AGRICULTURAL POTENTIAL AND IMPACT ASSESSMENT FOR STURDEE ENERGY DE HOEK SOLAR PARK

WESTERN CAPE PROVINCE

May 2021

PREPARED BY:
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DECLARATION

The observations, conclusions and recommendations made in this report are based on the best available data and on best scientific and professional knowledge of the directors of INDEX (Pty) Ltd. The report is based on GIS programming and utilises satellite tracking to map survey points. Survey points are normally accurate to within 3 metres; which must be considered in the use of the information.

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General declaration:

- INDEX acted as the independent specialist in this application;
- Performed 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;
- There were no circumstances that may compromise INDEX's objectivity in performing such work;
- INDEX have expertise in conducting the specialist report relevant to this application, including knowledge of NEMA and its regulations and any guidelines that have relevance to the proposed activity;
- Index has not and will not engage in conflicting interests in the undertaking of the activity.

The study was undertaken by Dr Andries Gouws. He is a registered member of SACNASP in the categories of Soils and Agriculture.

Signature of specialist
For INDEX (PTY) LTD
12 May 2021

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Summary and conclusions

The proposed Solar Park plant will comprise of less than 20 hectares. It will generate power for private consumption at the adjacent cement factory and neighbouring mine. A 11,5 kV single overhead line of approximately 1,9 km will connect the new proposed plant to the existing PPC 11,5 kV sub-station.

PPC's mining activities are located east and north of the site. Apart from mining and conservation of the Piketberg, all land not in watercourses is cultivated.

The climate in general is suitable for the production of most winter crops. Where there is water available for irrigation, grapes and stone fruit are also planted.

The soil derived from weathered shale. Clay from the topsoil washed into the subsoil to form pedocutanic structures. Saprolite occurs below the deeper subsoil and consists of partially weathered base rock. Shale outcrops occur in patches throughout the site. The dominant soil type found is Swartland.

DALRRD classifies the site as 'low moderate capability arable land'. This is also the classification according to the Screening Tool.

The entire transmission line is along existing structures and will not impact on any agricultural activities.

- *All the land under PV is arable was planted to winter crops. DALRRD at Elsenburg indicates that for wheat, the gross margin with a yield of 3,5 t/ha, is R4 048,54 per hectare. Assuming that 25 hectares are cultivated and planted with wheat, the total loss of production is estimated at 87 tonne with a total net enterprise loss of R357 397.*
- *There will be no loss of high potential land.*
- *Dust created by construction could potentially impact on crop yields. This however is not expected because the soil will be moist during the growing season when dust is not an issue.*
- *The land proposed for the PV is leased to a local farmer at part of an existing farming enterprise. Management and labour is, therefore, shared by a larger entire property. The loss of the 26 ha will not lead to loss of jobs.*

1 BACKGROUND

Sturdee Energy has been appointed by PPC Cement to develop a 7MW AC Solar PV Plant and associated infrastructure adjacent to the PPC's De Hoek Factory.

A 11,5 kV single overhead line of approximately 1,9 km will connect the new proposed plant to the existing PPC 11,5 kV sub-station.

The site is located at De Hoek, which is about 10 km south of Piketberg. The site is in Bergriver Municipality in the Western Cape Province.

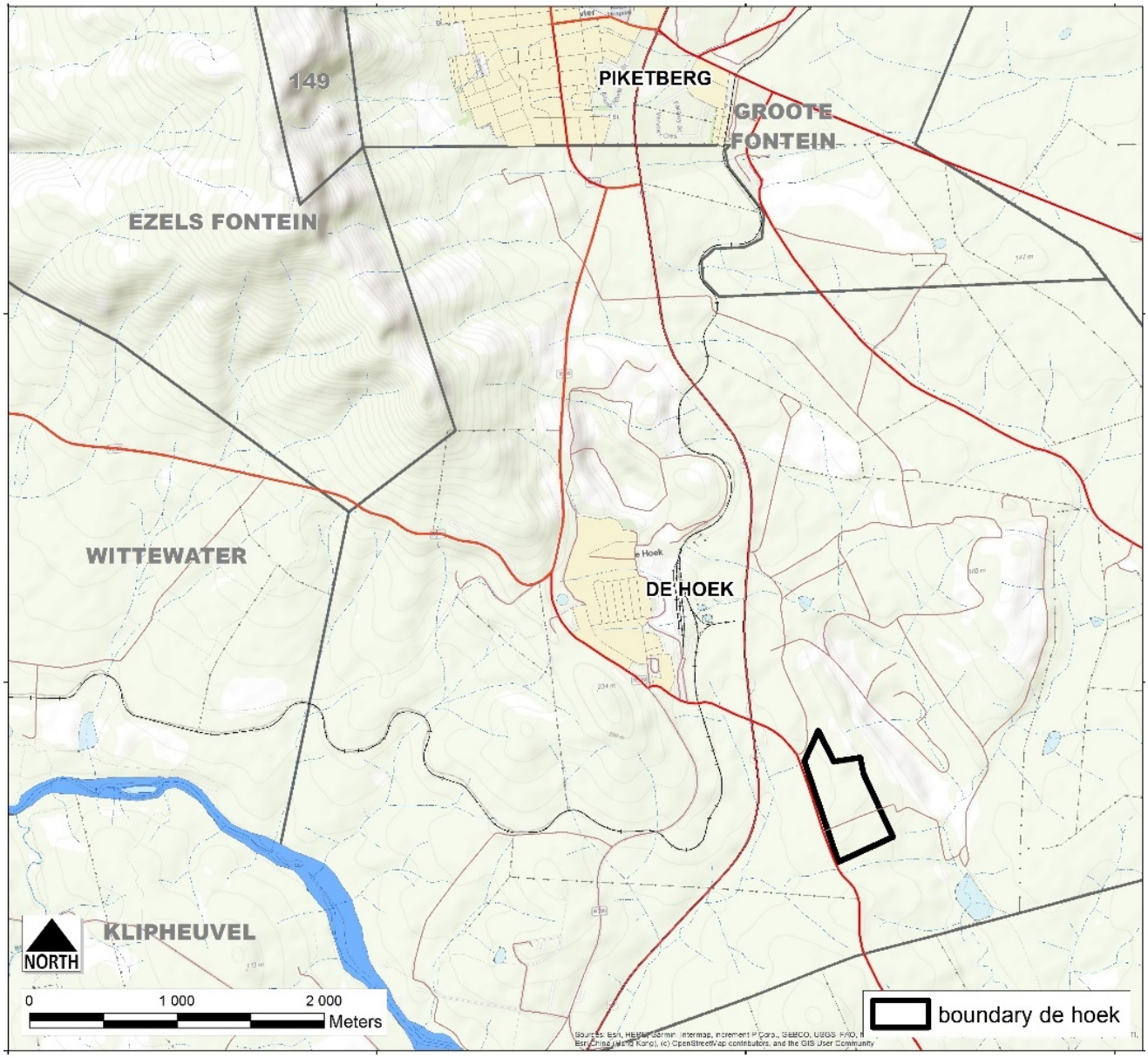


Figure 1. Location of the Project Area

Index was appointed by *CES - Environmental and social advisory services*, the environmental consultant, to assess the impact of the development on agriculture.

The main output will be the following:

Map the present land uses and farming infrastructure;

- Indicate land capability (potential);
- Determine the farming patterns of farmers in the region;
- Indicate the impact of the project on the agricultural potential of the land where it will be constructed;
- Indicate the impact of the project on agriculture.

The size of the Project Area investigated is as follows:

- Total site: 25,6 ha
- PV areas: 15,7 ha

2 PROPOSED DEVELOPMENT

The proposed Solar PV plant will comprise of less than 20 hectares. It will be used to generate power for private consumption at the adjacent cement factory and neighbouring mine. An 11,5 kV dual-circuit overhead line, approximately 1,9 km in length, will be required to connect the new proposed plant to the existing PPC 11,5 kV substation (see Figure 2 for details).

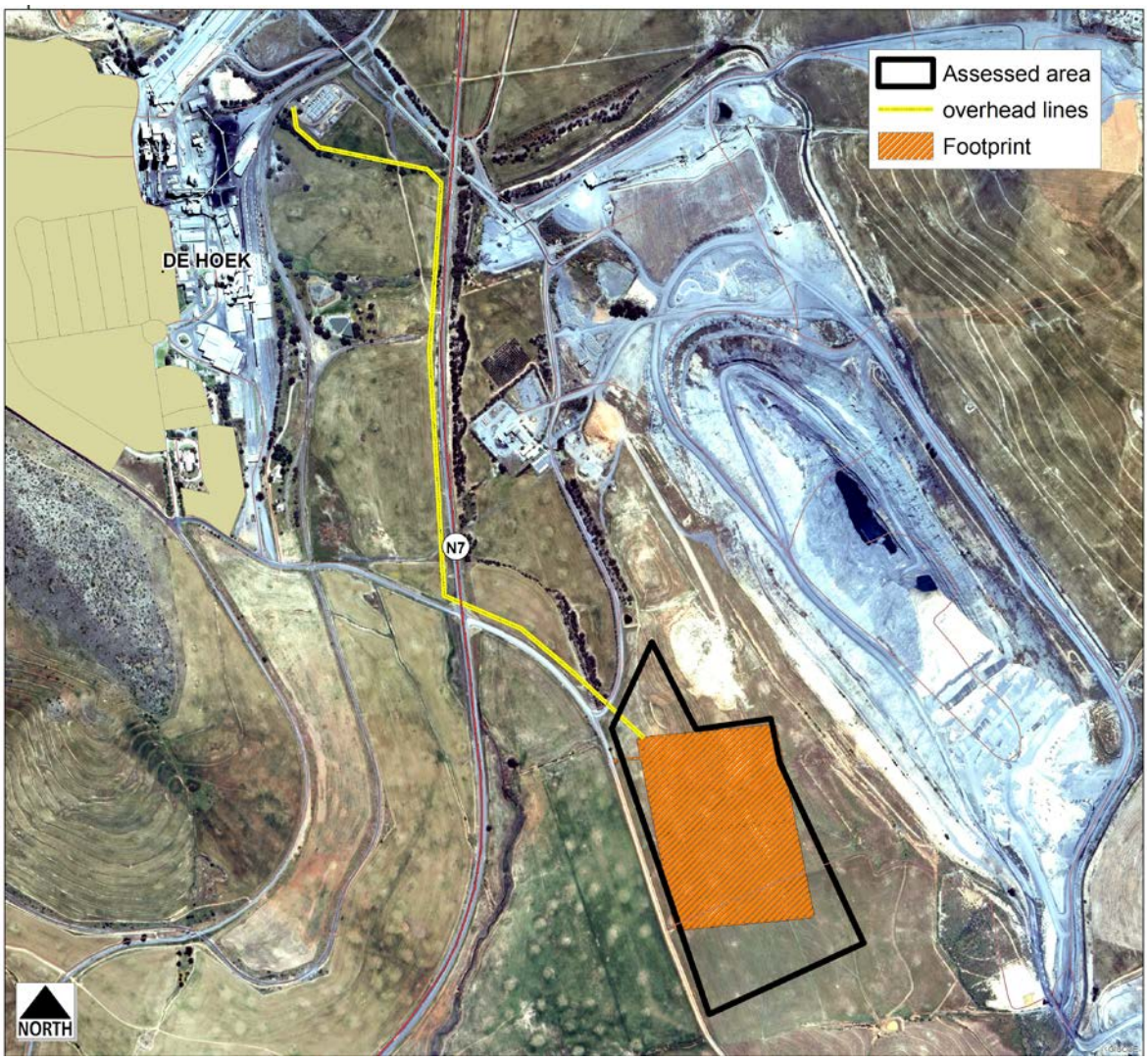


Figure 2. De Hoek PV Site development plan

3 PROCESS OF THE ASSESSMENT

The present land uses of the Project Area were identified from various recent satellite images.

A reconnaissance level soil survey was done for the Project Area. The 35 observations were made and photographed.

- The soils were classified according to the binomial soil classification system for Southern Africa.
- Soil capability is described according to the system used by the Department of Agriculture, Land Reform and Rural Development (DALRRD).
- The agricultural sensitivity description is done according to the screening tool, published by the Department of Environment, Forestry and Fisheries (DEFF) in Government Notice 320 of Government Notice 43310 on 20 March 2020 (DEFF Screening Tool).

4 REGIONAL LAND USES

PPC's mining activities are located east and north of the site. Apart from mining and conservation of the Piketberg, all land not in watercourses is cultivated.

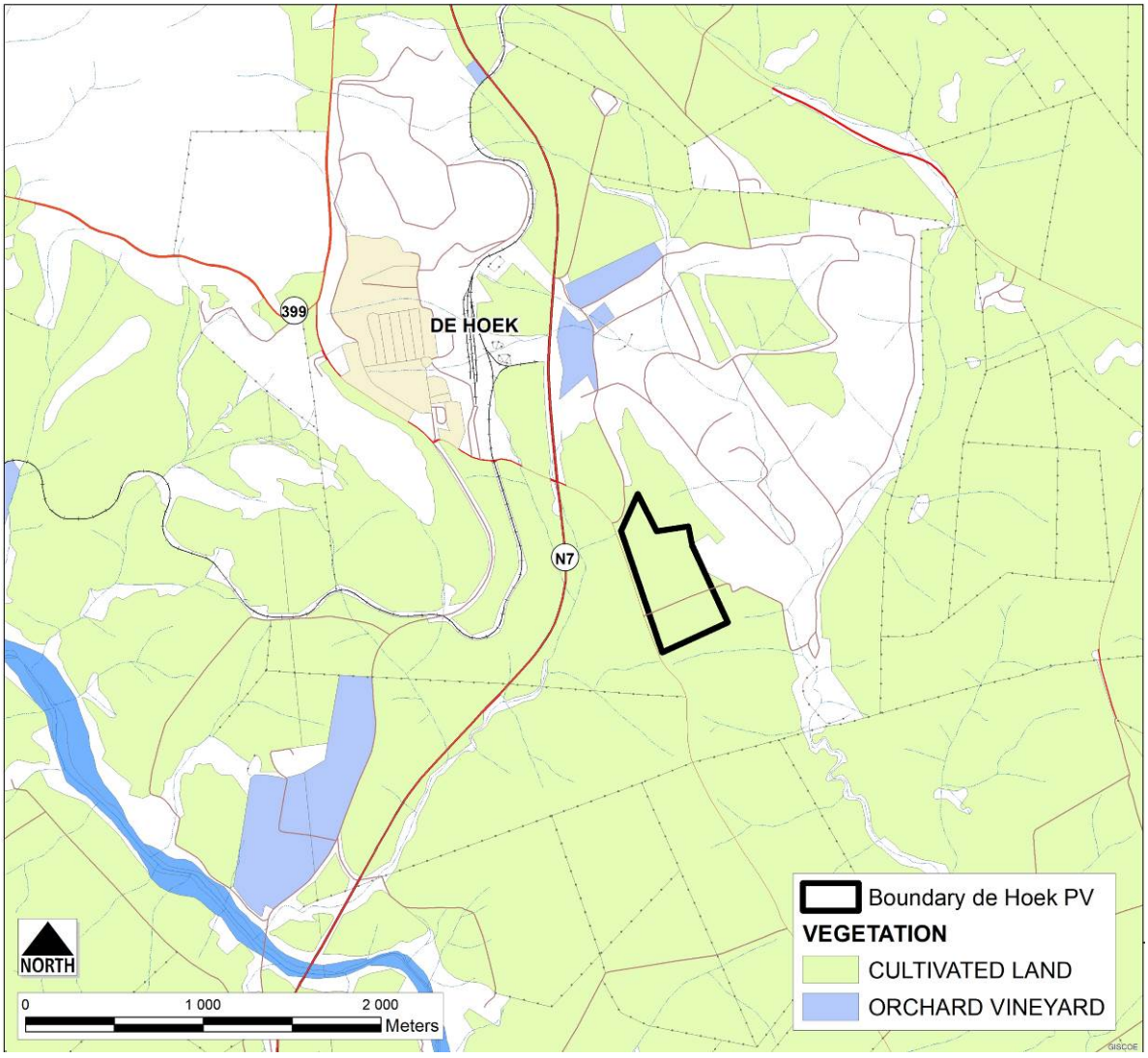


Figure 3. Regional land uses (Source: Land cover, DALRRD)

5 AGRICULTURAL LAND USE OF THE PROJECT AREA

The entire site is cultivated and planted to winter crops like wheat and canola. There is a small dam in the northern part of the site.

The animal watering facility indicates that the stover left after harvesting had taken place, is used by sheep as fodder.

6 AGRICULTURAL INFRASTRUCTURE

There is one reservoir and watering trough in the central part of the site. It is in poor condition and not functioning.

The site is fenced for most of the site. The southern boundary runs through cultivated land. The standard of the fence is good and functional. There is further also an internal fence that needs repair.

Overall, loss of the infrastructure on the site will not be significant and should not impact on the activities of the surrounding farmers.

Photo 1. Watering facility on the site

7 NATURAL RESOURCES

7.1 Climate

In Piketberg, the summers are hot and dry, the winters are cold and wet. Over the course of the year, the temperature typically varies from 5°C to 34°C and is rarely below 1°C or above 41°C.

Piketberg experiences significant seasonal variation in monthly rainfall. The rainy period of the year lasts for 10 months, from March 6 to January 20, with a sliding 31-day rainfall of at least 13 mm. The most rain falls during the 31 days cantered around June 25, with an average total accumulation of 96 mm.

The climate in general is suitable for the production of most winter crops. Where there is water available for irrigation, grapes and stone fruit are also planted.

7.2 Vegetation

The site is cultivated and planted to winter crops.

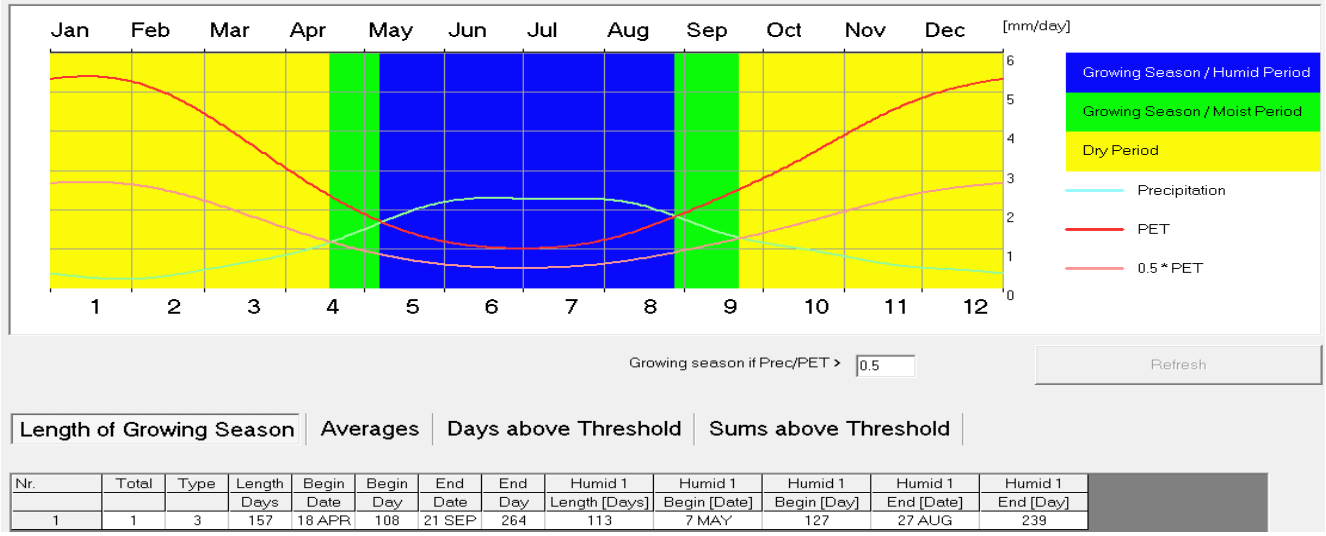
Grazing capacity

The grazing capacity for livestock of the natural veld, according to the DALRRD, is estimated at 36 hectares per large stock unit (LSU). This, however, is largely irrelevant because the land is transformed and planted to winter grains.

Growing season

When the rainfall is plotted against the temperature at a ratio of 1:2, the resulting graph indicates the growing season. See the climatogram below.

The growing season commences in mid-April when precipitation exceeds 50% of transpiration. This lasts until the end September. The dry season with a rain deficit lasts for almost 7 months of the year. The summer period is dry, with little vegetative growth.



Nr.	Total	Type	Length Days	Begin Date	Begin Day	End Date	End Day	Humid 1 Length [Days]	Humid 1 Begin [Date]	Humid 1 Begin [Day]	Humid 1 End [Date]	Humid 1 End [Day]
1	1	3	157	18 APR	108	21 SEP	264	113	7 MAY	127	27 AUG	239

Figure 4. Climatogram for Piketberg

7.3 Soil

The soil derived from weathered shale. Clay from the topsoil washed into the subsoil to form structured subsoil (pedocutanic structure). Saprolite occurs below the deeper subsoil and consists of partially weathered base rock. Shale outcrops occur in patches throughout the site and will determine the land use capability.

The dominant soil type found is Swartland. It consists of an orthic A horizon that overlies a pedocutanic B horizon. In this case the underlying geology is shale, quartzite and chert.

Soils on the map were delineated in terms of the amount of rock in the topsoil.

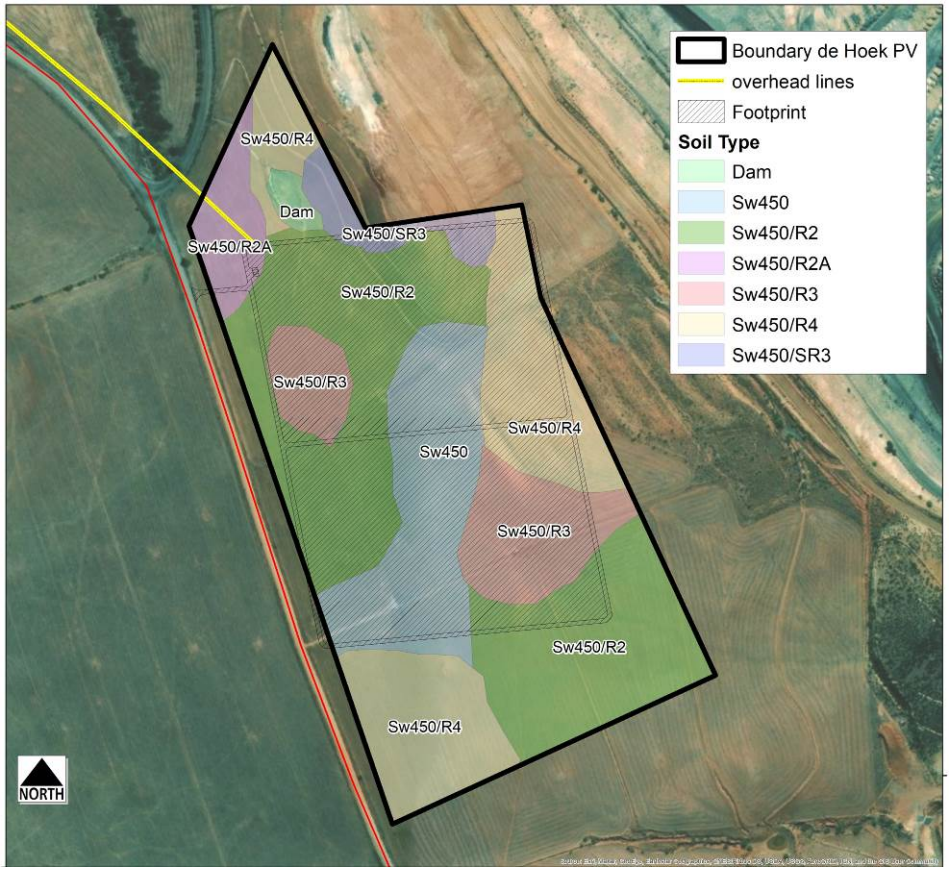


Figure 5. Generalised soil map

Table 1. Soil description

Map unit	Description	Area (ha)
Sw450	Moderately deep sandy loam reddish brown topsoil with moderately developed blocky structure that overlies strongly developed pedocutanic clay loam. The deeper subsoil consists of saprolite (partially weathered rock).	4,2
Sw450/R2	Similar to Sw450, but the profile has rocks and stones that effectively reduce the volume of soil exploitable by plant roots.	10,2
Sw450/R2A	Moderately deep sandy loam greyish topsoil with poorly developed blocky structure that overlies strongly developed pedocutanic clay loam. The deeper subsoil consists of saprolite (partially weathered rock). There are many rocks and stones in the profile.	1,2
Sw450/R3	Similar to Sw450, but the profile has may rocks and stones that effectively reduce the volume of soil exploitable by plant roots. There are abundant rocks and stones in the profile.	3,2
Sw450/SR3	Similar to Sw450, but the profile has may rocks and stones that effectively reduce the volume of soil exploitable by plant roots. There are abundant rocks and stones in the profile and the land have a slope exceeding 12%.	1,0
Sw450/R4	Similar to Sw450, but the profile has abundant rocks and stones in the profile.	6,3
Dam	Earthen dam	0,3
TOTAL		**26,4**

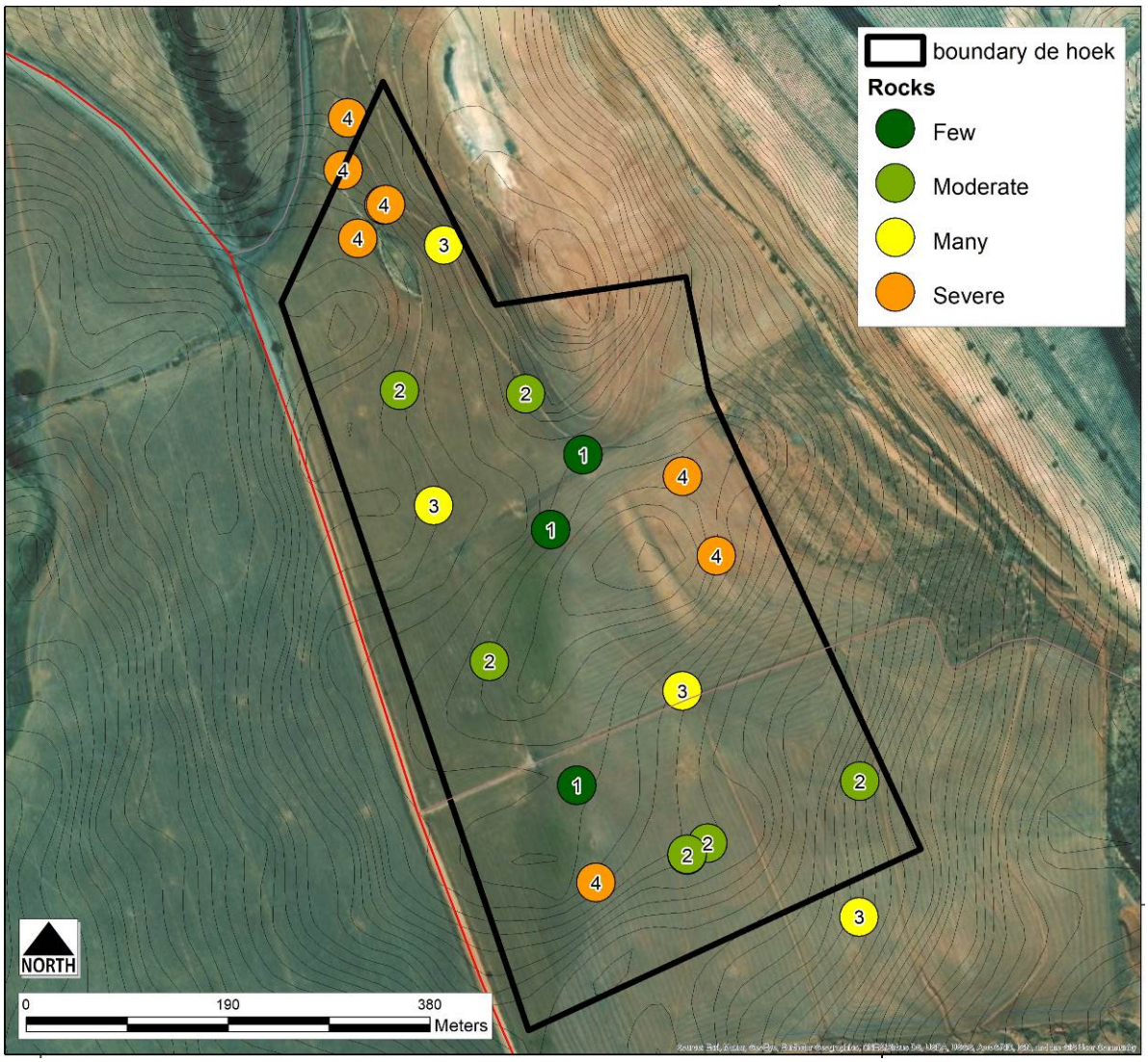


Figure 6. Occurrence of rock

Photo 2. Swartland soil with no surface rock

Photo 3. Swartland soil with few surface rocks

Photo 4. Swartland soil with many surface rock

Photo 5. Swartland soil with abundant surface rock

8 HIGH POTENTIAL LAND

In terms of the mandate of the DALRRD, high potential land must be protected. It is, therefore, necessary to define what high potential land is.

The potential of land is defined in terms of a viable farming unit, as described in CARA and HUAL and other legislation and guidelines that are used by the DALRRD.

As background the following:

Norms and standards in terms of CARA and HUAL (National Policy of the Preservation of High Potential Land)

The National policy on the protection of high potential and unique agricultural land, published by then Department of Agriculture, Fisheries and Forestry (DAFF) (now DALRRD) in 2006, relates to subdivision of land and changes in land use. It states that: '*Protection of high potential agricultural land for food security remains the primary responsibility of the Department of Agriculture*'.

The Draft Policy on the Preservation and Development of Agricultural Land Framework Bill was published for discussion in 2014. Although not finally approved, it does, however, indicate DALRRD's intentions for land uses, rezoning and of the protection of agricultural land.

In terms of the Bill, high potential cropping land means land best suited to, and capable of, consistently producing acceptable levels of goods and services for a wide range of agricultural enterprises in a sustainable manner, taking into consideration expenditure of energy and economic resources; and includes:

- Land capability classes I to III;
- Unique agricultural land;

- Irrigated land; and
- Land suitable for irrigation.

Essentially, the Bill's objective is to protect high potential land from being exploited for non-farming purposes. The definitions in the Bill states that:

- *High Potential Agricultural Land* means the best land available for, suited to and capable of consistently producing optimum yields of a wide range of agricultural products (food, feed, forage, fibre and oilseed), with minimum environmental damage; and
- *Unique Agricultural Land* means land that is or can be used to produce specific high value crops. It is not usually of high potential but important to agriculture due to a specific combination of location, climate or soil properties that makes it highly suited for a specific crop when managed with specific farming or conservation methods. This includes land of high local importance, where it is useful and environmentally sound to encourage continued agricultural production, even if some or most of the land is of mediocre quality for agriculture and not used for particularly high value crops.

Findings

In terms of the legislation the land is moderate potential; there is no high potential land on the site.

9 LAND CAPABILITY

Land capability classes are interpretive groupings of land with similar potential and limitations or similar hazards. It is considered by many land use planners as one of the only 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.

The classic eight-class land capability system (Klingebiel & Montgomery, 1961) was adapted for use with Agriculture Geographic Information System (AGIS) in South Africa.

Land capability is classified according to guidelines published by the DALRRD 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 5).

- 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 2. Land capability classes – intensity of land uses

LAND CAPABILITY				Grazing and Forestry			Crop production			
Order		Class	Wildlife	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 indicate the suitable land use

Soil use capability on the Project Area

The Project Area has no irrigated land and does not have any significant special use for which it has to be preserved in terms of the Bill.

The final land capability, after taking note of the soil and climate, is indicated in Figure 9.

Table 3. Land capability of soil groups

Soil Group	Area (ha)	Land Capability	Flood	Erosion	Depth	Texture	Drainage	Mechanisation
Dam	0,3	vi	3	0	2	2	2	0
Sw450	4,2	iii	0	0	2	2	0	0
Sw450/R2	10,2	iii	0	0	2	2	0	0
Sw450/R2A	1,2	iv	0	3	2	2	2	0
Sw450/R3	3,2	iv	0	0	2	2	0	0
Sw450/SR3	1,0	iv	0	3	2	2	0	0
Sw450/R4	6,3	iv	0	0	2	2	0	1
TOTAL	**26,4**							

Figure 7. Land Capability – Index assessment

Figure 8. Land capability according to DALRRD

DALRRD evaluation

According to AGIS, the official web site of the DALRRD (http://www.arcgis.com), the Project Area is classified as '*low moderate capability arable land*'. This is notwithstanding the rock outcrops and shallow soils the land is cultivated.

10 SENSITIVITY ANALYSIS

The 2014 EIA Regulations require a sensitivity analyses in an application for an EA. The sensitivity of a site is determined by the DEFF Screening Tool.

The DEFF Screening Tool, although not perfect in terms of describing the impact that the land use change will have on farming, it is, nevertheless, useful in evaluating what the impact will be of a proposed activity.

10.1 PV site

According to the Screening Tool, the Project Area has mostly low-moderate to moderate sensitivity. The detailed assessment performed by Index confirms this assessment, except for land on slope of more than 12%.

Table 4. Sensitivity according to the Screening Tool

DESCRIPTION	Area (ha)
01: Very low. 02: Very low. 03: Low-Very low. 04: Low-Very low. 05: Low	<1
06: Low-Moderate. 07: Low-Moderate. 08: Moderate	25
Total	**26**

The results of the Screening Tool are provided in the addenda.

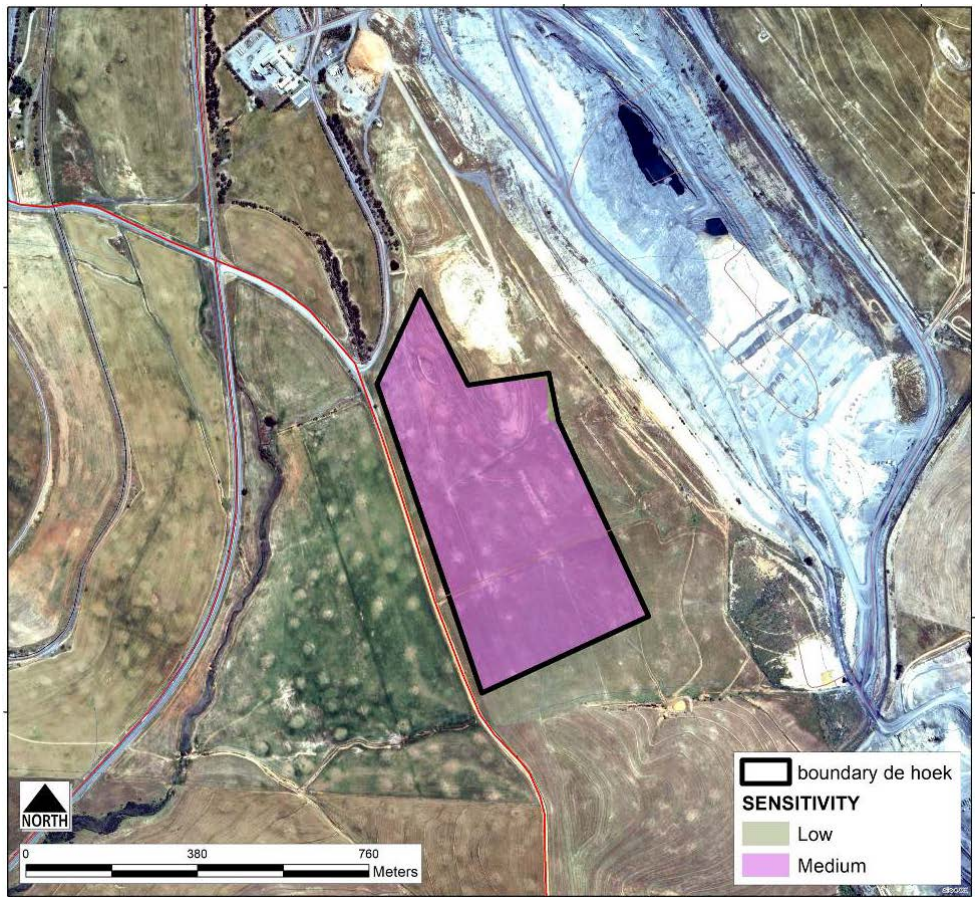


Figure 9. Agricultural sensitivity (Screening Tool)

10.2 Transmission line

An overhead transmission will be constructed from the PV site to an existing substation. It will follow the road and then veer towards the substation along the boundary of a cultivated land.

Because the entire line is along existing structures and will not impact on any agricultural activities

Figure 10. Transmission line from the PV site to an existing substation

11 IMPACT ASSESSMENT

11.1 Assumptions

General

The impact assessment is done for land on which new mining infrastructure will be constructed.

Land uses

Land uses on which the impact is based, are indicated in Section 2.

Land use potential classes

High potential land is defined as follows:

Land best suited to and capable of consistently producing acceptable levels of goods and services for a wide range of agricultural enterprises in a sustainable manner, taking into consideration expenditure of energy and economic resources; and includes:

- Land Capability Classes i, ii and iii;
- Unique agricultural and irrigated land; and
- Land suitable for irrigation (deep well-drained soils and assuming irrigation water is available).

11.2 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.

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: Totally reversible.
- 2: Partially reversible.
- 3: Partially reversible but some remnants of the development remains.
- 4: Not reversible.

Irreplaceability

- 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.

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 timespan that the impact can be considered transient.

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; natural and social functions and processes continue, albeit in a modified way.
- 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.

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.

11.3 Impact rating

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

Significance points = (extent +duration + irreplaceable + reversibility + magnitude) x probability

The maximum value is 105 SP (significance points). The unmitigated and mitigated scenarios for each potential environmental impact should be rated as per Table 4 below.

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 5. Impact assessment of the activity on farming

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	5	L	There will be no loss of high potential land. The potential of the land is moderate. Mitigation: no impact, mitigation not required	L
LOSS OF GRAZING LAND										
Loss of land	1	1	1	1	3	1	7	L	The land is cultivated with no grazing land. It only has value as stover during the dry season. Some grazing on a local scale will be lost for the duration of the project. Mitigation: very low impact, mitigation not required	L

IMPACT	Before mitigation								MITIGATION	Significance after mitigation
	Extent	Probability	Reversibility	Irreplaceable	Duration	Magnitude	TOTAL (SP)	Significance		
LOSS OF AGRICULTURAL PRODUCTION										
Loss of crop production	1	4	1	1	3	1	28	**M**	25 hectares are cultivated and planted with wheat. At a yield of 3,5 t/ha the total loss of production is estimated at 87 tonne with a total value based on the gross margin of R357 397. Mitigation: moderate impact and will last for the duration of the project, mitigation for the loss on a regional scale is not possible because there will be an actual loss. The lessee will have to lease alternative land. Dust created by construction could potentially impact on crop yields on adjoining fields. This however is not expected because the soil will be moist during the growing season when dust is not an issue. Mitigation: no impact, mitigation not required.	**M**
Loss of animal production	1	2	1	1	3	1	14	**L**	Some grazing of the stove or plant residue will be lost but the amount is insignificant. Mitigation: very low impact, mitigation not required.	**L**
LOSS OF AGRICULTURAL INFRASTRUCTURE										
Direct loss	1	1	1	1	1	1	5	**L**	The agricultural infrastructure is located outside of the construction area. Mitigation: no impact, mitigation not required	**L**
LOSS OF JOB OPPORTUNITIES										
Direct loss	1	1	1	1	1	1	5	**L**	This portion is leased by a local farmer at part of an existing farming enterprise. Management and labour is, therefore, shared by a larger entire property. The loss of the 26 ha will not lead to loss of jobs. Mitigation: very low impact, mitigation not required	**L**

11.4 Financial impact

All the land under PV is arable, and for this calculation, assumed to be planted to wheat. According to the DALRRD at Elsenburg, the gross margin for wheat with a yield of 3,5 t/ha is R4 048,54 per hectare.

Assuming that 25 hectares are cultivated and planted with wheat, the total loss of production is estimated at 87 tonne with a total net enterprise loss of R357 397.

12 CONCLUSIONS

The climate in general is suitable for the production of most winter crops.

DALRRD classifies the site as '*low moderate capability arable land*'. This is also the classification according to the Screening Tool.

- The entire transmission line is along existing structures and will not impact on any agricultural activities.
- All the land under PV is arable was planted to winter crops. DALRRD at Elsenburg indicates that for wheat, the gross margin with a yield of 3,5 t/ha, is R4 048,54 per hectare. Assuming that 25 hectares are cultivated and planted with wheat, the total loss of production is estimated at 87 tonne with a total net enterprise loss of R357 397.
- There will be no loss of high potential land.
- Dust created by construction could potentially impact on crop yields. This however is not expected because the soil will be moist during the growing season when dust is not an issue.
- The land proposed for the PV is leased to a local farmer at part of an existing farming enterprise. Management and labour is, therefore, shared by a larger entire property. The loss of the 26 ha will not lead to loss of jobs.

13 ADDENDA

13.1 References

1) Grieser, J., 2006. Local Climate Estimator. Agromeeoolgy 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

13.2 Gross margins

Western Cape Government
Agriculture

AGRICULTURAL ECONOMICS
Division: Production Economics
Tel: +27 21 808 5201
Private Bag X1, Elsenburg, 7607

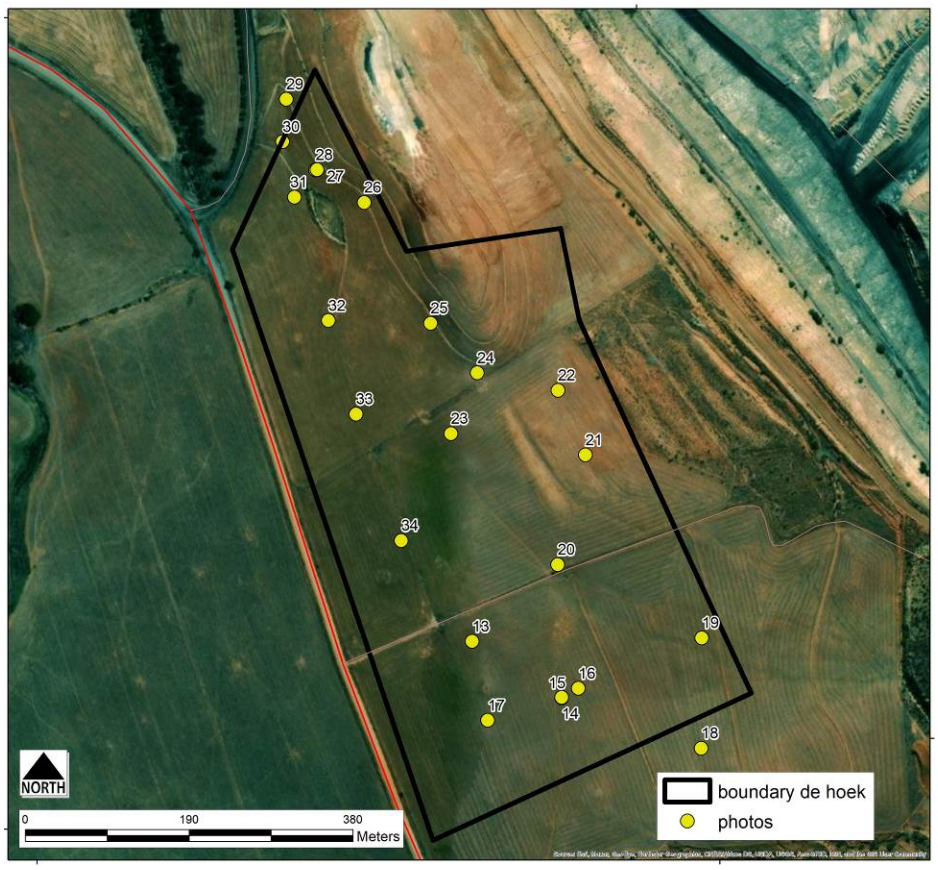
ENTERPRISE BUDGET

Classification	Agronomy	**Province**	Western Cape
Enterprise Budget Name	Wheat (Dry land)	**District**	Overberg
Land Size	1 Hectare	**Area**	Cape Agulhas/Swellendam
Date Developed	07 February 2020	**Latest update**	N/A
Soil Type	Sandy-Clay	**Budget ID**	SinovuyoM

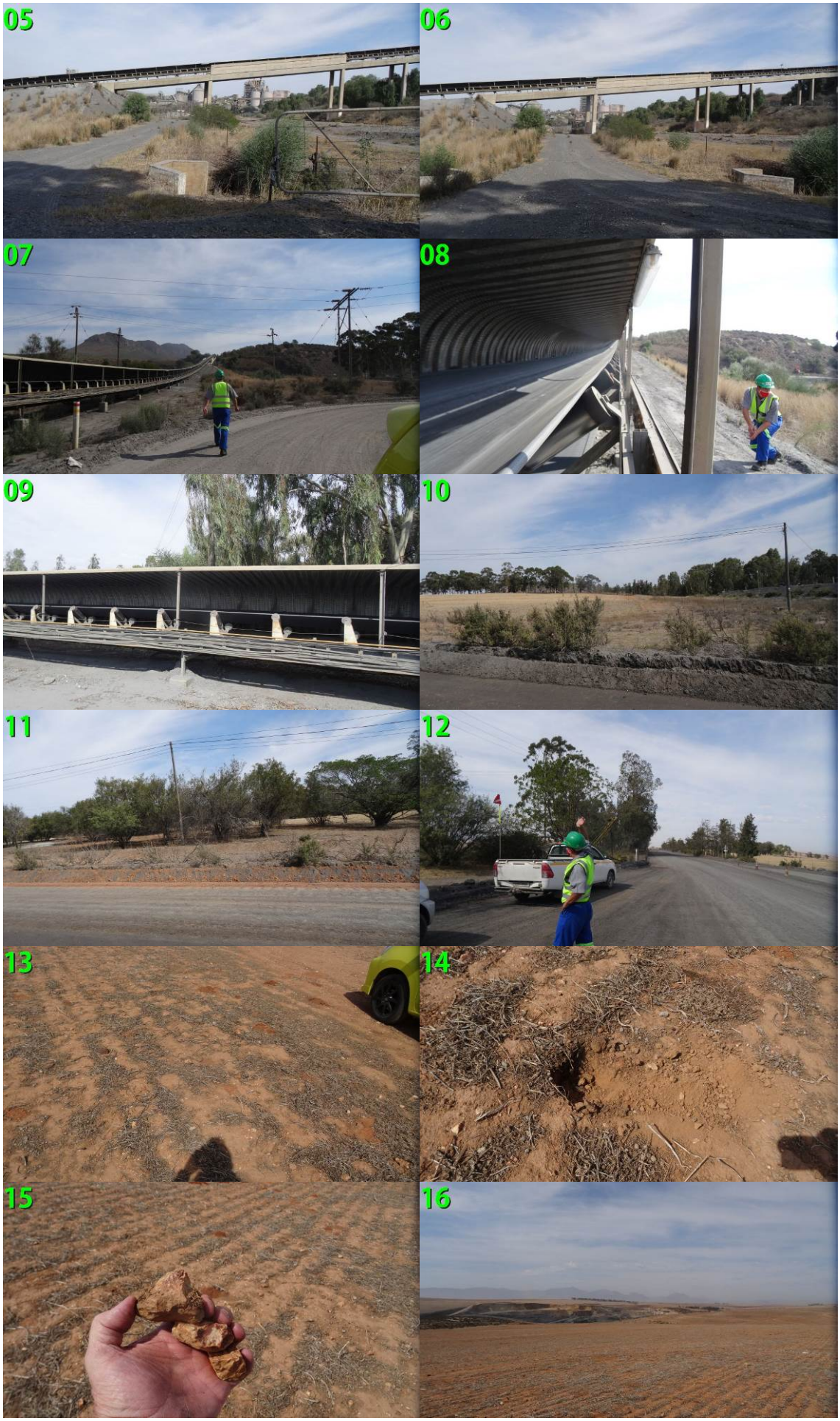
Use this enterprise budget as an aid in the planning process.

Description	Unit	Price Per Unit	Quantity	Per Ha	Value Per Yield Unit
GROSS INCOME			**3,50**	**12 600,00**	**3 600,00**
Product Income					
Wheat	Ton	3600,00	3,50	12 600,00	3 600,00
MARKETING COSTS Market					
GROSS INCOME minus MARKETING COSTS				**12 600,00**	**3 600,00**
TOTAL ALLOCATABLE VARIABLE COSTS				**8 119,62**	**2 319,89**
DIRECTLY ALLOCATABLE VARIABLE COSTS				**4 054,08**	**1 158,31**
A) PRE-HARVEST COST					
PLANTING MATERIAL				**630,32**	**180,09**
Wheat Seed	Kg	9,00	70,00	630,32	180,09
FERTILISER				**2 077,20**	
Mono Ammonium Phosphate	Ton	8 797,16	0,12	1 055,66	301,62
1:0:0 (40) +6% S	Ton	5 675,25	0,18	1 021,55	291,87
HERBICIDES				**434,64**	
Pyroxasulfone	L	138,00	0,50	69,00	19,71
MCPA	L	65,90	1,50	98,84	28,24
Pinoxaden	L	126,50	0,80	101,20	28,91
Trifluralin	L	92,00	1,80	165,60	47,31
PESTICIDES/INSECTICIDES				**201,84**	
acetamiprid	KG	293,37	0,10	29,34	8,38
Dimethoate 400 EC	L	115,00	1,50	172,50	49,29
FUNGICIDES				**710,08**	
Spiroxamine 500 EC	L	484,06	0,50	242,03	69,15
Pyraclostrobin	L	936,10	0,50	468,05	133,73
GROSS MARGIN ABOVE DIRECTLY ALLOCATABLE VARIABLE COSTS				**8 545,92**	**2 441,69**
INDIRECTLY ALLOCATABLE VARIABLE COSTS				**4 065,55**	**1 161,59**
B) PRE-HARVEST COST					
Fuel	L	13,91		943,66	269,62
Repairs & Maintenance				857,52	245,01
C) HARVEST COSTS					
Fuel	L	13,91		1190,81	340,23
Repairs & Maintenance				1073,55	306,73
GROSS MARGIN ABOVE TOTAL ALLOCATABLE VARIABLE COSTS				**4 480,38**	**1 280,11**
Interest on Working Capital				395,83	113,09
MARGIN ABOVE SPECIFIED COSTS				**4 084,54**	**1 167,01**

13.3 Map indicating observations and photo positions



13.4 Photos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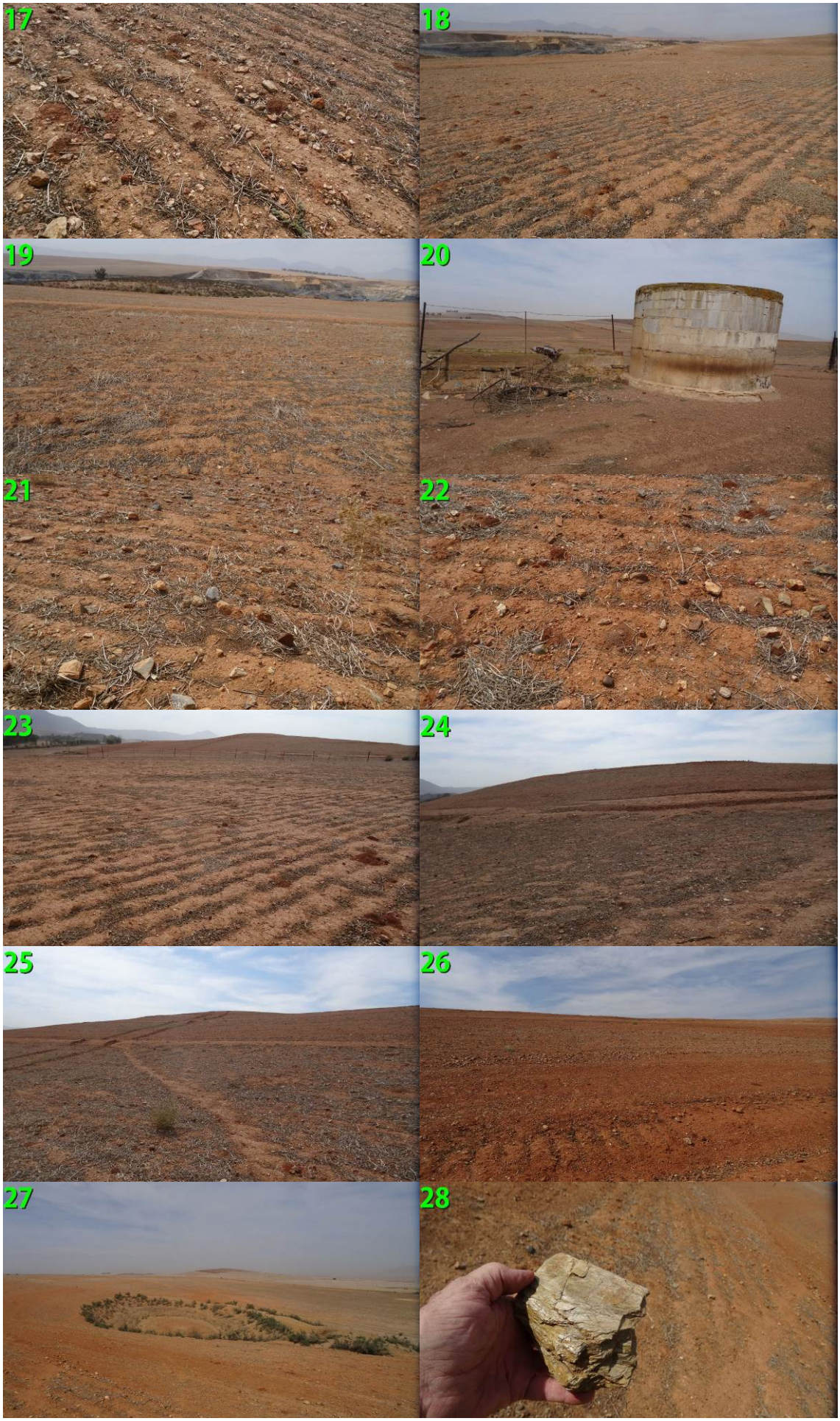
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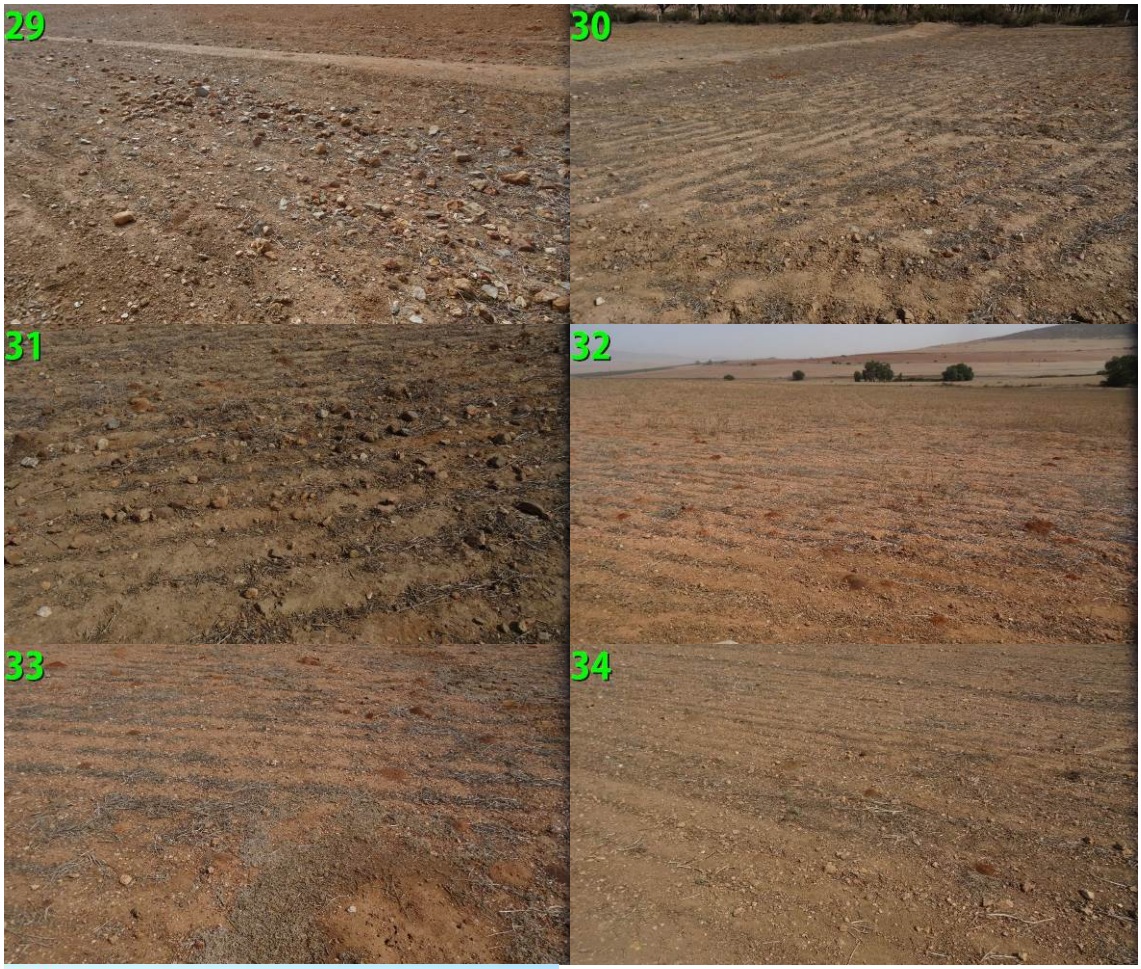
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13.5 Compliance statement in terms of 2014 EIA regulations

I, Dr Andries Gouws, set out below the information, as required the screening tool, published by the Department of the Environment, Forestry and Fisheries (DEFF) in Government Notice 320 of Government Notice 43310 on 20 March 2020 (DEFF Screening Tool).

1. I compiled the Land Capability and Soil Assessment for the De Hoek PV site dated May 2021.
2. I am a qualified soil scientist and land use evaluation specialist and registered with SACNASP in agricultural. My SACNASP registration certificate and CV are attached, which include my contact details and SACNASP registration number.
3. A signed statement of independence is provided in the preamble to the Report.
4. I undertook a sensitivity analyses for the development footprint of the EP Proposed Projects, as defined above, in accordance with the DEFF Screening Tool's requirements.
5. There will be no transformation of high potential agricultural land.
6. Given that the land capability of the Project Area is of a "low" to "medium" sensitivity for agriculture, a compliance statement regarding the Project Area is required under the DEFF Screening Tool, which is set out below.
7. A map showing the Project Area and its present uses is provided in Figure 2;
8. The size of the land is 26 hectares. Only the footprints of the PV installation will be lost due to the Proposed Project;
9. The detailed assessment of the farming resources did not found deviations regarding sensitivity of the Project Area, as indicated on the web-based Screening Tool.
10. Micro-siting to avoid or minimise fragmentation and disturbance of agricultural activities was not possible.
11. There are no gaps in information or specific areas of concern that needs of significance.
12. The Proposed Projects will not significantly impact on agricultural resources and production; and it is recommended that the authorities approve the environmental application.
13. No specific condition for implementing the proposed project is required or recommended.

13.6 CV of the author of this report

Dr. Andries Gouws

1. PERSONAL DATA
Family name: Johan Andries Gouws Year of birth: 12 April 1955 Nationality: South African **Contact details:** Tel: +27 12 346 5307 (South Africa) E-mail: index@iafrica.com Country of permanent residence: South Africa

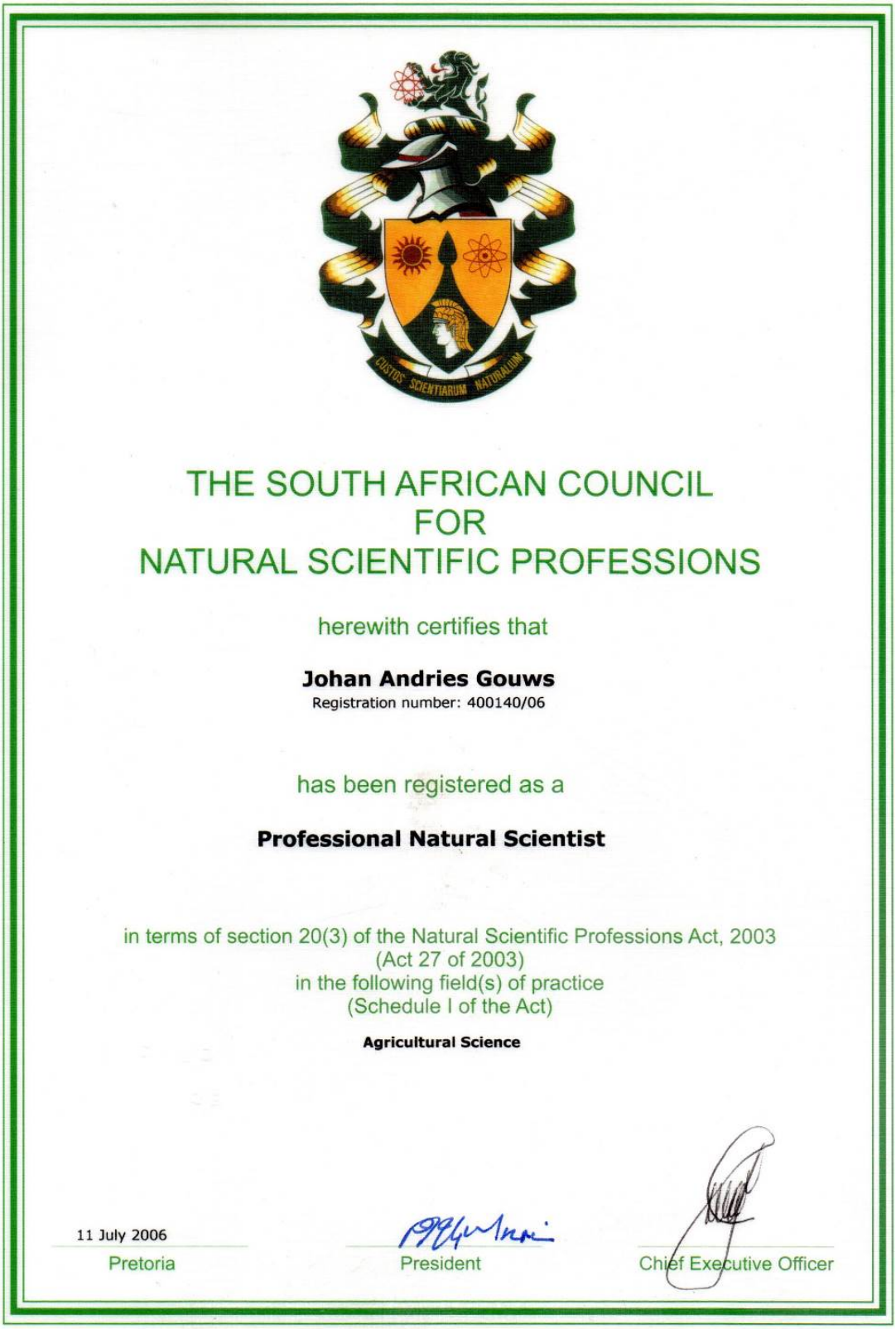
2. EMPLOYMENT RECORD		
Employer's Company Name:	**Period of service and length:**	**Position with the Enterprise:**
Integrated Development Expertise (INDEX)	Since 1993	Managing Director
Barari Forest Management (seconded)	2008 - 2016	Chief Technology Officer
South African Development Trust (STK)	1984 - 1993	Senior agriculturist, agronomy and planning
Eastern Transvaal Cooperative	1979 - 1981	Soil scientist

3. EDUCATION		
Institution	**Length of education**	**Degree/Diploma obtained:**
University of Pretoria, South Africa	1975 - 1979	BSc. Agriculture
University of Bloemfontein	1986 - 1987	BSc. Honours, Agriculture
Potchefstroom Collage for Agriculture	1981	Diploma: Stereoscopic aerial photo interpretation of natural resources for farm planning
University of South Africa	1992	Diploma: Financial management
University of Trinity	2007	PhD: Integrated agricultural development

6. SPECIALIST STUDIES ON AGRICULTURAL POTENTIAL (selected)		
Year:	**Project Name:**	**Name of Client:**
2018	Impact of mining development on agriculture in north-eastern Ekurhuleni	Boston Associates
2018	Agricultural potential study of Portion 21 (portion of portion 1) of the farm Koppieskraal 1157-IR	Adv. Johan du Plessis
2016	Promoting Intensive Agriculture in Ekurhuleni	Ekurhuleni Metro
2013	MSOBO COAL – HARWAR; economic study for the farming enterprises that will be affected by the proposed coal mine. Discussion of the natural resources that influences agricultural potential; Farming and the potential for different enterprises; Indicate the potential income from main enterprises and Indicate the financial impact of the development on the farmers.	DEMACON
2014	Agricultural Impact Assessment for a Proposed Pipeline Between Brandkop 1504 And Leeu Kop (105), Located South-East Of Bloemfontein	Nemai Consulting

J A Gouws

SACNASP registration of the author.



THE SOUTH AFRICAN COUNCIL
FOR
NATURAL SCIENTIFIC PROFESSIONS

herewith certifies that

Johan Andries Gouws
Registration number: 400140/06

has been registered as a

Professional Natural 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 I of the Act)

Agricultural Science

11 July 2006		
Pretoria	President	Chief Executive Officer