

APPENDIX E14 – Agricultural Agro-Ecosystem Assessment Statement

AGRICULTURAL AGRO-ECOSYSTEM ASSESSMENT REPORT

COMBINED CYCLE GAS TURBINE POWER PLANT IN
RICHARDS BAY, WHICH FALLS WITHIN THE CITY OF
UMHLATHUZE LOCAL MUNICIPALITY IN KZN SITE

July 2024

COMPILED FOR:

Nemai Consulting (Pty) LTD

PREPARED BY:

INDEX (PTY) LTD

P.O. BOX 96023

WATERKLOOF VILLAGE

PRETORIA, 0145

index@iafrica.com



DECLARATION

The observations, conclusions, and recommendations in this report are based on the best available data and the best scientific and professional knowledge of the directors of INDEX (Pty) Ltd. The report is founded on GIS programming and utilizes satellite tracking to map survey points. Survey points are typically accurate within 3 meters, which should be taken into account when using the information.

The directors of INDEX (Pty) Ltd exercise due care and diligence in rendering services and preparing documents. However, the company accepts no liability. By receiving this document, the client indemnifies INDEX (Pty) Ltd and its directors and employees against any action, claim, demand, loss, liability, cost, damage, or expense arising from or in connection with services rendered.

The property and copyright of this report remain vested in INDEX (Pty) Ltd. The client who commissioned the report may use the information as they see fit, but only for the land for which it was commissioned.

General declaration:

- INDEX acted as the independent specialist in this application.
- Performed the work related to the application objectively, even if this resulted in views and findings that were not favorable to the applicant.
- There were no circumstances that could compromise INDEX's objectivity in performing this work.
- INDEX has expertise in conducting the specialist report relevant to this application, including knowledge of NEMA and its regulations and any guidelines relevant to the proposed activity.
- INDEX has no conflicting interests and will not engage in any conflicting interests in undertaking the activity.

The study was undertaken by Dr. Andries Gouws, a registered member of SACNASP in the category of Agriculture.



Signature of specialist

For INDEX (PTY) LTD

18/07/2024

SUMMARY AND CONCLUSIONS

Mabasa Energy and Fuels (Pty) Ltd intends to submit a bid for the Gas Independent Power Producers Procurement Programme (GASIPPPP).

The property under investigation covers an area of 14.07 hectares. The results of the land and soil investigation are based on a site visit conducted on June 19, 2024

land uses

The property is vacant and located within the Security Control Area, where farming is not permitted. No cultivated land was detected in proximity of the site. There are some plantations to the north-west of the site.

Soil

The underlying material is aeolian or wind-blown sands. The soil is generally between 600 to more than 1000mm deep, with colours ranging from light grey to dark grey.

Sensitivity analysis – Notice 320 of NEMA

According to the screening tool, the site is categorized as mostly high and medium sensitivity, a finding that is not confirmed by the site investigation.

Capability – site survey

The detailed assessment performed by Index found the following:

- Deep Regic Sands: The entire site is composed of coarse sands classified as Namib. These sands are not cultivated and exhibit low sensitivity.
- Uneven Land with Perched Water Table: The remaining land in the middle portion of the site is characterized by uneven terrain with a perched water table that is covered with facultative hydrophytic vegetation. This area has low agricultural sensitivity.
- Tool Assessment Discrepancies:
 - The tool incorrectly categorized the water-saturated areas as having very high sensitivity.
 - The clay content of the regic sands is below 10%, which is typically the threshold where cation exchange capacity is too low for effective nutrient adsorption by plants. Consequently, nutrients are leached beyond the root zone and are unavailable for normal plant growth.
 - The entire site falls within a Security Zone designated for industrial use, where farming is prohibited. Therefore, the site has no agricultural potential.

Conclusions

The entire site has very low sensitivity related to agriculture.

The land is located within a Security Control Zone where crop production is prohibited.

The development will have no impact on agriculture.

It will not result in the loss of high-potential land or its associated agricultural production.

The soils are not arable due to the land being situated in an industrial area and its low potential for farming.

Given these factors, it is recommended that the project be approved and its implementation supported.

Table of Contents

1	BACKGROUND	8
2	PROJECT DESCRIPTION	8
3	PROCESS OF THE ASSESSMENT	10
4	LAND USES	11
5	REGIONAL LAND USES	11
6	NATURAL RESOURCES	11
6.1	CLIMATE	11
6.2	VEGETATION	12
6.3	SOIL	12
7	SENSITIVITY ANALYSIS – NOTICE 320 OF NEMA	13
8	HIGH POTENTIAL LAND	14
9	LAND CAPABILITY	14
9.1	BACKGROUND	14
9.2	LAND USE CAPABILITY	15
9.3	CAPABILITY – SITE SURVEY	16
10	CROP PRODUCTION POTENTIAL	17
11	IMPACT ASSESSMENT	17
11.1	RATING CRITERIA	17
11.2	IMPACT RATING	18
12	CONCLUSIONS	20
13	ADDENDA	21
13.1	REFERENCES	21
13.2	CAPABILITY DETERMINATION CRITERIA	22
13.3	SACNASP REGISTRATION	23
13.4	PHOTOS OF THE SITE	24

Table of Figures

Figure 1. Location of the site	8
Figure 4. Farm portions of adjoining properties	9
Figure 3. Locality within the Security Control Zone	10
Figure 5. Photo positions	10
Figure 6. Land cover in proximity of the site	11
Figure 7. Soil map	12
Figure 8. Sensitivity in terms of the National Screening Tool	13
Figure 9. Soil capability following the site assessment	16

Agricultural Agro-Ecosystem Assessment Statement

1	General information	Reference
1.1	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified on the screening tool as being of “very high” or “high” sensitivity for agricultural resources must submit an Agricultural Agro-Ecosystem Specialist Assessment unless:	The site has a low sensitivity related to agriculture. However, due to the nature of the project, the client requested an Agricultural Agro-Ecosystem Assessment
1.1.1	the application is for a linear activity for which impacts on the agricultural resource are temporary and the land in the opinion of the soil scientist or agricultural specialist, based on the mitigation and remedial measures, can be returned to the current land capability within two years of the completion of the construction phase;	N/A
1.1.2	the impact on agricultural resources is from an electricity pylon; or	N/A
1.1.3	information gathered from the site sensitivity verification differs from the designation of “very high” or “high” agricultural sensitivity, and it is found to be of a “medium” or “low” sensitivity.	N/A
1.2	Should paragraphs 1.1.1; 1.1.2; or 1.1.3 apply, an Agricultural Compliance Statement must be submitted.	N/A
1.3	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool	N/A
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).	SACNASP registration of the author is attached as an addendum.
2.2	The assessment must be undertaken on the preferred site and within the proposed development footprint.	Confirmed.
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:	A site visit took place in June 2024. The land is in an industrial area where no farming has taken place during the past 5 years.
2.3.1	the extent of the impact of the proposed development on the agricultural resources; and	The land is in an industrial area where no farming has taken place during the past 5 years.
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.	The land is in an industrial area where no farming has taken place during the past 5 years.
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:	The baseline conditions are described in Sections 6 through to Section 10.
2.4.1	the soil form/s, soil depth (effective and total soil depth), top and sub-soil clay percentage, terrain unit and slope;	The land has a variety of soil depths and potential. A soil survey was done and is described in Section 6.
2.4.2	where applicable, the vegetation composition, available water sources as well as agro-climatic information;	N/A
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;	The land is in an industrial area where no farming has taken place during the past 5 years.

1	General information	Reference
2.4.4	the current employment figures (both permanent and casual) for the land for the past 3 years, expressed as an annual figure; and	The land is in an industrial area where no farming has taken place during the past 5 years.
2.4.5	existing impacts on the site, located on a map (e.g., erosion, alien vegetation, non-agricultural infrastructure, waste, etc.).	The present land uses are discussed in Section 4.
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:	
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;	The land is in an industrial area where no farming has taken place during the past 5 years.
2.5.2	change in employment figures (both permanent and casual) for the past 5 years expressed as an annual figure; and	The land is in an industrial area where no farming has taken place during the past 5 years.
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.	N/A
2.6	The findings of the Agricultural Agro-Ecosystem Specialist Assessment must be written up in an Agricultural Agro-Ecosystem Specialist Report.	The findings of the assessment are the subject of this 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;	The author is a soil scientist and is register with SACNASP. Registration and CV is attached.
2.7.2	a signed statement of independence by the specialist;	See preamble to this report.
2.7.3	the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	The survey took place in June. Land use potential is based on soil properties which is not dependent on season.
2.7.4	a description of the methodology used to undertake the on-site assessment inclusive of the equipment and models used, as relevant;	The method used for the assessment is described in Section 3.
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;	N/A
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;	N/A
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;	The land is in an industrial area, which is designated for activities like the one proposed.
2.7.8	additional environmental impacts expected from the proposed development based on the current status quo of the land including erosion, alien vegetation, waste, etc.;	N/A
2.7.9	information on the current agricultural activities being undertaken on adjacent land parcels;	There are no farming activities in the Security Control Area or any of the adjacent properties.
2.7.10	an identification of any areas to be avoided, including any buffers;	There are no specific areas that should be avoided from an agricultural.
2.7.11	a motivation must be provided if there were development footprints identified as per paragraph 2.5.3 above that have a “medium” or “low” agriculture sensitivity and that were not considered appropriate;	N/A

1	General information	Reference
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;	The land is in an industrial area where no farming has taken place during the past 5 years.
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;	Refer to Sections 6 to 11. The development will not have any impact on farming.
2.7.14	any conditions to which this statement is subjected;	There are no conditions that the project is subject to.
2.7.15	where identified, proposed impact management outcomes or any monitoring requirements for inclusion in the Environmental Management Programme (EMPr); and	Not required.
2.7.16	a description of the assumptions made and any uncertainties or gaps in knowledge or data.	There are no specific assumptions that were made. The soil survey was in sufficient detail to establish the boundaries of different soils.
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.	Confirmed
2.9	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	Complied. This report is signed in the report declaration.

1 BACKGROUND

Mabasa Energy and Fuels (Pty) Ltd intends to submit a bid for the Gas Independent Power Producers Procurement Programme (GASIPPPP). As part of this process, NEMAI Green has requested that Index evaluate the site sensitivity of a proposed 750 MW Combined Cycle Gas Turbine Power Plant in Richards Bay according to the National Environmental Management Act (NEMA). It falls within the UMHLATHUZE Local Municipality in KwaZulu-Natal,

The primary objectives of this evaluation are to assess the following:

- Loss of high-potential agricultural land and cultivated areas;
- Loss of grazing land;
- Loss of agricultural infrastructure;
- Impacts of the project from an agricultural perspective; and
- Suitable mitigation measures to address the identified impacts.

The property under investigation covers an area of 14,07 hectares. The results of the land and soil investigation are based on a site visit conducted on June 19, 2024

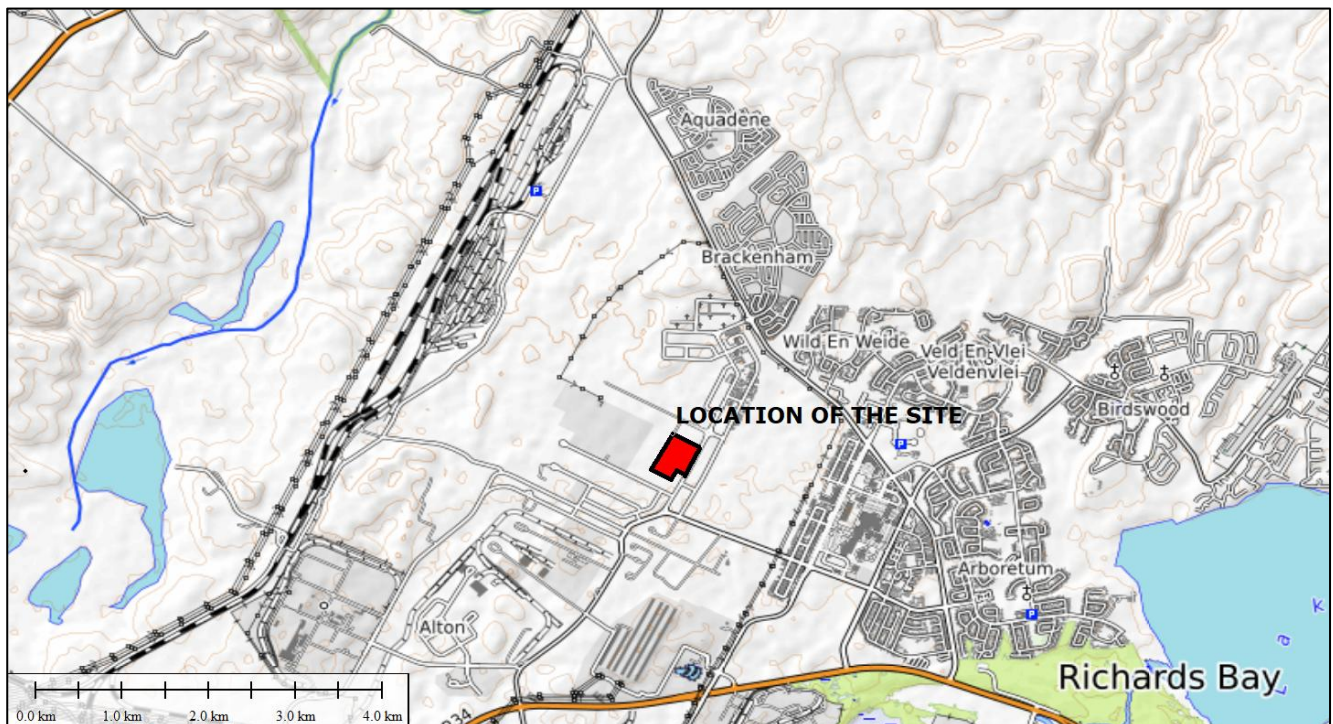


Figure 1. Location of the site

2 PROJECT DESCRIPTION

The purpose is to build a 750MW Combined Cycle Gas Turbine Power Plant in Richards Bay, Kwazulu-Natal (KZN). It will consist of the following

1. Two (2) General Electric (GE) Frame 9 (model 9F.03) combustion turbines and generators;
2. Two (2) triple pressure, 3 drum, natural circulation Heat Recovery Steam Generators (HRSGs);
3. One (1) condensing steam turbine and generator;

4. One (1) de-aerating surface condenser;
5. One (1) induced draft cooling tower;
6. Balance of plant (BOP) equipment consisting of Pumps, Heat Exchangers, Transformers, Power Electrics, etc.;
7. One (1) integrated plant distribution control system; and
8. 275 kV Switchyard comprising of three (3) x 15kV to 275kV step-up transformers and one (1) station auxiliary transformer (the rating to be defined during detailed design).

Property description:

The earmarked site is located on Erf 16673 in Phase 1F of the Richards Bay Industrial Development Zone (RBIDZ)

Applicant:

Mabasa Energy and Fuels (Pty) Ltd



Figure 2. Farm portions of adjoining properties



Figure 3. Locality within the Security Control Zone

3 PROCESS OF THE ASSESSMENT

- Present land uses were identified using various satellite images available on the internet.
- A reconnaissance-level soil survey was conducted on the property.
- Soil types and depths were determined using a soil auger and/or soil probe and described according to the Binomial Soil Classification System used in South Africa.
- Twelve photographs were taken and their positions recorded on GIS.
- Climate data was sourced from online resources.
- Soil capability was assessed according to the system used by the Department of Agriculture, Land Reform, and Rural Development (DALRRD).



Figure 4. Photo positions

- Agricultural sensitivity was evaluated using the Sensitivity Tool developed by the Department of the Environment.

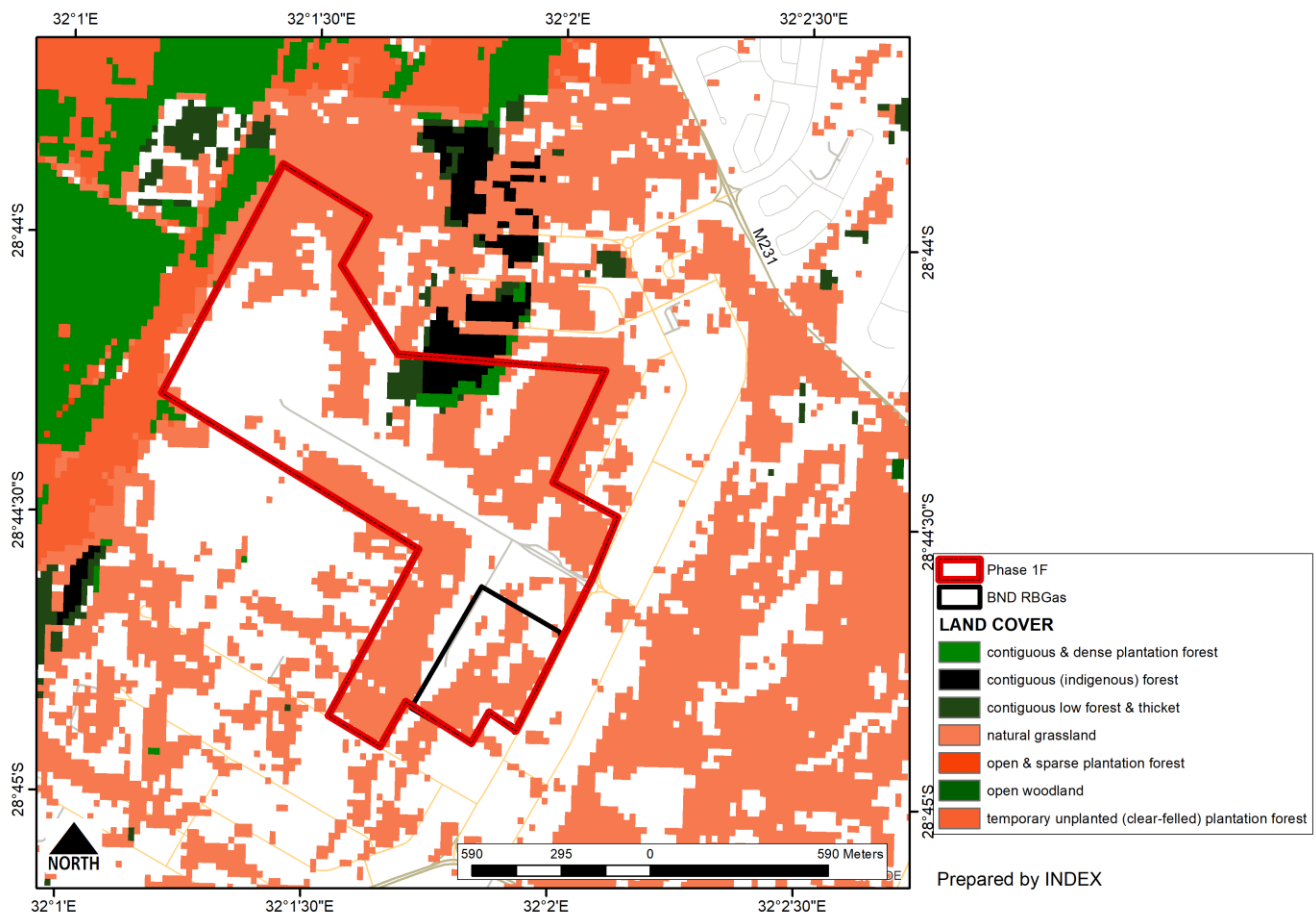
4 LAND USES

The property is vacant and located within the Security Control Area, where farming is not permitted.

5 REGIONAL LAND USES

No cultivated land was detected in proximity of the site. There are some plantations to the north-west of the site. See Figure 5 that describes the land cover (Department of the Environmental Affairs – DFFE).

Figure 5. Land cover in proximity of the site



6 NATURAL RESOURCES

6.1 Climate

In Richards Bay, the summers are warm and muggy; the winters are short, comfortable, and dry; and it is windy and mostly clear year-round. The temperature typically varies from 14°C to 28°C and is rarely below 12°C or above 32°C.

Rain falls throughout the year. The long-term average rainfall is around 1100mm/year. The month with the most rain in Richards Bay is *February*, with an average rainfall of *81 mm*. The month with the least rain is *June*, with an average rainfall of *16 mm*.

The climate is suitable for rainfed crop production.

6.2 Vegetation

Grazing capacity

The livestock grazing capacity of natural veld according to the Department of Agriculture, is estimated at 3 hectares per large stock unit (LSU).

This is not relevant because cattle grazing is not allowed within the Security Control Zone.

6.3 Soil

Observations were made using a soil auger and probe. The underlying material is aeolian or wind-blown sands. The soil is generally deep, with colours ranging from light grey to dark grey and has a sandy texture. The dominant soil types found on the site are described below.

The soil depth varies between 600 to more than 1000mm.

The soil map is provided as Figure 6 and the detail for each soil unit is described in Table 1.

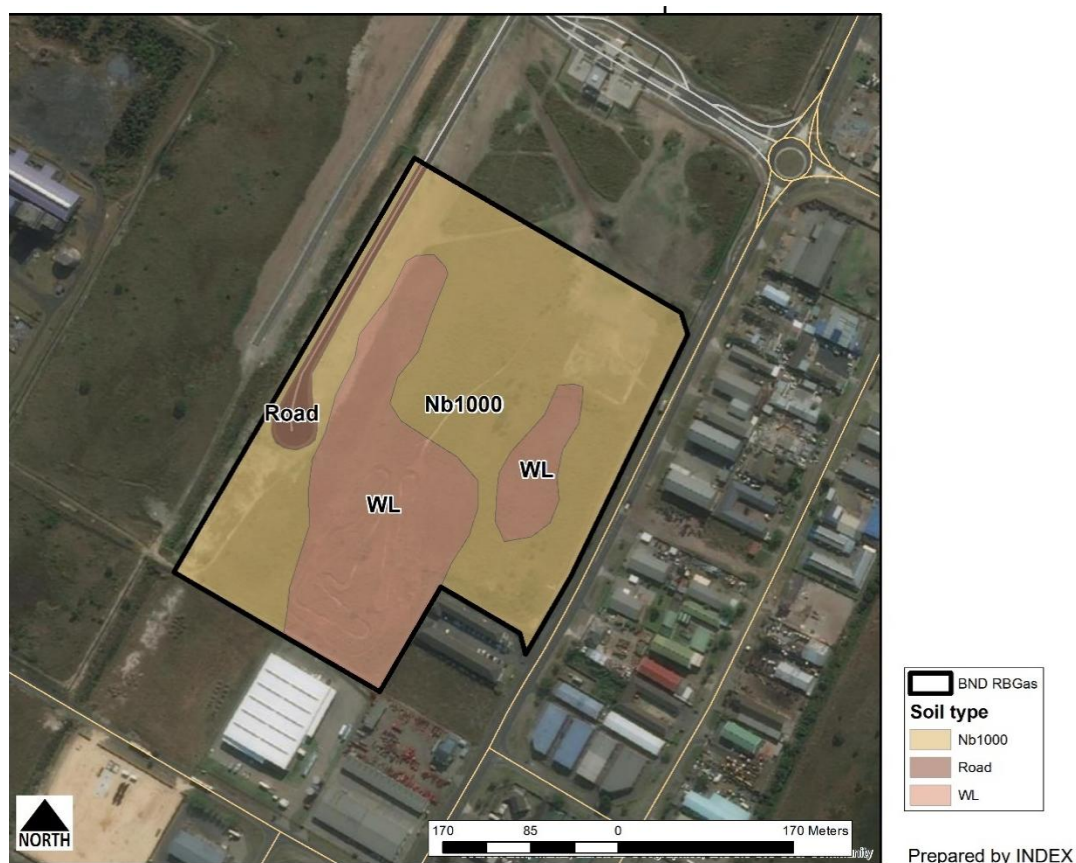


Figure 6. Soil map

The soil map and description of the dominant soils are provided below.

Table 1. Soil descriptions

Map unit	Description
Nb1000	The entire site consists of wind-blown sands. The soil is very sandy, with a clay content of less than 10%, and a typical depth of over 1,000 mm. The topsoil is light greyish-brown with a single-grain structure and is free of stones or nodules. The subsoil is greyish-brown sand with a similar grain structure. During periods of high rainfall, the deeper subsoil may become water-saturated. The dominant soil form identified is Namib.
Road	Entrant road.
W	This is waterlogged regic sand. It consists of uneven land that was previously used as a motocross race track.

7 SENSITIVITY ANALYSIS – NOTICE 320 OF NEMA

In March 2020, the Department of Environmental Affairs published Notice 320 under the National Environmental Management Act, which outlines the minimum criteria for applying for environmental authorization. This notice specifically applies to energy generation projects.

The protocol detailed in the notice provides criteria for assessing and reporting impacts on agricultural resources for activities requiring environmental authorization. The assessment requirements are linked to the level of environmental sensitivity determined by the national web-based environmental screening tool for agricultural resources. This tool uses the most recent land capability evaluation data provided by the Department of Agriculture, Land Reform, and Rural Development.

The sensitivity analysis, as shown in Figure 7 indicate the results of the screening tool. The tool is based on broad information and may not fully capture all impacts. According to the screening tool, the site is categorized as mostly very high and high sensitivity, a finding that is not confirmed by the site investigation.

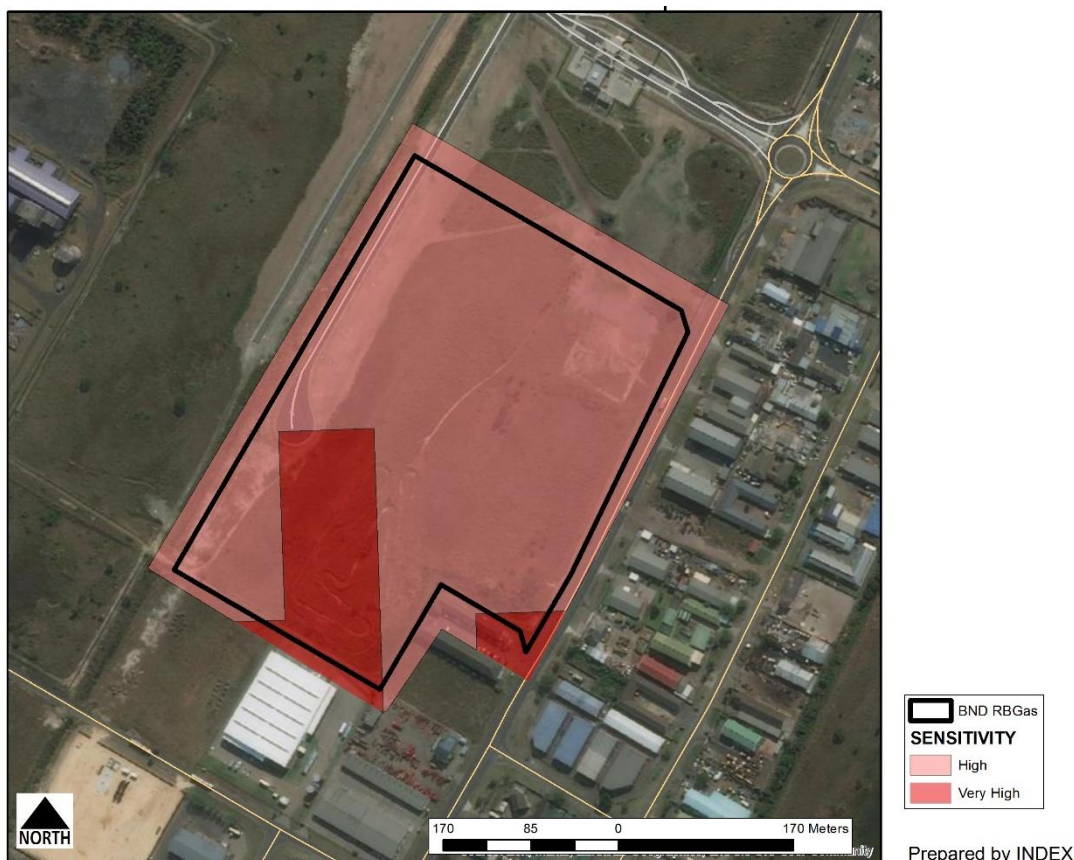


Figure 7. Sensitivity in terms of the National Screening Tool

For land with a very high or high sensitivity, the following will apply:

Where the land has highly sensitive soils and is confirmed by the site visit, then an Agricultural Agro-Ecosystem Assessment (AEA report) will need to be undertaken and a report prepared.

Analysis for this development

The tool is incorrect in its assessment. Wetlands, road and soils with less than 10% clay is not highly sensitive land.

The results of the survey are discussed later in the report.

8 HIGH POTENTIAL LAND

According to the mandate of the Department of Agriculture, Land Reform, and Rural Development, high-potential land must be protected. The potential of land is defined in terms of a viable farming unit as described in the Conservation of Agricultural Resources Act (CARA) and the National Policy for the Preservation of High Potential Agricultural Land (HUAL), as well as other relevant legislation and guidelines used by the Department. Land and soil properties often determine whether land is considered arable, and these characteristics are frequently the primary criteria used, rather than the financial viability of the property as a farming unit.

The norms and standards set by CARA as well as the National Policy on the Protection of High Potential and Unique Agricultural Land published by the Department of Agriculture in 2006 (HUAL), emphasize the importance of protecting high-potential agricultural land to ensure food security. This policy addresses issues related to land subdivision and changes in land use, asserting that the protection of high-potential agricultural land remains the Department's primary responsibility.

According to HUAL, high-potential cropping land is defined as land capable of consistently producing acceptable levels of goods and services for a wide range of agricultural enterprises in a sustainable manner, considering the expenditure of energy and economic resources. This definition includes:

- Land capability Classes i to iii;
- Unique agricultural land;
- Irrigated land; and
- Land suitable for irrigation and where irrigation water is available.

Essentially, its objective is to protect high potential land from being exploited for non-farming purposes.

9 LAND CAPABILITY

9.1 Background

Land capability classes are interpretive groupings of land with similar potential and limitations or similar hazards. It is considered by many practicing land use planning as one of the few methods to describe the potential of land for development.

The evaluation involves consideration of:

- Difficulties in land use owing to physical land characteristics,
- The risks of land damage from erosion and other causes; and
- Climate.

9.2 Land use capability

In 2002 the Directorate: Land Use and Soil Management (DLUSM) within DALRRD through the Agricultural Research Councils' (ARC), Institute of Soil, Climate and Water (ISCW) developed a national spatial land capability data set to depict the spatial delineation of the then defined eight land capability classes. The approach followed was based on the approach of Klingebiel and Montgomery (1961) but adapted for South Africa by the Multilateral Technical Committee for Agriculture and Environmental Affairs' Task team, to develop a system for soil and land capability classification, but it further aimed to incorporate the parameters within a Geographic Information System (GIS). The resulted spatial data set was derived at a scale of 1:250 000 with the land type data set being the main input data set for the derived land capability classes together with climatic and terrain parameters.

While the new dataset is more complex than that of Klingebiel *et al*, the latter has clear guidelines and is generally still followed when assigning capability to land. A comparison between the two systems is provided below:

Table 2. Relationship between grading of the Screening tool and that of Klingebiel *et al*.

DALRRD (2016)	Klingebiel	Capability	Arability
1-2	viii	Very low	Not arable
3-4	vii	Very low to low	
5-6	vi	Low	
7	v	Low to moderate	
8	iv	Moderate	Arable
9-10	iii	Moderate to high	
11-12	ii	High	
13-14	i	High to very high	
15	i	very high	

Land capability is classified according to guidelines published by the National Department of Agriculture in AGIS.

Land Capability is determined by the collective effects of soil, terrain and climate features and shows the most intensive long-term use of land for rain-fed agriculture. At the same time, it indicates the permanent limitations associated with the different land-use classes (refer to

Table 3). The criteria used for the assessment is provided in the addenda.

- Order A: Arable land – high potential land with few limitations (Classes i and ii)
- Order B: Arable land – moderate to severe limitations (Classes iii and iv)
- Order C: Grazing and forestry land (Classes v, vi and vii)
- Order D: Land not suitable for agriculture (Class viii)

Table 3. Land capability classes – intensity of land uses

LAND CAPABILITY			Wildlife	Grazing and Forestry			Crop production			
Order		Class		Forestry	Veld	Pastures	Limited	Moderate	Intensive	Very
Arable	A	i								
		ii								
	B	iii								
		iv								
Non arable	C	v								
		vi								
		vii								
	D	viii								

Note: the shaded area indicates the suitable land use

9.3 Capability – site survey

The detailed assessment performed by Index found the following:

- **Deep Regic Sands:** The entire site is composed of coarse sands classified as Namib. These sands are not cultivated and exhibit low sensitivity.
- **Uneven Land with Perched Water Table:** The remaining land in the middle portion of the site is characterized by uneven terrain with a perched water table (at least during the survey period) and is covered with facultative hydrophytic vegetation. This area has low agricultural sensitivity.

Tool Assessment Discrepancies:

1. The tool incorrectly categorized the water-saturated areas as having very high sensitivity.
2. The clay content of the regic sands is below 10%, which is typically the threshold where cation exchange capacity is too low for effective nutrient adsorption by plants. Consequently, nutrients are leached beyond the root zone and are unavailable for normal plant growth.
3. The entire site falls within a Security Zone designated for industrial use, where farming is prohibited. Therefore, the site has no agricultural potential.

Soil use capability on the site

The analysis indicates that there is no high potential land that falls into Land Capability Class i to iii. The entire site falls into Class v and poorer.



Figure 8. Soil capability following the site assessment

Table 4. Land capability of soil groups

Soil Group	Land Capability	Description
Na1000	v	Low potential soil with a low cation exchange capacity.
W	vii	Waterlogged land that is not suitable for cultivation
Road	viii	Not arable

Site sensitivity in terms of Notice 320 of NEMA

The entire site has very low sensitivity related to agriculture.

10 CROP PRODUCTION POTENTIAL

Viability of the land for commercial crop production

The land is within the Security Control Zone where crop production is not allowed.

11 IMPACT ASSESSMENT

11.1 Rating criteria

The following rating was used to indicate impacts:

Extent

- 1: Local - extend to the site and its immediate surroundings.
- 2: Regional - impact on the region but within the province.
- 3: National - impact on an interprovincial scale.
- 4: International - impact outside of South Africa.

Magnitude

Degree to which impact may cause irreplaceable loss of resources.

- 1: Low - natural and social functions and processes are not affected or minimally affected.
- 2: Medium - affected environment is notably altered.
- 3: High - natural or social functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.
- 4: Very high – Will affect the continued viability of the system/environment.

Duration

- 1: Short term: 0-5 years.
- 2: Medium term: 5-11 years.
- 3: Long term: impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention.

- 4: Permanent: mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Probability

- 1: Rare/Remote - the event may occur only in exceptional circumstances.
- 2: Unlikely - the event could occur at some time.
- 3: Moderate - the event should occur at some time.
- 4: Likely - the event will probably occur in most circumstances.
- 5: Almost certain - the event is expected to occur in most circumstances.

Reversibility

- 1: Rare/Remote - the event may occur only in exceptional circumstances.
- 2: Unlikely - the event could occur at some time.
- 3: Moderate - the event should occur at some time.
- 4: Likely - the event will probably occur in most circumstances.
- 5: Almost certain - the event is expected to occur in most circumstances.

Significance

Provides an overall impression of an impact's importance, and the degree to which it can be mitigated. The range for significance ratings is as follows:

- 0: Impact will not affect the environment.
- 1: No impact.
- 2: Residual impact.
- 3: Impact cannot be mitigated.

11.2 Impact rating

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

$$\text{Significance points} = (\text{duration} + \text{extent} + \text{irreplaceable} + \text{reversibility} + \text{magnitude}) \times \text{probability}$$

The maximum value is 100 SP (significance points). The unmitigated and mitigated scenarios for each potential environmental impact should be rated as per Table 4 below.

Table 5. Significance rating

Score	Significance	Description of Rating
2 – 10	Low Significance	No specific management action required
10 – 20	Medium-low significance	Administrative management actions required
20 – 40	Medium significance	Management and monitoring action plans required
40 – 60	Medium-high significance	Specific management and monitoring plans required
>60	High significance	Detailed plans required, potential red flag impact

Table 6. Impact rating

IMPACT	Before mitigation								MITIGATION	Significance after mitigation
	Extent	Probability	Reversibility	Irreplaceable	Duration	Magnitude	TOTAL (SP)	Significance		
LOSS OF HIGH POTENTIAL LAND										
Loss of land	1	1	1	1	1	1	0	L	No land is cultivated. Mitigation: No impact and no mitigation required.	L
LOSS OF GRAZING LAND										
Loss of land	1	1	1	1	1	1	0	L	No land is used for grazing. Mitigation: No impact and no mitigation required.	L
LOSS OF AGRICULTURAL PRODUCTION										
Loss of crop production	1	1	1	1	1	1	0	L	No land is cultivated.	L
Loss of animal production	1	1	1	1	1	1	0	L	The land is not used for grazing.	L
LOSS OF AGRICULTURAL INFRASTRUCTURE										
Direct loss	1	1	1	1	1	1	0	L	There is no agricultural infrastructure that will be lost	L
LOSS OF JOB OPPORTUNITIES										
Direct loss	1	1	1	1	1	1	0	L	No loss of jobs will occur.	L
LOSS OF TOPSOIL										
Erosion	1	1	1	1	1	1	0	L	The infiltration rate is very high and runoff that could cause erosion is not expected.	L
ANIMAL SAFETY										
Direct loss	1	1	1	1	1	1	0	L	The site is within an Security Control Area that is fenced.	L
FRAGMENTATION OF LAND										
Direct loss	1	1	1	1	1	1	0	L	There will be no fragmentation of land. The property will remain a single unit	L

Notes on impacts related to agriculture

The development will have no impact on agriculture.

It will not lead to a loss of high potential land and its associated production of agricultural products.

The soils are not arable because it is within an industrial area and because the land has a low potential for farming.

12 CONCLUSIONS

The entire site has very low sensitivity related to agriculture.

- The land is located within a Security Control Zone where crop production is prohibited.
- The development will have no impact on agriculture.
- It will not result in the loss of high-potential land or its associated agricultural production.
- The soils are not arable due to the land being situated in an industrial area and its low potential for farming.

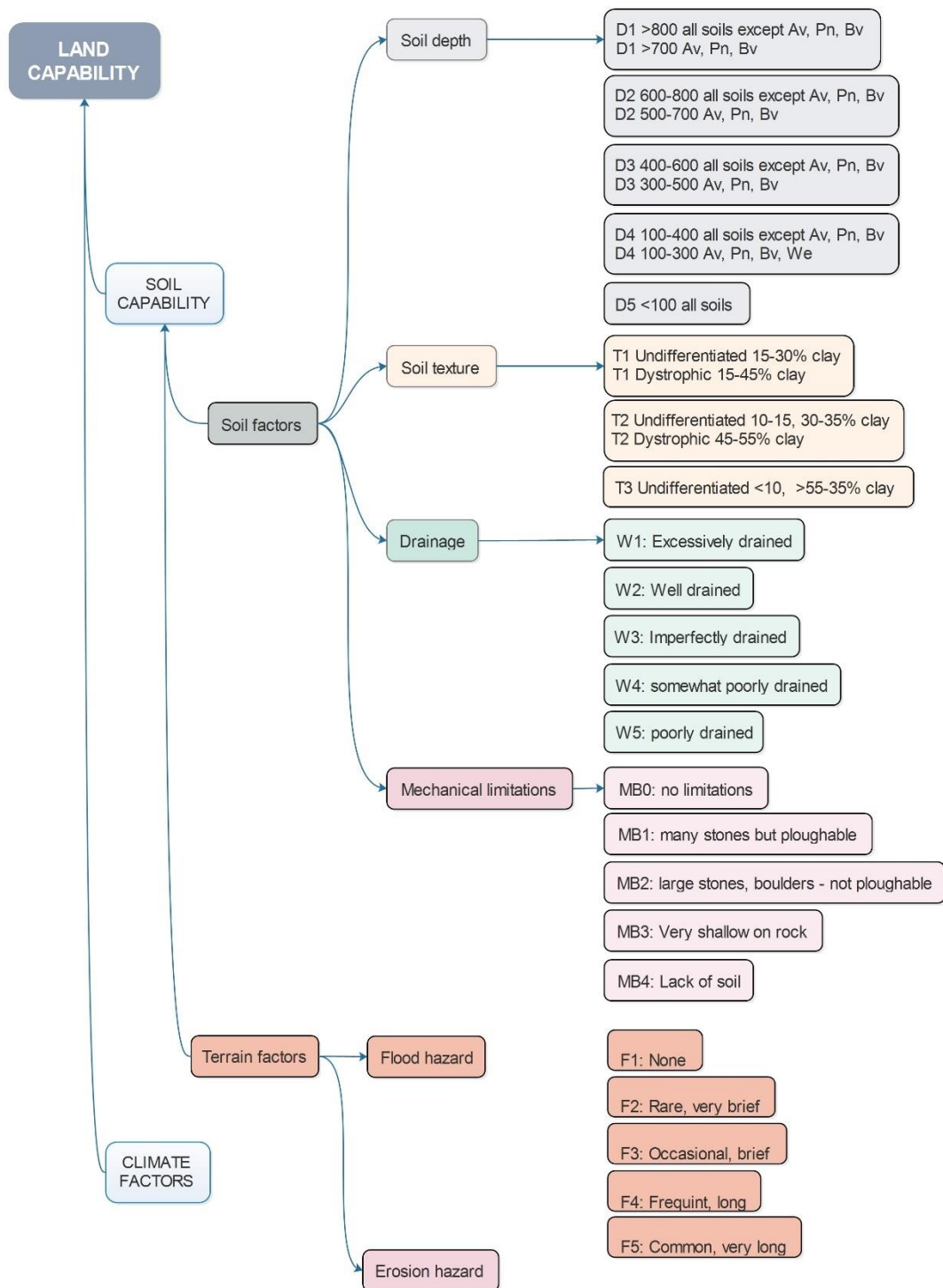
Given these factors, it is recommended that the project be approved and its implementation supported.

13 ADDENDA

13.1 References

- 1) Grieser, J., 2006. Local Climate Estimator. Agrometeorology Group, FAO. Rome
- 2) Grondklassifikasie Werkgroep, 1991. Grondklassifikasie, 'n Taksonomiese sisteem vir Suid Afrika, Departement van Landbou-ontwikkeling, Pretoria.
- 3) Department of Agriculture, 2019. http://daffarcgis.nda.agric.za/Comp_Atlas_v2/
- 4) South African Atlas of Agrohydrology and Climatology, Water Research Commission, Pretoria
- 5) Notice 320, Government Gazette 43110, March 2020. Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more.
- 6) DALRRD, 2006. National Policy on the preservation of high potential and unique agricultural land.
- 7) DALRRD, 1986, CONSERVATION OF AGRICULTURAL RESOURCES ACT 43 OF 1983. Gazette No. 8673, Notice No. 883, dated 27 April 1983. Commencement date: 1 June 1984. [Proc. No. R74 Gazette No. 9238, dated 25 May 1984])

13.2 Capability determination criteria



13.3 SACNASP registration



SACNASP
South African Council for Natural Scientific Professions

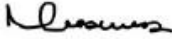
herewith certifies that
Johan Andries Gouws
Registration Number: 400140/06
is a registered scientist

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 11 July 2006 Expires 31 March 2024




Chairperson


Chief Executive Officer



To verify this certificate scan this code

13.4 Photos of the site

IMG_1939
19/6/2024



IMG_1940
19/6/2024



IMG_1941
19/6/2024



IMG_1942
19/6/2024



IMG_1944
19/6/2024



IMG_1943
19/6/2024



IMG_1945
19/6/2024



IMG_1946
19/6/2024



IMG_1947
19/6/2024



IMG_1948
19/6/2024



IMG_1949
19/6/2024



IMG_1950
19/6/2024

