other 55 million RSA residents relies not one's own food production but on permanent and well-paid employment giving sufficient income to provide for nutritious food, good clothing, secure tenure of shelter and transport to the source of one's income, for example:

Where there is a change of land use to residential, commercial and industrial townships the range of provision of food security through well paid employment ranges from typically one employment opportunity per three residential units, up to 1 employment opportunity per 75m2 in warehousing (Spar figure).

In this instance there will be a measure of temporary employment during construction, but the long term and main benefit is increased safety

4. METHODOLOGY: SITE ASSESSMENT

Although there are more than ample directives and regulations on what the site assessment should establish and report, the specialist is unaware of any directives at either national or provincial levels (except for KZN) on the methodology to be employed while conducting an onsite assessment.

The methodology consists of the extensive use of the KZN DARD Directorate of Natural Resources publication Natural Resources and / or Agricultural Specifications, Survey Standards, Version 3 January 2018 and the Soil Profile Data Sheet used by the Directorate's own staff as guidelines.

This standard is far higher than any standard set at National level or in the other Provinces.

The assessment for the interchange was conducted on Saturday 5 October 2024. Seasonality was not an issue

The tool used for profile observations was a Dutch Auger. Slope was measured by eye as the land is uniformly level or gently sloping. Soil texture measurement was based on the ball and sausage method.

There are no gaps or omissions in the findings on soil yield potential or the impact of change of land use.

4.1 Findings

Put in a nutshell, the Interchange and most of the bypass are on technically high yield potential soils, but they are being put to a current use far less valuable due to a functionally hostile climate. There are three components that determine actual yield:

a) *Soil physical qualities*.

These have evolved over tens of millions of years and will not change because of change of land use

b) Climate

The most important components are rainfall and temperature. These determine what can be grown where, when and at what yields. This component is annually variable, usually within a range of 25% to 40%. This is one of the risk factors that must be considered when selecting crops

c) Management

This is totally variable and is not considered

4.2 Soils Data

The following data was recorded for each soil profile:

- Soil texture (clay content)
- Slope % of surrounding area
- Effective rooting depth
- Moisture intake rate

- Soil permeability
- Soil wetness

Rockiness and crusting potential are sometimes a consideration. Aspect and location on the slope (terrain units) can sometimes also provide insight.

Table 4 below provides a descriptive summary of the main features of the Soil Form encountered at the site in layman's language. The same applies to those who might be adjudicating this report. Corresponding technical details constitute Appendix 9.4 hereto.

Table 4-1: Description of Site Soil Families

Soil Family	Features
Bonheim	The Bonheim Soil Form Is featured by a black, blocky clay topsoil over yellow-brown or red blocky clay. If there is subsurface moisture from 500 mm downwards there will be variegated colours in the clay. Widespread throughout Zululand, this soil has a good yield potential but is difficult to manage if the clay content is over 35%. Swells when wet, shrinks and cracks when dry.

The physical properties of the above soil family were summarized from "Identification and Management of the Soils of the South African Sugar Industry" published by the SA Sugar Research Institute. (Sugar Book)

This is an extremely useful publication as it details physical and chemical properties as well as soil management guidelines for all 48 of the Soil Forms that occur within the RSA Sugar Industry. This data is further refined at the Soil Series level for some 400 Soil Series that occur within the 48 Soil Forms.

4.3 Land Capability Class Determination

Once the relevant soil profile and topographic data outlined above had been recorded, the next step was to compile and record the Land Capability Class (LCC) for each soil profile assessed, transfer the data to a table reflected in Appendix 9.4 hereof giving the GPS co-ordinates and the corresponding physical data for each profile. A further set of tables as illustrated in Appendix 9.4 is used to convert the raw physical data for each profile into one of eight Land Capability Classes.

This is the fundamental step in assessing all the individual components that determine the physical capability and crop yield potential of a particular soil at a particular site.

Table 4.2 overleaf defines the qualities of each of the eight internationally recognised Land Capability Classes. The values attached to each determinant of an LCC also provide a useful management guide e.g. Texture, rooting depth, permeability etc.

Only soils complying with Land Capability Classes I to III (LCCI to LCCIII) are readily acceptable for arable crop cultivation. LCC IV soils may be cultivated under certain stringent and well managed conditions.

LCC V usually refers to wetlands and LCC VI to non-arable land that can be used only for long term crops due to steepness, soil depth and so forth. LCC VII and VIII soils are limited to domestic livestock and wild game

The profiles studied at this site all fell into LCC II and LCC III. This is equivalent to an Agricultural Theme Sensitivity of 9 to 11, good Agricultural Theme Sensitivity land.

Table 4-2: Description of Land Capability Classes

Class	Concepts
I	Land in Class I has few limitations that restrict its use; it may be used safely and profitably for cultivated crops; the soils are nearly level and deep; they hold water well and are generally well drained; they are easily worked, and are either fairly well supplied with plant nutrients or are highly responsive to inputs of fertilizer; when used for crops, the soils need ordinary management practices to maintain productivity; the climate is favourable for growing many of the common field crops.
II	Land in Class II has some limitations that reduce the choice of plants or require moderate conservation practices; it may be used for cultivated crops, but with less latitude in the choice of crops or management practices than Class I; the limitations are few and the practices are easy to apply.
III	Land in Class III has severe limitations that reduce the choice of plants or require special conservation practices, or both; it may be used for cultivated crops, but has more restrictions than Class II; when used for cultivated crops, the conservation practices are usually more difficult to apply and to maintain; the number of practical alternatives for average farmers is less than that for soils in Class II.
IV	Land in Class IV has very severe limitations that restrict the choice of plants, require very careful management, or both; it may be used for cultivated crops, but more careful management is required than for Class III and conservation practices are more difficult to apply and maintain; restrictions to land use are greater than those in Class III and the choice of plants is more limited.
V	Land in Class V has little or no erosion hazard but has other limitations which are impractical to remove that limit its use largely to pasture, range, woodland or wildlife food and cover. These limitations restrict the kind of plants that can be grown and prevent normal tillage of cultivated crops; it is nearly level; some occurrences are wet or frequently flooded; others are stony, have climatic limitations, or have some combination of these limitations.
VI	Land in Class VI has severe limitations that make it generally unsuited to cultivation and limit its use largely to pasture and range, woodland or wildlife food and cover; continuing limitations that cannot be corrected include steep slope, severe erosion hazard, effects of past erosion, stoniness, shallow rooting zone, excessive wetness or flooding, low water-holding capacity; salinity or sodicity and severe climate.
VII	Land in Class VII has very severe limitations that make it unsuited to cultivation and that restrict its use largely to grazing, woodland or wildlife; restrictions are more severe than those for Class VI because of one or more continuing limitations that cannot be corrected, such as very steep slopes, erosion, shallow soil, stones, wet soil, salts or sodicity and unfavourable climate.
VIII	Land in Class VIII has limitations that preclude its use for commercial plant production and restrict its use to recreation, wildlife, water supply or aesthetic purposes; limitations that cannot be corrected may result from the effects of one or more of erosion or erosion hazard, severe climate, wet soil, stones, low water-holding capacity, salinity or sodicity.

To facilitate flow and avoid clutter, the flowsheets reflecting the key components of LCC determinations are relegated to Appendix 9.4 hereto.

To give a spatial representation of LCC across the entire site the same physical data is also presented in map form giving the locality of each profile examined.

4.4 Soil Properties

For the technically minded, physical and chemical properties of the soils encountered at the site are detailed in Appendix 9.5 hereto.

4.5 Ownership and Use of Land

The land is privately owned game farm.

5. AGRICULTURAL THEME SENSITIVITY ASSESSMENT

This section of the report represents an onsite assessment which will either support or challenge the Screening Tool prepared by DFFE reflecting the Agricultural Theme Sensitivity (ATS) of the site measured against the two criteria listed below:

5.1 Criterion 1: Soils Quality

An examination of a representative cross section of soil profiles up to a depth of 700mm confirmed that these are Land Capability Class II (LCCII) and Land Capability Class III (LCCIII) on a scale of LCCI to LCCVIII. Land Capability Class is an internationally used table of definitions for soil yield potential, expressed as Land Capability Class on a scale of LCC I to LCC VIII. This assessment is based on soil physical properties alone and does not include climate which is the second critical factor in crop yield potential. For the purpose of this exercise LCC is being used and then converted to ATS where there is an equivalent.

Land Capability Class was introduced in RSA in 2002 by the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC) of the Department of Agriculture, it should be noted that since 2002 the ISCW is the ultimate authority on change of land use. This is proved by the fact that when there is a dispute between a client and the Land Use Regulatory authority in the Department of Agriculture, it is the ISCW that is brought in as an arbitrator and whose word is final.

LCC determinations are used in all English-speaking food producing countries of any consequence. These include the USA, Canada, Australia and New Zealand. Although the land at the target site is technically arable, climate limits it to being suitable for livestock and game only i.e. LCC VII or an ATS of 1 to 5. It is a toss-up whether, or not to use LCC II and LCC III or LCC VII in the determination of the impact of change of land use.

Care should be taken to avoid confusing soil yield potential with actual soil yield.

The other two determinants of actual yield are climate (mainly rainfall and temperature) and management, the former being subject to short term and medium-term variation, the latter to random variation, and therefore not considered.

It should be noted in passing that in the Science of Agronomy, world-wide, there is no such concept as Agricultural Theme Sensitivity (ATS). It is a creation by DFFE through a GN 320 of 20 March 2020. Agricultural Impact Assessments come under the Department of Agriculture, not Environment and should not be included in Theme Sensitivity exercises

However, as mentioned elsewhere, it is the policy of the ISCW to cooperate with other entities, therefore an ATS assessment is included in this report.

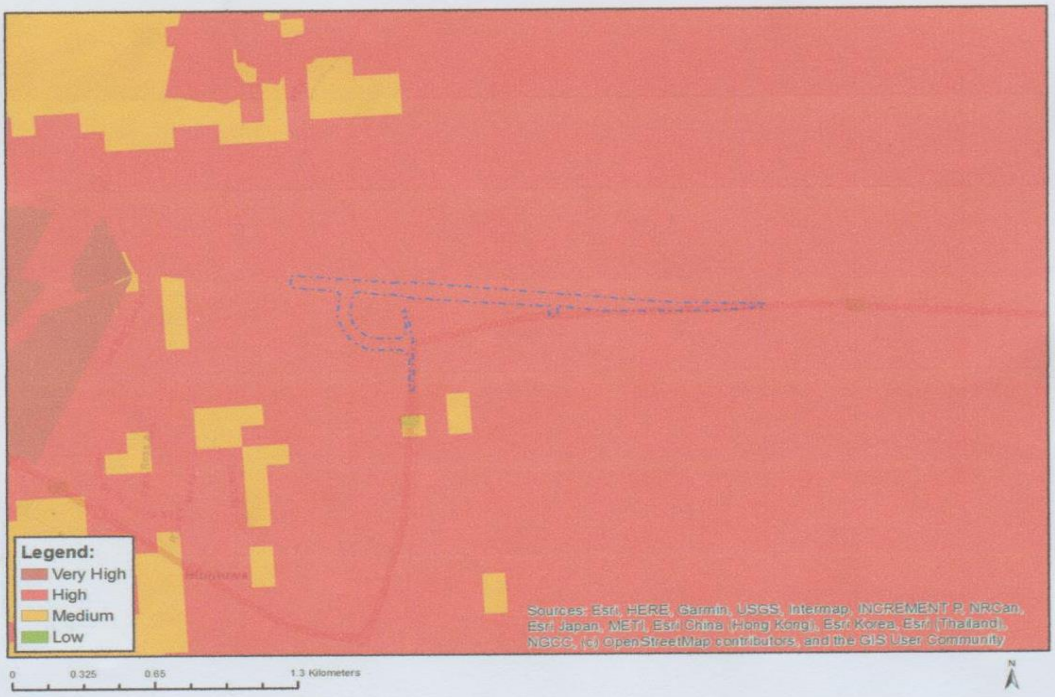
5.2 Criterion 2: Climate, Temperature and Rainfall

This is a sub-tropical area with hot, humid Summers and frost-free Winters. The Summers are too hot for the growing of arable vegetable crops. This is aggravated by a high incidence of insect predation as well as high levels of airborne and soilborne pathogens, that in other areas are killed off or controlled by the severity and number of frost nights. As mentioned elsewhere there is insufficient water for irrigation.

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Old Fields;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High

Figure 5-1: The Results of Screening Tool Sensitivity Assessment

5.3 Hluhluwe Bypass: Agricultural Theme Sensitivity Verification

As indicated in the above diagram, the soils at this site are all intrinsically high sensitivity soils. The agronomic assessment comes to the same conclusion i.e. a high yield Land Capability Class (LCC II and LCC III)

However, for both Site Sensitivity and Yield Potential assessments the actual land use should be taken into consideration as the basis for accepting or rejecting application is whether the

change of land use will increase the output value of the land either in financial terms or public service.

For the sake of brevity and ease of reference a short form description of the Site Sensitivity is presented below:

Table 5-1: Findings

DEFF Screening Tool Theme	DFFE's recommended Level of Sensitivity	Motivation for Recommendation
	High Sensitivity. The Land Capability Class (LCC) Determinations of LCCII and LCCIII Lands concur with the DFFE Screening Tool and Site Sensitivity assessment	The site-specific sensitivity as determined by the Specialist: The soils at the bypass have not been cultivated and are still virgin bush. In terms of Land Capability Class, the high land capability class rating is outweighed by the benefit of improved safety for both pedestrians and motor traffic

Figure 5-2: Site LCC and ATS Assessment and Land Capability Map

Table 5-2: Soil Profile

Ref	Co-ordinates	Soil Form	Slope %	Clay %	Depth (mm)	Permeability	Wet-ness	LCC	ATS
H1	28°0'35.7" S 32°17'41.4" E	Bonheim	0-2	35 to 50	>700	3	WO	II	8 to 10
H2	28°0'37.6" S 32°17'34.6" E	Bonheim	0-2	35 to 50	>700	3	WO	II	8 to 10
H3	28°0'9.4" S 32°17'42.2" E	Bonheim	0-2	35 to 50	>700	3	WO	II	8 to 10
H4	28°0'42.2" S 32°16'42.2" E	Bonheim	0-2	35 to 50	>700	3	WO	II	8 to 10
H5	28°0'34.3" S 32°16'47.9 E	Bonheim	0-2	35 to 50	>700	3	WO	II	8 to 10
H6	28°0'33.8" S 32°16'39.8" E	Bonheim	0-2	35 to 50	>700	3	WO	II	8 to 10

ATS Equivalents to LCC

LCC II and LCC III are equivalent to ATS 8 to 11: High Sensitivity

Colour Coding

Colour	Comment
	LCC II and LCC III: Arable Agricultural land. High Sensitivity Soil. ATS 8 to 11

Terrain units:

These describe the position of the soil profile on the landscape e.g. Crest, upper slope, medium slope, and lower slope etc. In this instance the entire site is level, sloping very gently from northwest to southeast.

Aspect

This describes the direction in which the slope faces e.g. East, South, North and West. In this instance the site is almost level, very gently facing southeast,

5.4 Conclusion and Compliance Statement

5.4.1 Conclusion

Although the interchange is on good quality agricultural land, this is outweighed by the fact that it will provide a safe crossing over a frequently used railway line.

5.4.2 Compliance Statement

The DFFE Site Sensitivity Assessment of High Sensitivity arising from Screening Tool is supported by the Land Capability Classes determined by the Specialist. The two assessments are mutually compliant.

6. ECOSYSTEM SERVICES

As earlier recorded in detail, Ecosystem Services are in this instance irrelevant.

7. IMPACT ASSESSMENT AND MITIGATION MEASURES

Listed below are the physical qualities of a soil. These features determine the yield potential of the soil and thus its agronomic value, expressed as Land Capability Class (LCC).

Except for Alluvial and Aeolian (windblown) soils, the rest of the soils in RSA are derived from parent materials that are upwards of 180 million years old. The physical qualities of these soils are the same as they were 10 000 years ago and will be the same in 10 000 years' time. A change of Land Use will not and cannot impact on any of these qualities

A change of land use will therefore have no impact at all

Physical Qualities that make up Land Capability Class

- Soil texture (clay content)
- Slope % of surrounding area
- Effective rooting depth
- Moisture intake rate
- Soil permeability
- Soil wetness

Rockiness and crusting potential are sometimes a consideration. Aspect and location on the slope (terrain units) can sometimes also provide insight.

As there is no change in soil quality brought about by the change in land use, the decision on whether to approve or refuse the change in land use is an agribusiness decision: Will the change in land use increase the output and thus the value of the land be of benefit, not only to the local community, but also to passing traffic

The numerical values used in the table below are derived from the following formula:

Table 7-1: Ranking scales

Occurrence	**Duration:**	**Probability:**
	5 – Permanent	5 – Definite/don't know
	4 - Long-term (ceases with the operational life)	4 – Highly probable
	3 - Medium-term (5-15 years)	3 – Medium probability
	2 - Short-term (0-5 years)	2 – Low probability
	1 – Immediate	1 – Improbable
		0 – None
Severity	**Extent/scale:**	**Magnitude:**
	5 – International	10 - Very high/uncertain
	4 – National	8 – High
	3 – Regional	6 – Moderate
	2 – Local	4 – Low
	1 – Site only	2 – Minor

The significance of each impact is calculated using the following formula:

S= (E+D+M) P

The environmental significance of each identified potential impact is then be rated as follows:

Significance Rating	Score
High	>60–100
Moderate	30–60
Low	<30-0

Each potential impact must also be rated in terms of the following:

Table 7-2: Agricultural Impact Assessment

The Nature of the Impact **There is no agricultural Impact. The two soils at the sites**		
Defining the Impact	**Without Mitigation**	**With Mitigation (There is no negative impact to mitigate)**
Extent	0	0
Duration	0	0
Magnitude	0	0
Probability	0	0
Significance	0	0
Status	Land use is currently poor	Land use is currently poor
Reversibility	N/A	N/A
Irreplaceable Loss of Resources?	The value of the resources will be enhanced	The value of the resources will be enhanced
Can Impacts be Mitigated?	N/A	N/A
Mitigation: There is no negative impact to mitigate		
Residual Impacts: The residual impact will positive and long term		

Table 7-3: Cumulative Impact Assessment: Agribusiness Considerations

Defining the Impact	**Overall Impact of the Proposed Project Considered in Isolation**	**Cumulative Impact of the Project on Other Projects in the Area**
Extent	The extent of the area is irrelevant in terms of loss of indigenous thornveld	Not Applicable
Duration	The duration for the interchange is long term.	Not Applicable
Magnitude	Long term but irrelevant in terms of the small area to be disturbed in relation to the extent of the game farm, hundreds of ha. Any vegetation outside of the immediate road area disturbed or damaged during construction will quickly regrow or recover	Not Applicable

Defining the Impact	Overall Impact of the Proposed Project Considered in Isolation	Cumulative Impact of the Project on Other Projects in the Area
Probability	Highly likely	Not Applicable
Significance	The significance is closely related to the benefits outlined in Magnitude above.	Potentially high

Table 7-4: Cumulative Impact Assessment: Physical Properties

Cumulative Impacts: as there is no cumulative impact on the physical properties of the soils		
Defining the Impact	**Cumulative Impact of the Proposed Project Considered in Isolation**	**Cumulative Impact of the Project on other Projects in the Area**
Extent	0	0
Duration	0	0
Magnitude	0	0
Probability	0	0
Significance	0(very low)	0(very low)
Status	Neutral	Neutral
Reversibility	\Where the road surfaces, supporting structure and any other infrastructure is located it will be irreversible. Elsewhere the vegetation will either recover or regrow	N/A
Irreplaceable Loss of Resources?	N/A	N/A
Can impacts be Mitigated?	There are no negative impacts to mitigate.	N/A
	Mitigation: As there are no impacts on the surrounding area, there is nothing to mitigate	
	Residual Impacts: There are no residual impacts on the surrounding area	

7.1 Summary of Findings

7.1.1 Soil Type

There is only one good quality Soil Form, the Bonheim Soil Form which covers the entire project area. It is a high agricultural yield potential soil. This potential has never been used as the entire property is a game farm and therefore the economic value is reduced to about one sixth of its potential.

7.1.2 Food crops

There was no evidence of any food crops ever having been grown on the site.

7.1.3 Industrial Crops

There was no evidence of any industrial crops ever having been grown on the site.

7.1.4 Livestock

No domestic livestock was seen.

7.1.5 Vegetation

The game farms are covered by Zululand lowveld indigenous bush which appears to be in pristine condition. As shown in the Picture Gallery tree density varies. This is typical of this vegetative unit

7.1.6 Water

There was no sign of any water, surface or subsurface

7.2 Conclusion

For all practical purposes the bypass site has a low economic output, at the same time rendering an important public service. Furthermore, the change of land use will have no impact whatsoever on the physical properties of the soil, impacting only on what is being currently grown on this soil.

7.3 Recommendations

It is therefore recommended that the application be approved. This recommendation complies fully with the policy of the ISCW, the ultimate authority on change of land use.

8. REFERENCES

The following reference material was utilized during the assessment and verification process:

Development and Application of a Land Capability Classification System for South Africa: J L Schoeman et al, ARC-ISCW, 2002

Identification and Management of the Soils of the South African Sugar Industry: SA Sugar Research Institute. (Sugar book).

Identification and Properties of Soils: A D Manson: Course Notes 2010: KZNDARD

KwaZulu-Natal Agricultural Land Categories: Collett A (DAFF) and Mitchell FJ (KZN DARD), Version 1, 2012 and its Appendix:

KZN Natural Resources Soil Profile Data Sheets

Land Assessment in KwaZulu-Natal: Botha et al, Natural Resources Directorate, KZN DARD; Cedara

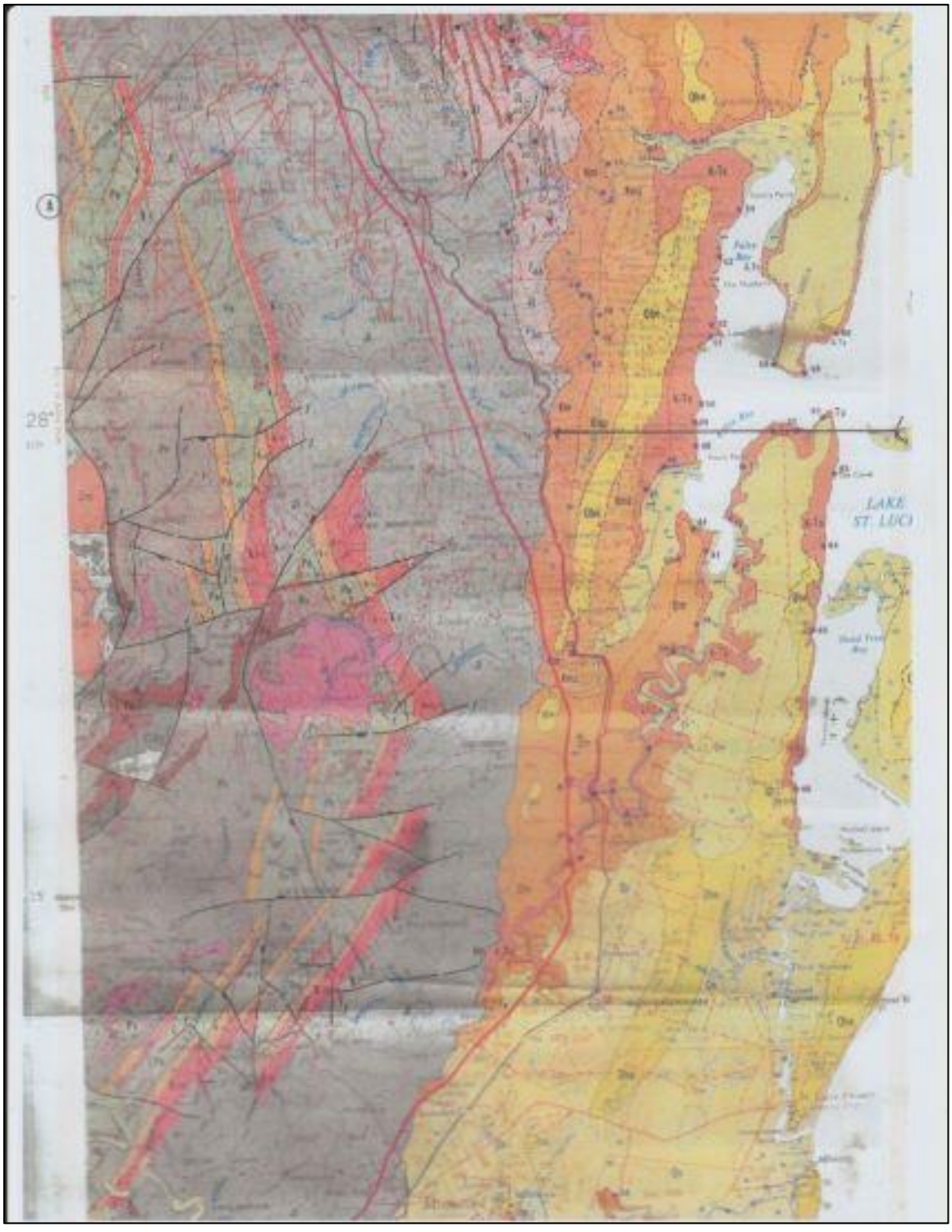
Natural Resources and/or Agricultural Survey Specifications, Version 3 January 2018: KZNDARD

Soil Potential and Land Capability: Course Notes 2010: A D Manson, K G T Camp, J M B Smith, KZNDARD

Soil Classification: A Taxonomic System for South Africa: CN MacVicar et Al, SIRI 1991 (Blue Book). This publication was produced by a working group of 30 scientists, written primarily for scientists

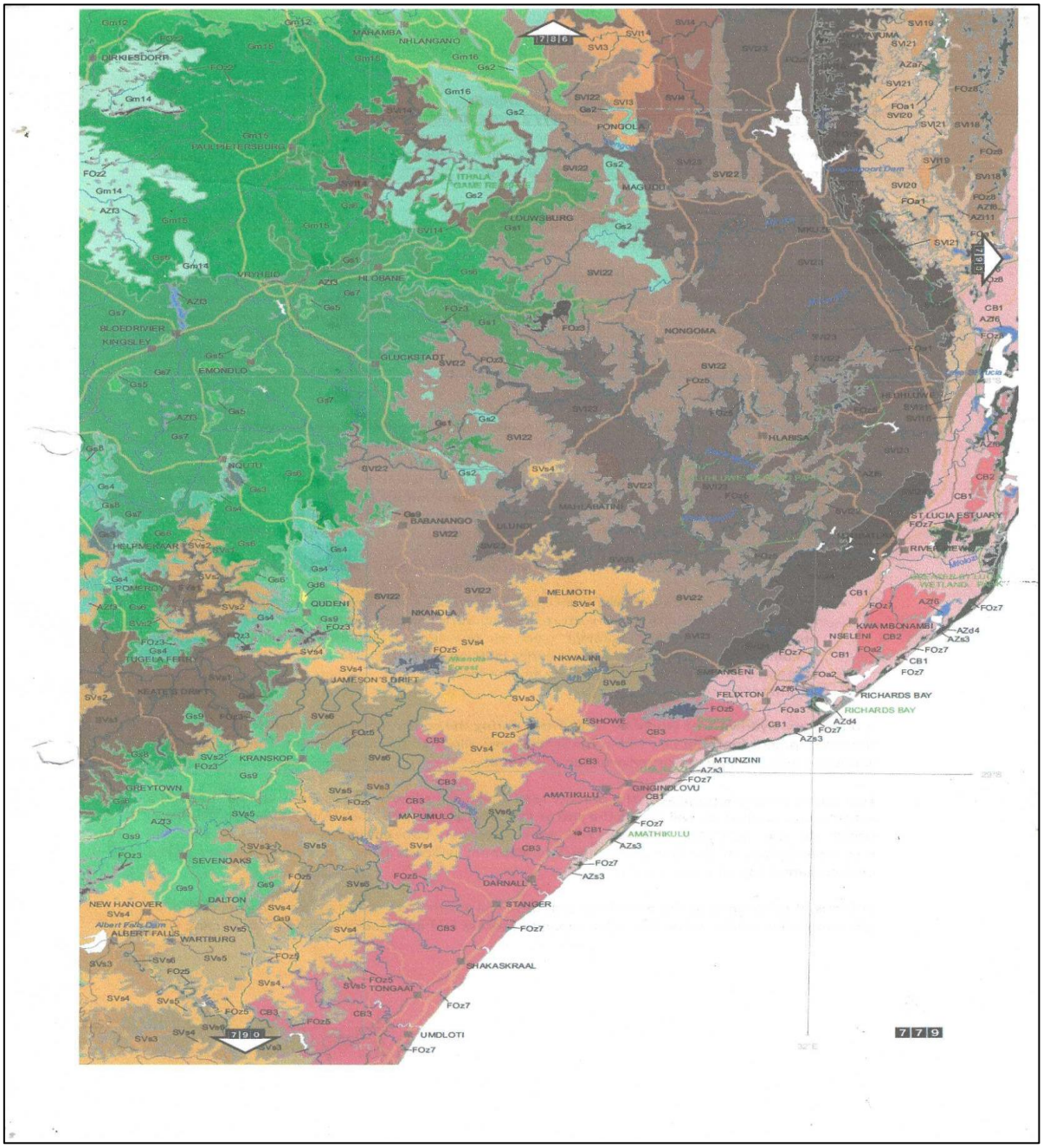
The Soils of South Africa: Martin Frey; Cambridge

APPENDIX A: COUNCIL FOR GEOSCIENCE PARENT MATERIAL MAP 27 ½ 32 ST. LUCIA

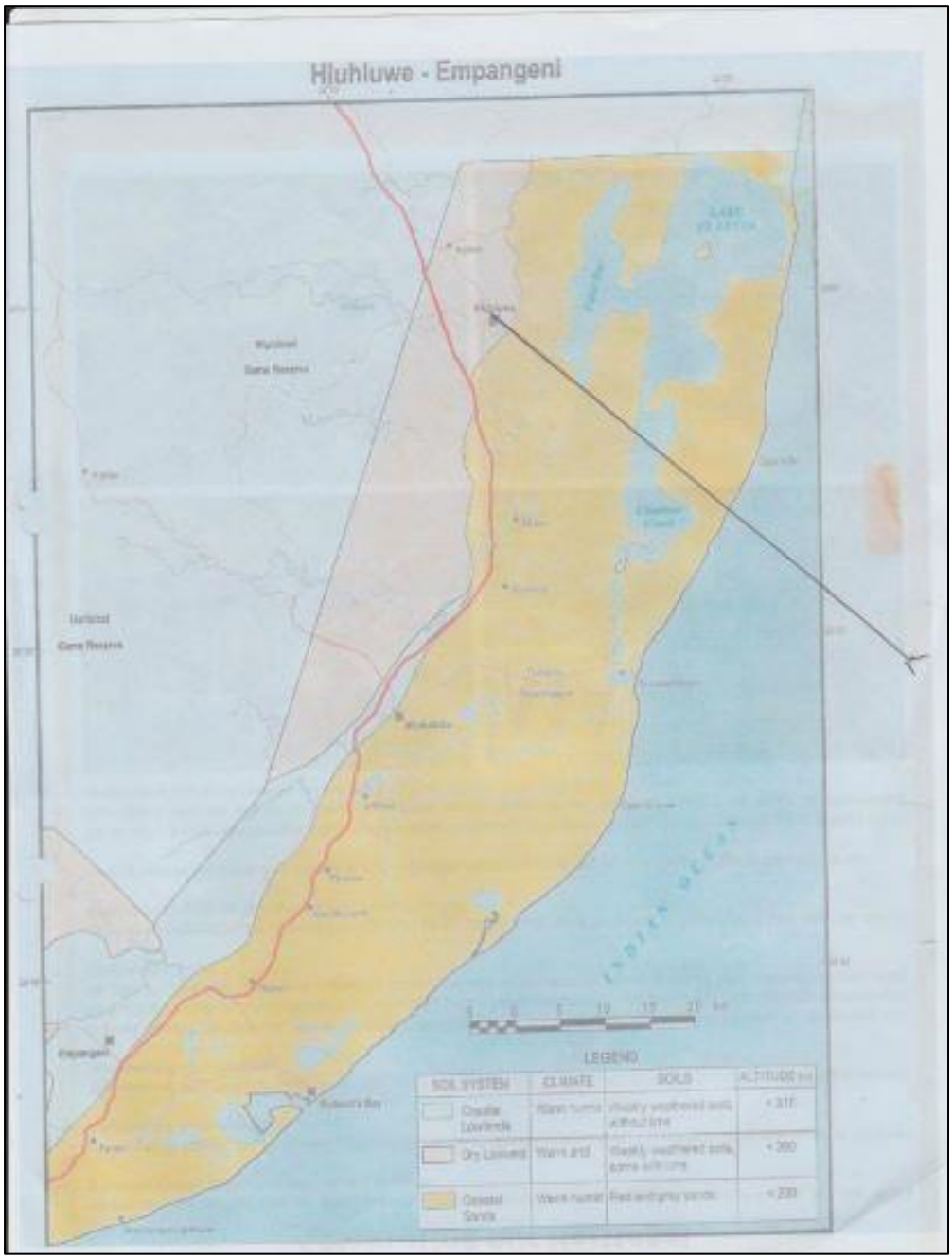


The Soil Parent Material is a compound of conglomerate, siltstone and sandstone of the Makhathini Formation of the Zululand Group of the Cretaceous System. These soils are more than 100 million years old. Their preset physical properties will not be affected by any change of land use

APPENDIX B: MUCINA AND RUTHERFORD VEGETATION MAP 790



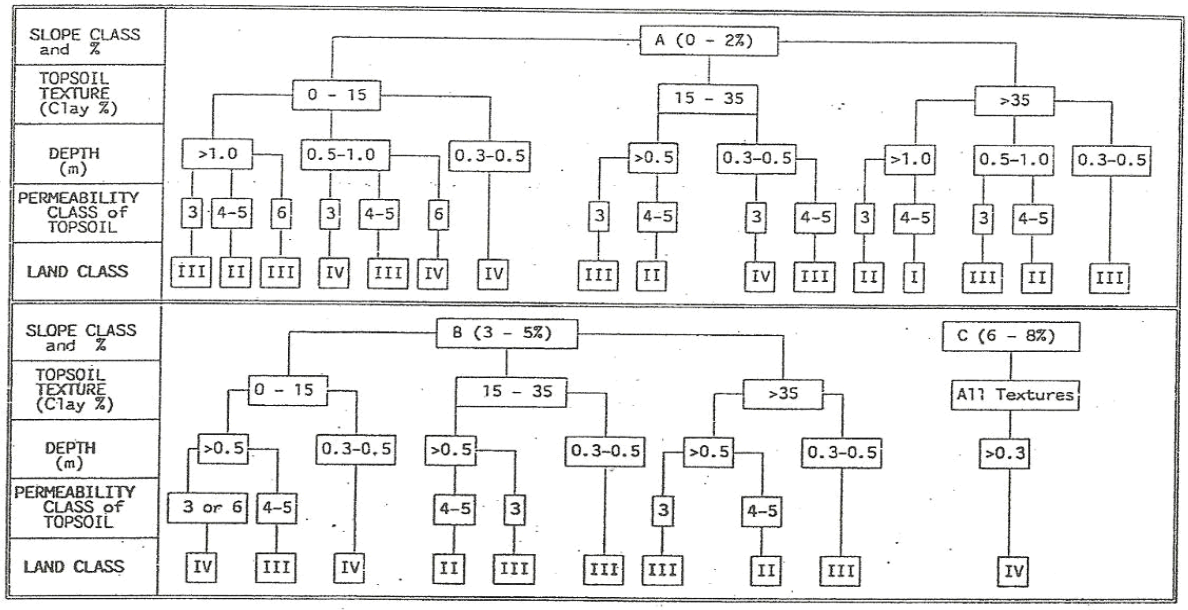
APPENDIX C: SOIL SYSTEMS HLUHLUWE - EMPANGENI



APPENDIX D: DEFINITION AND DETERMINATION OF LCC

The flowsheets below and overleaf detail the procedures used to determine LCC. This capability is closely allied to soil yield potential.

CAPABILITY CLASS DETERMINATION GUIDELINE for BRGs:
Dry Zululand Thornveld (20), Valley Bushveld (21), Lowveld (22), Sandy Bushveld (23) (Average annual rainfall 587-830 mm)
Use the following flow chart to determine the land capability classes for land to be cropped in the above Bioresource Groups.



PERMEABILITY CLASS DESCRIPTION*			
Class	Rate (seconds)	Description	Texture
7	<1	Extremely rapid	Gravel and Coarse Sand. 0 to 10 % clay.
6	1-3	Rapid	5% to 10% clay.
5	4-8	Good	> 10% clay.
4	9-20	Slightly restricted	
3	21-40	Restricted	Strong structure, grey colours, mottles. > 35% clay.
2	41-60	Severely restricted	Strong structure, weathered rock. > 35% clay.
1	>60	Impermeable	Rock and very strong structure. > 35% clay.

* If roots can penetrate the subsoil, test permeability of upper subsoil.
If roots cannot penetrate the subsoil, test the permeability of the mid-topsoil.
Dark structured clay topsoil (vertic & melanic) with a Class 2 permeability should be assessed in the chart as if it has a Class 3 permeability. If permeability is Class 7, downgrade to Land Class IV.

Now refer to the opposite page to make adjustments for wetness, rockiness, crusting or permeability.

USE THE FOLLOWING LAND CHARACTERISTICS TO MODIFY THE LAND CLASS OBTAINED OPPOSITE, IF NECESSARY: The land capability class determined using the "flow chart" cannot be upgraded through consideration of wetness, rockiness, surface crusting or permeability classes given below, but it may be downgraded as indicated.

WETNESS		
Class	Definition	Land Class
W0	Well drained - no grey colour with mottling within 1.5 m of the surface. Grey colour without mottling is acceptable.	No change
W1	There is no evidence of wetness within the top 0.5 m. Occasionally wet - grey colours and mottling begin between 0.5 m and 1.5 m from the surface.	Downgrade Class I to Class II, otherwise no change
W2	Temporarily wet during the wet season. No mottling in the top 0.2 m but grey colours and mottling occur between 0.2 m and 0.5 m from the surface. Included are: soils with G horizons (highly gleyed and often clayey) at depths deeper than 0.5 m; soils with an E horizon overlying a B horizon with a strong structure; soils with an E horizon over G horizons where the depth to the G horizon is more than 0.5 m.	Downgrade to Class IV
W3	Periodically wet. Mottling occurs in the top 0.2 m, and includes soils with a heavily gleyed or G horizon at a depth of less than 0.5 m. Found in bottomlands.	Downgrade to Class Va
W4	Semi-permanently / permanently wet at or above soil surface throughout the wet season. Usually an organic topsoil or an undrained vlei. Found in bottomlands.	Downgrade to Class Vb

PERMEABILITY	
Permeability Class	Adjustment to be made
1 - 2	If in sub-soil, rooting is likely to be limited: Use the permeability of the topsoil in the flow chart. If this is the permeability of the topsoil, then the topsoil is probably a dark structured clay, in which case a permeability Class 3 can be used in the flow chart.
3 - 5	Classify as indicated in the flow chart.
6	Topsoil should have < 15% clay - use the flow chart.
7	Downgrade Land Classes I to III to Land Class IV.

ROCKINESS		
Class	Definition	Land Class
R0	No rockiness	No change
R1	2 - 10% rockiness	Downgrade Classes I to II, otherwise no change
R2	10 - 20% rockiness	Downgrade Classes I to II, otherwise no change
R3	20 - 30% rockiness	Downgrade to Class IV
R4	> 30% rockiness	Downgrade Classes I, II, III & IV to Class VI

SOIL SURFACE CRUSTING		
Class	Definition	Land Class
t0	No surface crusting when dry	No change
t1	Slight surface crusting when dry	Downgrade Class I to Class II, otherwise no change
t2	Unfavourable surface crusting when dry	Downgrade Classes I & II to Class III, otherwise no change

NB **Any land not meeting the minimum requirements shown is considered non-arable (Class V, VI, VII or VIII).**

Non-arable land in BRGs 2, 4, 6, 9, 12, 14, 15, 16, 17, 18 & 19 includes:

* all land with W3, W4 or R4,
* all land with slope exceeding 20%,
* land with slope 13-20%, if clay < 15% or depth < 0.4m,
* land with slope 8-12% and clay > 15%, if depth < 0.25m,
* land with slope 8-12% and clay < 15%, if depth < 0.5m, and
* land with slope 0-7%, if depth < 0.25m.

20 March 1996

APPENDIX E: SOIL PROPERTIES: HLUHLUWE INTERCHANGE

Physical Properties

Soil Form / Family	Clay %	Water Holding Capacity	Steady Intake Rate	Drainage	Erosion Hazard	Tillage Constraints
Bonheim	>35	100 to 140	Medium	Moderate	Low	Cl

Chemical Properties

Soil Form / Family	Base Status	Organic matter Content	N&S Mineralisation Capacity	K Reserves	Zn Reserves	Salinity/ Sodicity Hazard
Bonheim	High	Moderate to High	Moderate	Moderate	Moderate	Moderate to High

Tillage Constraint Code	Tillage Constraint Risk
Cl	Clod Formation
Co	Compaction
Cr	Surface Crusting
Mw	Machine Wear
Sh	Subsurface Hindrance: Soils on hard Rock or Plinthite

APPENDIX E: MR. JOHN PHIPSON CVS AND DECLARATION

Abbreviated CV John Phipson

General Background:
John Phipson is an Agricultural and Agribusiness Specialist with extensive experience of:

- ✓ Agricultural Potential and Agricultural Impact Assessments for crop potential and change of land use purposes such as Environmental Impact Assessments
- ✓ Agricultural and Agribusiness Community Development Projects, especially those with an irrigated component
- ✓ New Farmer Capacity Building Workshops and Mentorships

A Registered Professional Natural Scientist in Agricultural Science (Reg No. 116608), he has worked with a wide range of State and Parastatal agencies as well as private sector investors, consultants, developers and community entities, not only throughout RSA, but also in Central and East Africa

Advisory Bodies
He is and has been an adviser to or active participant in several State and Private Sector initiatives at a national level. These include:

- ➢ The Presidential Advisory Panel on Agriculture and Land Reform
- ➢ The Agricultural Development Agency (AGDA), a highly focused private sector thinks tank and implementation facilitator for Community Agriculture and Land Reform
- ➢ The National Water Resource Strategy: Irrigation Component
- ➢ The Department of Agriculture, Land Reform and Rural Development Ministerial Steering Committee on Agricultural Policy

Academic background
BA (UKZN) 1959 and UED 1960. 2 years post- graduate study in economics (NDP). He undertook Extension Studies at the UCT Graduate School of Business in 1969 and UKZN Durban 1981. He has attended numerous training courses and seminars on various aspects of agriculture, covering mainly soil, nutrient and crop management, environmental management, irrigation and field husbandry at Cedara Agricultural College, the South African Sugar Association Research Station, and various other centres. His most important qualification is the width and depth of his experience.

Operational Philosophy
John's approach to all projects is hands on. He leads by example. He is able to enthuse and motivate, think laterally and never stops looking for better ways to meet the client's needs

Places of Tertiary Education & Dates Associated:

Institution	Qualification	Dates
UKZN(Pmb)	BA	1957-1959
UKZN(Pmb)	University Education Diploma	1960
UKZN(Dbn)	B Econ 1 and 2 (Part time, NDP)	1962-1963
UKZN (Dbn)	B Econ 2 (Part time, NDP)	1959

UCT, Graduate School of Business	Summer School: Managing Business in Europe	1970
Cedara College of Agriculture	Short Courses in Agriculture (Soil Fertility, Crop Production, Irrigation, Land Management)	2005, 2006, 2012
Agrifert Academy	Short Course: Crop Fertigation	2007

John Phipson's most important agricultural asset is a QBE (Qualified by Experience) as outlined below:

Overview of Postgraduate Experience:

- John Phipson has been involved in agriculture, nature conservation and related fields since 1963. He has worked as a consultant to corporate agricultural entities such as Illovo Sugar, Tongaat Hulett Sugar and the Commonwealth Development Corporation as well as numerous privately owned commercial undertakings both locally and in sub-Saharan Africa
- He has been self employed as a consultant in crop production since 1977
- He has been an active participant in rural community agriculture since 2002
- He has been engaged in change of Land Use applications since 2008

John is or has been a member of a wide range of agriculturally and scientifically related bodies and interest groups. These include the SA Institute of Measurement and Control (SAIMC), the SA Sugar Technologists Association (SASTA) and the No-till Club. He regularly attends and participates in industry workshops and seminars. He contributed the Presidential Panel on Land Reform and is currently an active participant in Minister Didiza' Steering Committee on Agricultural Reform. He is a Foundation Member of the Agricultural Development Agency (AGDA), a high-level think tank and implementation Agency (AGDA) which is a component of the In Transformation Initiative (ITI) which reports directly to the Presidency. Despite having no formal agricultural degrees, he was admitted into the S A Council for Natural Scientific Professions in Agriculture (SACNASP) in 2016

Change of Land Use and Crop Yield Potential: John Phipson

John Phipson has behind him a lifetime of experience in land management and crop production, not only throughout RSA but also in sub-Saharan Africa

This has included crop yield estimates based on the physical and chemical properties of the target soils. These properties have then been matched to requisite crop nutrients, methods of crop husbandry, irrigation management, good harvesting practices, value adding and market access

This led to his becoming involved in agricultural impact assessments, an extremely important and interesting field of endeavour as it seeks to find a balance between our scarce agricultural resources and the inevitable demands of economic development. It also seeks to counterbalance the twin demands of job security through permanent employment and the land required to grow the food

This has led to a deep and wide range of experience in assessing the impact of change of land use in the following categories:

- Township development, ranging from a few dozen entry level homes on a few ha to fully integrated developments of up to 2 500 ha each. The latter have, where possible, included a strong market garden component

- Mining, both underground and opencast, including surface working areas, conveyor systems and access roads

- Alternate energy, wind generated, photovoltaic and gas conversion, the latter being the most recent, a 3 000 MW, R 40 billion initiative to generate electricity from Liquid and Natural Petroleum Gas

- Linear developments in the form of new roads, road upgrades, pipelines, bridges, underground and overhead power transmission lines etc.

- Conversion of vacant rangeland to both rain fed and irrigated crop production. Crop selection and crop yield potential are important components of this type of assessment

- The agricultural and agribusiness component of Environmental Management Frameworks for local and district municipalities. These include crops, livestock and timber, both commercial and indigenous

Although John Phipson is based in KZN, he undertakes work in all the provinces as well as adjoining territories. As he is semi-retired his rates are reasonable and his availability usually good.

Nature Conservation: John Phipson

My formative years were spent on a 100HA property halfway between Harding and the Weza State Forest, most of which was covered in pristine mist belt indigenous forest. For a number of reasons, I could not follow my chosen career path of obtaining a BSc .in Silviculture from Stellenbosch. but ended up with a BA UED from UN PMB

During my term of office in the then Natal Provincial Council I served on the Natal Parks Board and Town Planning portfolio committees, one of the highlights of which was providing the motivation for a Private Member's Motion calling for a chair of Nature Conservation at UKZN. Among the outcomes thereof has been the creation of opportunities for previously disadvantaged young men and women to secure well paid and secure employment in conservation orientated entities such as Ezemvelo, tourism and the environmental professions

I was for many years an active member and contributor to the Custodians of Rare and Endangered Wildlife (CREW) an entity under the SANBI umbrella. Similarly, I was for many years an active member of BirdLife SA. I was on the executive of the KZN Deep Sea Angling Association for several years and spent many hours with Rudy van der Elst and his colleagues

After moving to Mtunzini in 1992 I soon met the late Ian Garland who sparked my interest in indigenous trees. I have since then been actively involved in the Zululand Indigenous Tree Club. Every second month we spend a day or a weekend in one of the many Zululand indigenous forests.

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

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
Hluhluwe R22 Interchange

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/documentsforms.
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.

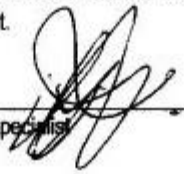
1. SPECIALIST INFORMATION

Title of Specialist Assessment	Hluhluwe R22 Interchange
Specialist Company Name	John Phipson
Specialist Name	John Phipson
Specialist Identity Number	390223 5023 086
Specialist Qualifications:	BAUED UKZN
Professional affiliation/registration:	SACNASP Pr. Agric 119208
Physical address:	2 Park Lane, Mtunzini KZN 3867
Postal address:	N/A
Postal address	N/A
Telephone	035 340 1940
Cell phone	082 944 8462
E-mail	topohpe@mweb.co.za

2. DECLARATION BY THE SPECIALIST

I, John Phipson 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

John Phipson

Name of Company:

16 Nov 2024

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _ John Phipson_____, 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

John Phipson

Name of Company

17 Nov 2024

Date

Signature of the Commissioner of Oaths

SOUTH AFRICAN POLICE SERVICE
Community Service Centre
2024 -11- 17

Batho pele- putting people first

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

John Sydney Phipson

Registration Number: 116608

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)

Agricultural Science (Professional Natural Scientist)

Effective **21 September 2016** Expires **31 March 2025**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

APPENDIX F: PICTURE GALLERY

As mentioned in the text, this vegetation unit is a mixture of dense and open savannah. This photograph, looking northwards from the current R 22 is the start of a densely populated

In contrast with the previous photograph, the view southwest from the existing R 22 is of a more open vegetation. This mixture is ideal for a game farm as different species prefer different habitat densities e.g. Inyala like thickets, kudu prefer more scattered trees.