

**Attention: Keobakile Sedupane**

KGATELOPELE ENERGY

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19 October 2020

**DESKTOP ENVIRONMENTAL SCAN OF SPECIFIED PORTIONS OF THE FARM HALFGEWONNEN 190 IS FOR THE POTENTIAL DEVELOPMENT OF SOLAR PV AND COAL FIRED POWER PLANT AS PART OF THE DMRE RENEWABLE ENERGY INDEPENDENT POWER PRODUCER PROCUREMENT PROGRAMME (REIPPPP).**

Dear Sir;

We would like to thank you for providing Cabanga with the opportunity to be involved in the above-mentioned project.

This memorandum presents the findings of our initial desktop environmental assessment with a view to identify the preferred development site option(s) and requirements for further information / studies, in support of the feasibility studies being undertaken for the development of the energy projects.

The assessment was limited to portions of the Farm Halfgewonnen 190IS to which Overlooked Colliery Alpha (Pty) Ltd ("Overlooked Alpha" hereafter) and Overlooked Colliery (Pty) Ltd ("Overlooked" hereafter) hold the surface rights.

## 1 Introduction

Kgatelopele Energy ("K-Energy" hereafter) is investigating the feasibility of developing Energy Projects (both Solar PV and Coal Fired Generators) with the land owners, Overlooked and Overlooked Alpha. The properties considered in this desktop site selection are described in Table 1. These properties as well as the surrounding Mining Rights and Farm Portions are shown in Figure 1.

K-Energy has proposed the development of three components:

- Solar PV1 with an installed capacity of <20MW and land requirement of 30Ha;
- Solar PV2 with an installed capacity of 40MW and land requirement of 60Ha; and
- A Coal plant with an installed capacity of 300MW and land requirement of 210Ha.

The Projects are being developed as part of the Department of Mineral Resources and Energy (DMRE) Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

Activities identified in the Environmental Impact Assessment (EIA) Regulations 2014 (as amended), published in terms of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA), requires environmental authorisation prior to implementation. The development of facilities or infrastructure for the generation and distribution of electricity is one such activity that will be relevant to the development of the Energy Projects (among others). A comprehensive identification of relevant Listed Activities will form part of the application process, once a site is selected and project design is complete.

In the interest of sustainable and environmentally responsive development, K-Energy requested Cabanga Environmental to identify suitable sites for the proposed developments that:



- Avoid known environmental sensitivities on the properties; and
- Can sustainably co-exist with the coal mining activities and other infrastructure associated with the properties.

**Table 1: Summary of Properties**

Farm	Portion	Surface Rights Owner	Mineral Rights	Total Size (Ha)	Description
Halfgewonnen 190 IS	7	Overlooked Colliery Alpha (Pty) Ltd	Halfgewonnen Colliery	138.58	Contains old farm house, currently used as mine offices. Bisected by provincial road.
	8			284.79	Contains Halfgewonnen pits, discard dump, PCD, explosives magazine. Bisected by railway.
	9			303.08	Contains Halfgewonnen pits, overburden and infrastructure area (including plant). Bisected by provincial road.
	10			284.29	Contains mining pit and boxcut, river diversion and topographical high-point.
	16			5.2	Vacant
	2	Overlooked Colliery (Pty) Ltd	None (permit applications by Overlooked and Soft Wink; potential future mining)	370	Overlooked Infrastructure. Permit applications for open pit mining. Agriculture lease on portions. Bisected by railway and provincial road.
	17			7.49	Pit B
	RE			71.3	Pit A
	5			73.2	Overburden Dump. South vacant, will be undermined.

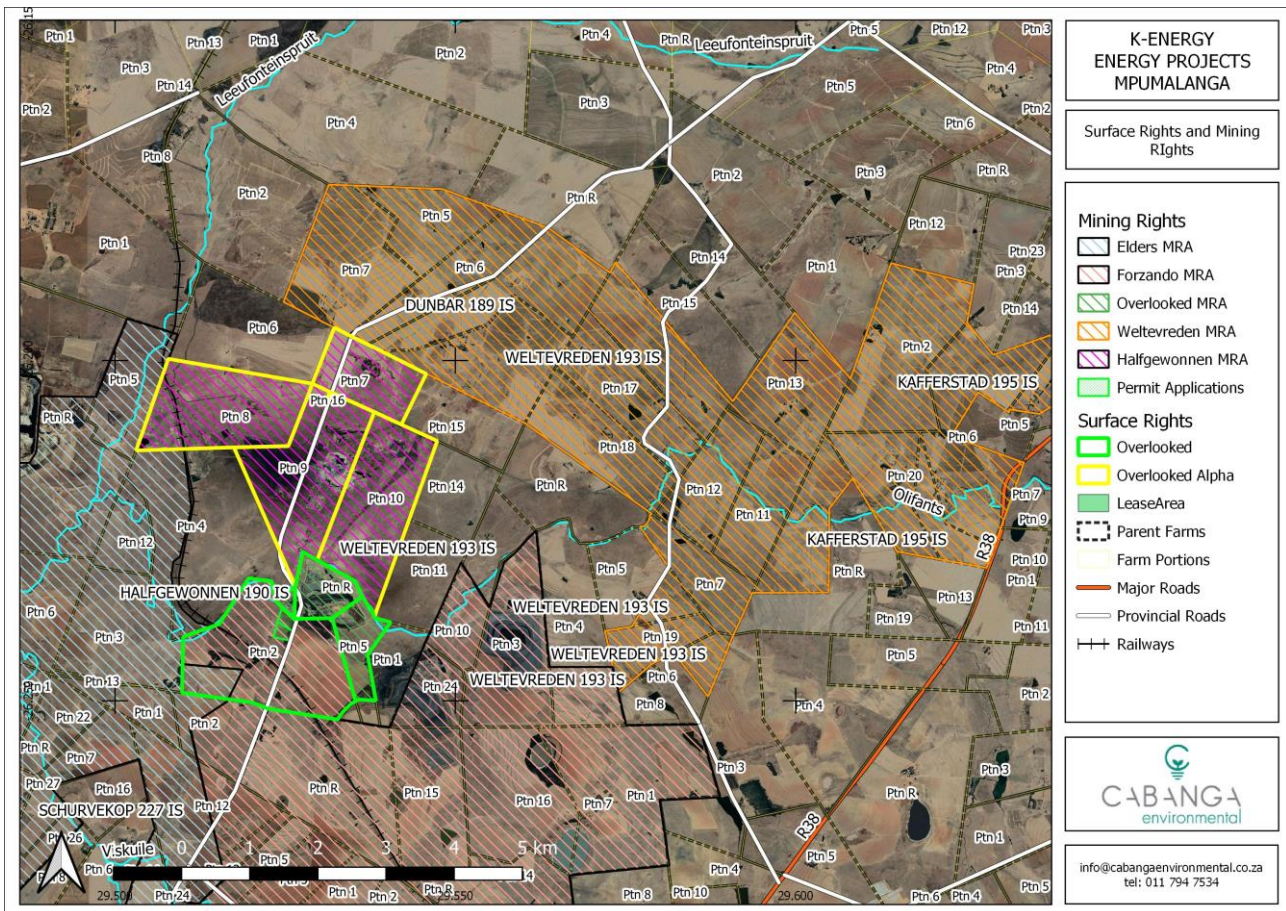


Figure 1: Regional Location, showing surrounding mining rights and relevant surface rights

## 2 Site Selection Criteria

In evaluating the feasibility of land for development of the energy projects, the following primary considerations are relevant:

Table 2: Site Selection Criteria

Criteria	Description	Conclusion
Ownership	Only farm portions where Overlooked or Overlooked Alpha owns the surface rights will be considered at this stage.	Only the Farm Halfgewonnen 190 IS Portions 0 (RE), 2, 5, 7 – 10, 16 and 17 are included in the assessment.
Availability	Land that is presently affected by mine pits or infrastructure (processing plants, waste or water management facilities, etc.) is excluded from the site selection.	Portion 0 and 17 are entirely excluded from the assessment. Parts of the remaining portions are also excluded.
Size	The development area must be of sufficient size to accommodate the planned energy output.	Available development areas must be assessed in terms of land availability.

Criteria	Description	Conclusion
Access	Access for construction vehicles and equipment, operational and maintenance requirements must be planned for.	Access to the development site should be readily available from existing roads where possible, and where new access is required these should be as short as possible and avoid environmental sensitivities as far as possible
Existing power reticulation	The energy projects must be able to tie in with existing electricity infrastructure. Proximity of the development to existing substations must be considered.	Preference is given to sites less than 1km from existing substations, while sites over 2.5km from existing sub-stations are not preferred.
Geotechnical stability	Previously mined areas may have geotechnical stability issues if infrastructure is to be constructed over backfilled pits.	Portion 8, west of the railway line, may be excluded due to anticipated geotechnical issues.
Slope	The development area must be relatively flat to enable the effective construction of the Energy Projects.	Areas with steep slopes should be avoided as these areas may not be suitable for development.
Wetlands	The majority of all properties fall within the 500m regulated zone of delineated and/or NFEPA <sup>1</sup> wetlands, and a Water Use Authorisation in terms of the National Water Act (Act 36 of 1998) may be required.	Delineated wetlands should preferably be avoided (as far as possible) given the ecological importance and sensitivity of wetland systems. Further Wetland delineation/ verification is required for the Overlooked Alpha properties.
Biodiversity	The Mpumalanga Biodiversity Sector Plan identifies Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) aimed at conserving biodiversity pattern and ecological processes on Provincial Level.	Areas demarcated as CBAs and ESAs require further specialist investigation to verify the ecological importance of such areas prior to development.
Heritage Resources	Previous studies have identified graves and heritage structures on the properties. These must preferably be preserved <i>in-situ</i> .	Further Heritage assessment is required, known heritage resources should be avoided if possible.
Dust	Areas associated with coal handling and/or bare areas may be associated with significant dust generation that could negatively affect the operation of Photovoltaic (PV) installations.	The predominant wind direction in the area is from the north-east to the south-west. PV Projects should preferably be sited north-east of the coal handling areas.

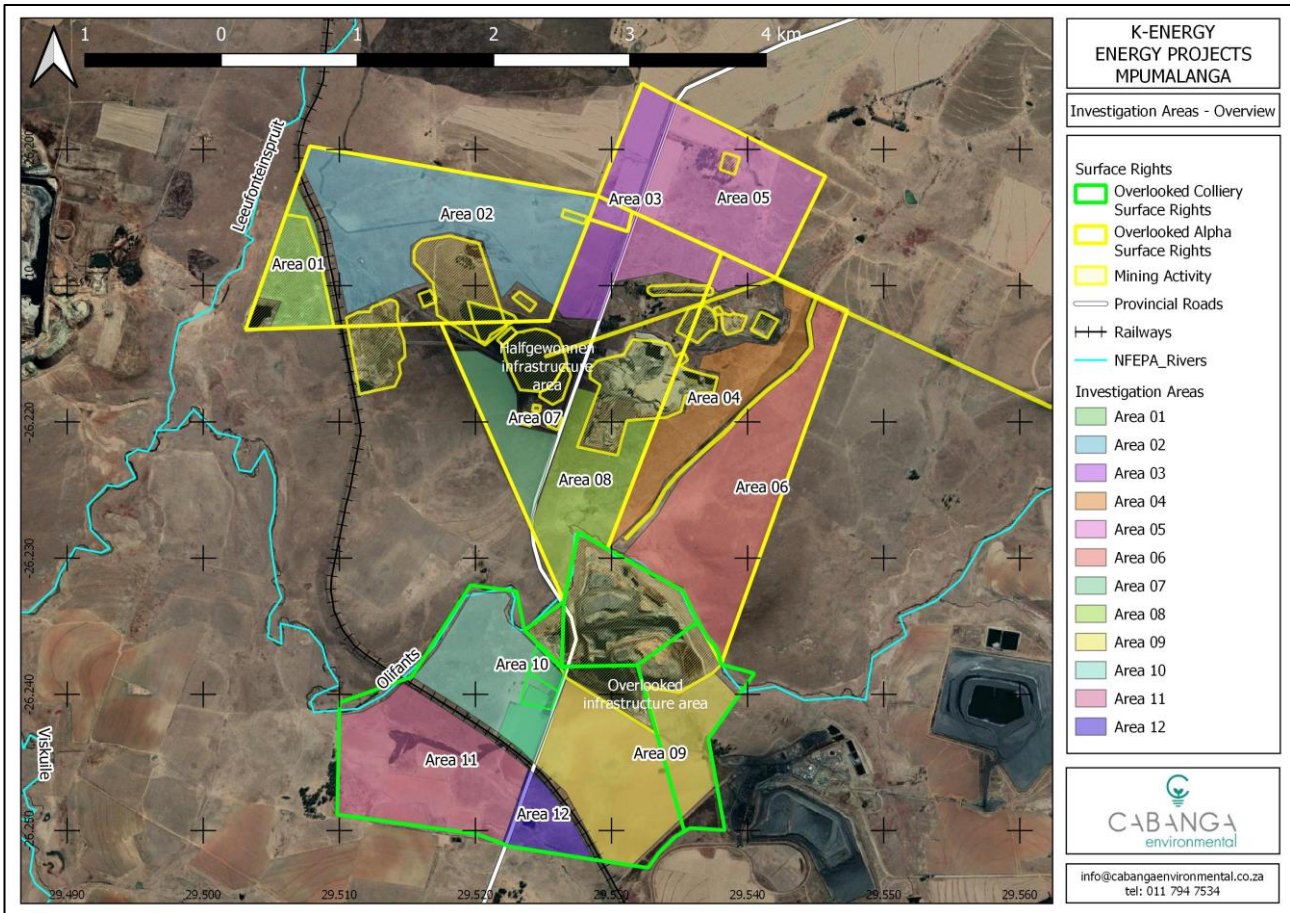
<sup>1</sup> National Freshwater Ecosystem Priority Areas



### 3 Site Ownership, Availability and Size evaluation

Only the Farm Halfgewonnen 190 IS Portions 0 (RE), 2, 5, 7 – 10, 16 and 17 are included in the assessment. Of these, the areas directly affected by mining activity are excluded from further assessment. Additionally, areas in-between the existing mining activities that are too small (less than 30 ha) to accommodate any of the three Energy Projects are also excluded from further assessment.

The remaining areas have been delineated and are illustrated in Figure 2.



**Figure 2: Investigation Areas**

Table 3 overleaf evaluates the total size of each delineated area and thus each area's suitability to accommodate the development size requirements of the Solar PV and Coal Plant Projects.

From Table 3 it is evident that no single evaluation area can meet the size requirements for the development of the Coal Plant (210 Ha). The Coal Plant site must be identified in terms of available combinations of Areas.

**Table 3: Criteria – development size**

Area	Size	PV 1 Suitability	PV 2 Suitability	Coal Plant Suitability		Additional Notes
1	37 Ha	Yes	No	No		May be evaluated for <b>PV1</b> development only
2	165 Ha	Yes (both)	Yes (both)	No	Yes (if combined)	May be considered for <b>PV1</b> , or <b>PV2</b> , or <b>both</b>
3	62 Ha	Yes (either)	Yes (either)	No		Maybe considered for <b>PV1</b> or <b>PV2</b> , not both.
4	75 Ha	Yes (either)	Yes (either)	No	Combine with 6 and 8	Maybe considered for <b>PV1</b> or <b>PV2</b> , not both.
5	143 Ha	Yes (both)	Yes (both)	No		May be considered for <b>PV1</b> , or <b>PV2</b> , or <b>both</b>
6	148 Ha	Yes (both)	Yes (both)	No	Combine with 4 and 8	May be considered for <b>PV1</b> , or <b>PV2</b> , or <b>both</b>
7	37 Ha	Yes	No	No		May be evaluated for <b>PV1</b> development only
8	66 Ha	Yes (either)	Yes (either)	No	Combine with 4 and 6	Maybe considered for <b>PV1</b> or <b>PV2</b> , not both.
9	135 Ha	Yes (both)	Yes (both)	No	Possible combinations, with consideration of railway and road separating these sites.	May be considered for <b>PV1</b> , or <b>PV2</b> , or <b>both</b>
10	70 Ha	Yes (either)	Yes (either)	No		Maybe considered for <b>PV1</b> or <b>PV2</b> , not both.
11	120 Ha	Yes (both)	Yes (both)	No		May be considered for <b>PV1</b> , or <b>PV2</b> , or <b>both</b>
12	22 Ha	No	No	No		Too small for development, unless combined.

## 4 Site Assessment

The following sub-sections evaluate each of the assessment areas in terms of the site selection criteria stipulated in Table 2, with the aim to identify the preferred site(s) for each of the Energy Projects.

The assessment is grouped into the following categories:

- Access considerations (road access and access to existing electricity infrastructure);
- Geotechnical and slope considerations; and
- Environmental sensitivity considerations.

#### 4.1 Site Access and access to existing electricity infrastructure

**Table 4: Criteria – Access (See Figure 3 overleaf)**

Area	Road Access Description	Access Evaluation	Electricity Access Description	Electricity Access Evaluation
1	Underpass at railway	<b>Not preferred</b>	3.3km from Halfgewonnen South sub-station	<b>Not preferred</b>
2	From Halfgewonnen Plant OR D622 (over area 3)	<b>Suitable</b>	3.4km from Halfgewonnen South sub-station	<b>Not preferred</b>
3	Direct from D622	<b>Preferred</b>	3.3km from Halfgewonnen South sub-station	<b>Not preferred</b>
2&3	Direct from D622	<b>Preferred</b>		<b>Not preferred</b>
4	Via Halfgewonnen East Pits	<b>Suitable</b>	1.7 km from Halfgewonnen South sub-station	<b>Suitable</b>
5	Direct from D622	<b>Preferred</b>	3.9 km from Ysterkop sub-station. 3.7km from Halfgewonnen South sub-station	<b>Not preferred</b>
6	Via Halfgewonnen East Pits and crossing river diversion.	<b>Not preferred</b>	1.5 km from Ysterkop sub-station.	<b>Suitable</b>
7	Direct from D622	<b>Preferred</b>	1.6 km from Halfgewonnen South sub-station	<b>Suitable</b>
8	Direct from D622	<b>Preferred</b>	1.2 km from Halfgewonnen South sub-station	<b>Suitable</b>
4, 6 & 8	Direct from D622	<b>Preferred</b>		<b>Suitable</b>
9	Direct from D622	<b>Preferred</b>	1.3 km from Ysterkop sub-station. 600m from Halfgewonnen South sub-station	<b>Suitable</b>
10	Direct from D622	<b>Preferred</b>	Halfgewonnen South sub-station on site	<b>Preferred</b>
11	Direct from D622	<b>Preferred</b>	Halfgewonnen South sub-station across railway	<b>Suitable</b>
12	Direct from D622	<b>Preferred</b>	Halfgewonnen South sub-station 600m away	<b>Suitable</b>



Area	Road Description	Access	Access Evaluation	Electricity Description	Access	Electricity Access Evaluation
				(across the road and railway)		
9, 10, 11 & 12	Direct from D622, but no access from one area directly to another without crossing the road or railway.		Suitable	Halfgewonnen South sub-station at Area 10		Preferred

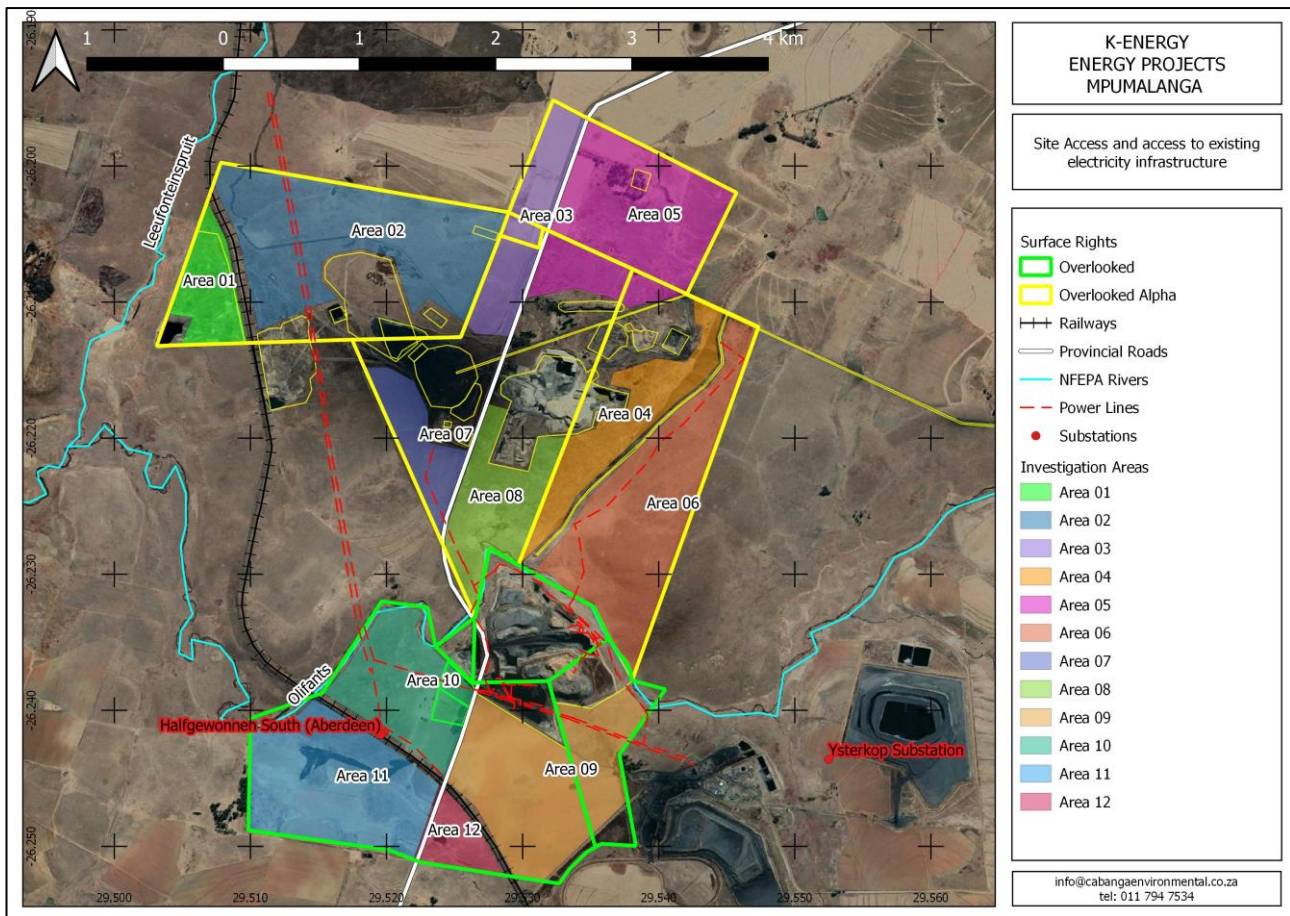


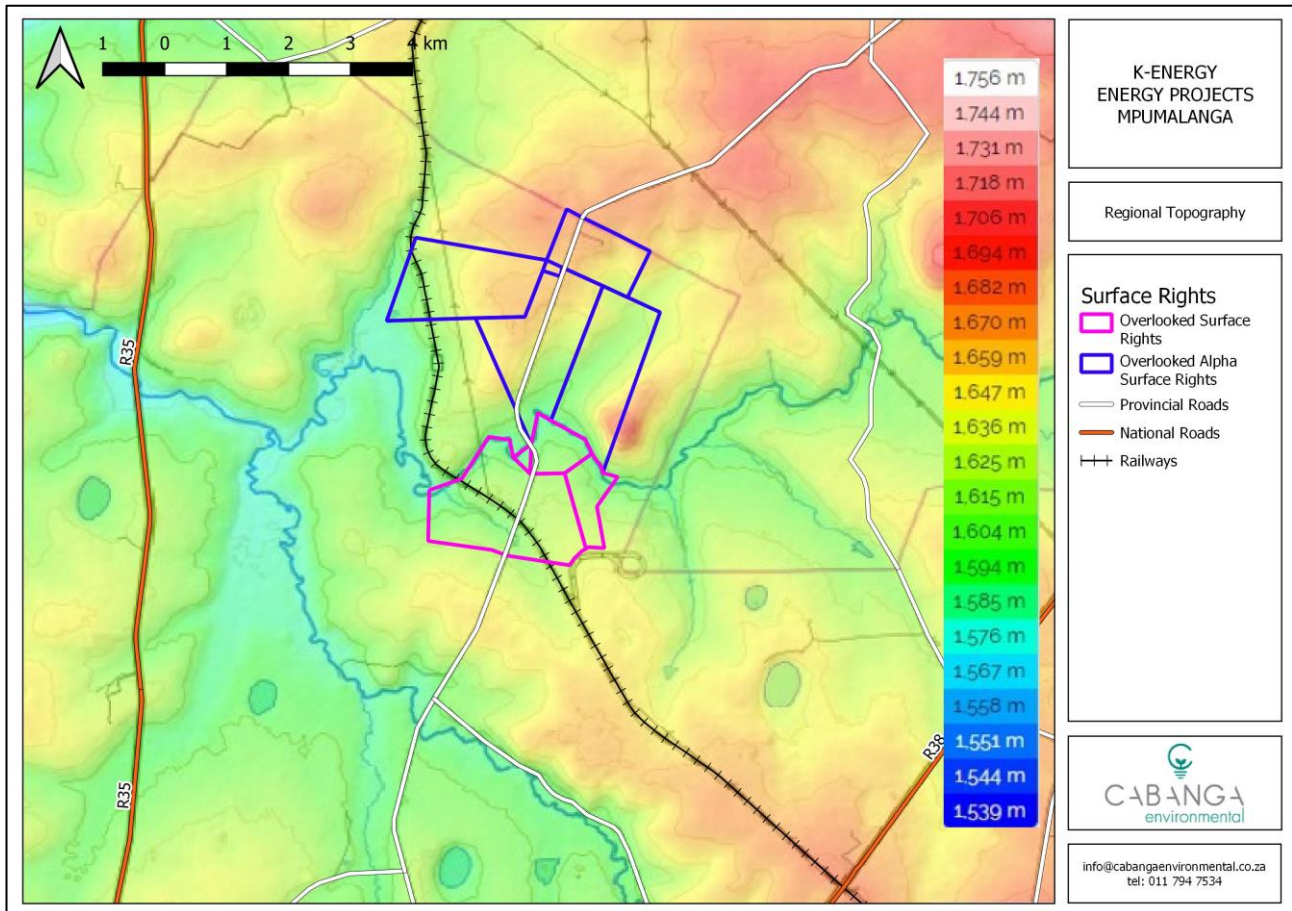
Figure 3: Site Access and Existing Electricity Infrastructure



## 4.2 Geotechnical and slope considerations

**Table 5: Criteria – Geotech and Slope (See Figure 4)**

Area	Geotech description	Geotech Assessment	Slope Description	Slope Assessment
1	Previously Mined	<b>Not preferred</b>	Backfilled Pit	<b>Unknown</b>
2	Presumed stable (discard dump approved)	<b>Assumed Suitable</b> (study required)	Relatively Flat	<b>Suitable</b>
3	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>
2&3	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>
4	Presumed stable	(study required)	Slopes to River Diversion	<b>Not preferred</b>
5	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>
6	Presumed stable	(study required)	Slopes: River Diversion and Ysterkop.	<b>Not preferred</b>
7	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>
8	Presumed stable	(study required)	Slopes to River Diversion and Olifants	<b>Not preferred</b>
4, 6 & 8	Presumed stable	(study required)	Slopes to River Diversion and Olifants River	<b>Not preferred</b>
9	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>
10	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>
11	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>
12	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>
9, 10, 11 & 12	Presumed stable	(study required)	Relatively Flat	<b>Suitable</b>



**Figure 4: Regional Elevations**

### 4.3 Environmental sensitivity considerations.

In considering the environmental sensitivity of the investigation areas, the following information was considered:

- Halfgewonnen Colliery Wetland Identification and Impact Assessment. Strategic Environmental Focus (Pty) Ltd (SEF). May 2013.
- Cabanga Environmental. (2013). Wetland Assessment for Portion 5, Portion 17 and Remaining Extent of Halfgewonnen 190 IS and a part of Portion 0 of Forzando 592 IS, Bethal Mpumalanga.
- Cabanga Environmental. (2019). Overlooked Colliery (Pty) Ltd. Wetland Risk and Impact Assessment Report.
- Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute. 2013. Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector. Pretoria.
- NFEPA Metadata: South African National Biodiversity Institute (SANBI).
- Mpumalanga Biodiversity Sector Plan GIS data (SANBI).

### 4.3.1 Wetlands

**Table 6: Criteria – Wetlands (See Figure 5)**

Area	Wetlands description	Conclusion
1	Affected by connected Hillslope Seep Wetland, Channelled Valley Bottom Wetland and additional NFEPA Wetlands. Approximately 15Ha remaining if wetlands are excluded.	<b>Not preferred</b>
2	Affected by Channelled Valley Bottom Wetland, Pan, Unconfirmed Isolated Hillslope Seep and additional NFEPA Wetlands. Approximately 95 Ha remaining if wetlands are excluded.	<b>Suitable</b>
3	Affected by Hillslope Seep and Channelled Valley Bottom Wetlands. Approximately 24 Ha remaining if wetlands are excluded.	<b>Not preferred</b>
2&3	Affected by Channelled Valley Bottom Wetland, Pan, unconfirmed isolated hillslope seep, Hillslope Seep and additional NFEPA Wetlands. Approximately 119 Ha remaining if wetlands are excluded.	<b>Suitable</b>
4	Entire Area affected by delineated and NFEPA Wetlands.	<b>Not preferred</b>
5	Approximately 38 Ha remaining if wetlands are excluded.	<b>Suitable</b>
6	Entire Area (except for Ysterkop) affected by delineated and NFEPA Wetlands.	<b>Not preferred</b>
7	Small portion of Hillslope Seep in south of area. Approximately 35 Ha remaining if wetlands are excluded.	<b>Suitable</b>
8	All but 10 Ha affected by delineated and NFEPA Wetlands.	<b>Not preferred</b>
4, 6 & 8	All but 10 Ha affected by delineated and NFEPA Wetlands.	<b>Not preferred</b>
9	27 ha affected by seeps and depression, approximately 105 Ha remaining if wetlands are excluded.	<b>Suitable</b>
10	Approximately 61 Ha remaining if wetlands are excluded.	<b>Suitable</b>
11	Wetlands bisecting the area – remaining areas if wetlands excluded will be isolated.	<b>Not preferred</b>
12	Wetlands bisecting the area – remaining areas if wetlands excluded will be isolated.	<b>Not preferred</b>
9, 10, 11 & 12	Approximately 200 Ha remaining if wetlands are excluded, but area bisected by Road, Railway, and wetlands.	<b>Not preferred</b>

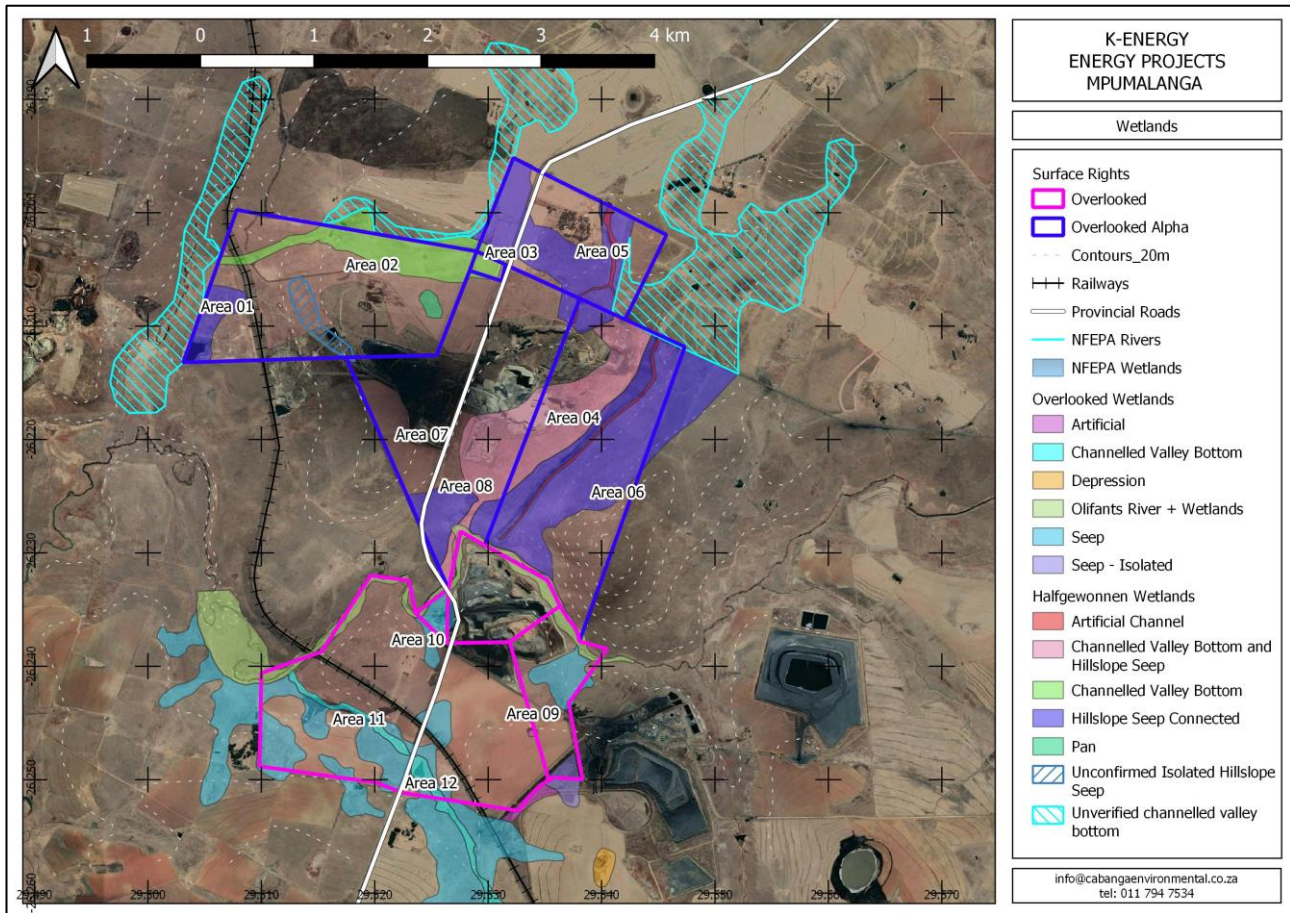


Figure 5: Wetlands and investigation areas

### 4.3.2 Biodiversity

Table 7: Criteria – Biodiversity (See Figure 6)

Area	Biodiversity Classification (Mpumalanga Biodiversity Sector Plan (MBSP) Terrestrial Assessment (based on SANBI GIS))	Conclusion
1	"Heavily Modified".	Preferred
2	Central Portion: "Critical Biodiversity Area (CBA) Optimal".	Not preferred
3	"Heavily Modified" and "Moderately Modified".	Preferred
2&3	CBA Optimal (Area 2), "Heavily Modified" and "Moderately Modified". Approximately 100 ha remaining if CBA excluded.	Preferred
4	"Heavily Modified" and "Moderately Modified".	Preferred
5	"Heavily Modified", "Moderately Modified" and "Other Natural Areas closely associated with Farm House Site .	Preferred
6	"CBA Optimal".	Not preferred
7	Mostly "CBA Optimal".	Not preferred



Area	Biodiversity Classification (Mpumalanga Biodiversity Sector Plan (MBSP) Terrestrial Assessment (based on SANBI GIS))	Conclusion
8	Mostly "Heavily Modified" with small portions in the south classified as CBA Optimal and CBA Irreplaceable.	Suitable
4, 6 & 8	Cumulatively, approximately 100 ha remaining if CBA areas excluded.	Suitable
9	CBA Optimal in northern section, remaining 110 Ha classified as Heavily Modified.	Suitable
10	Mostly CBA Optimal and CBA Irreplaceable, approximately 19 Ha of Heavily and Moderately Modified land remaining.	Not preferred
11	Approximately 81 Ha of heavily and moderately modified land (southern portions), mostly CBA Irreplaceable in the north.	Suitable
12	Classified as Moderately Modified.	Preferred
9, 10, 11 & 12	Approximately 220 Ha of Heavily and Moderately Modified lands, with the remaining areas as CBAs. Note, the areas are bisected by the railway line and provincial road.	Suitable

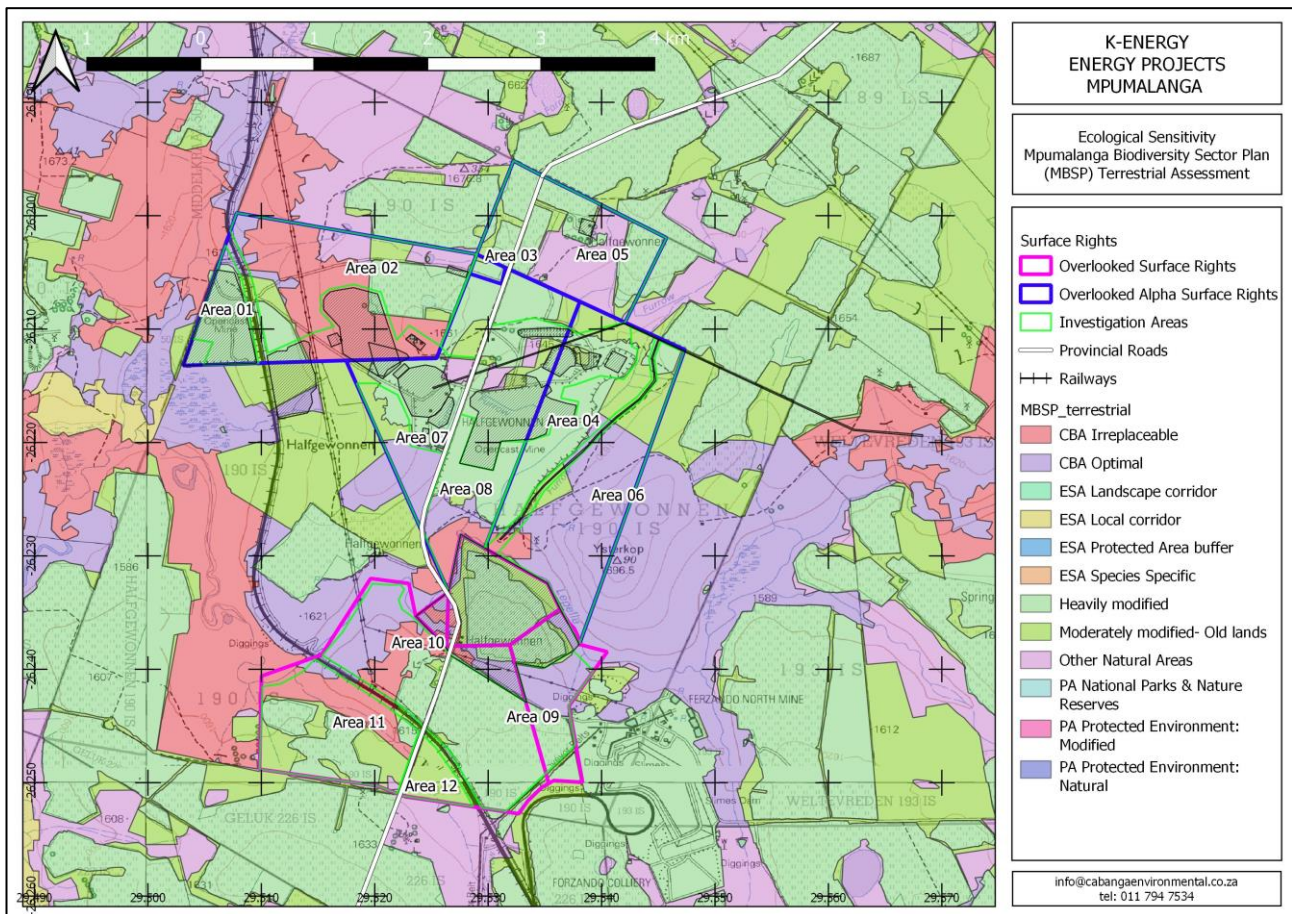


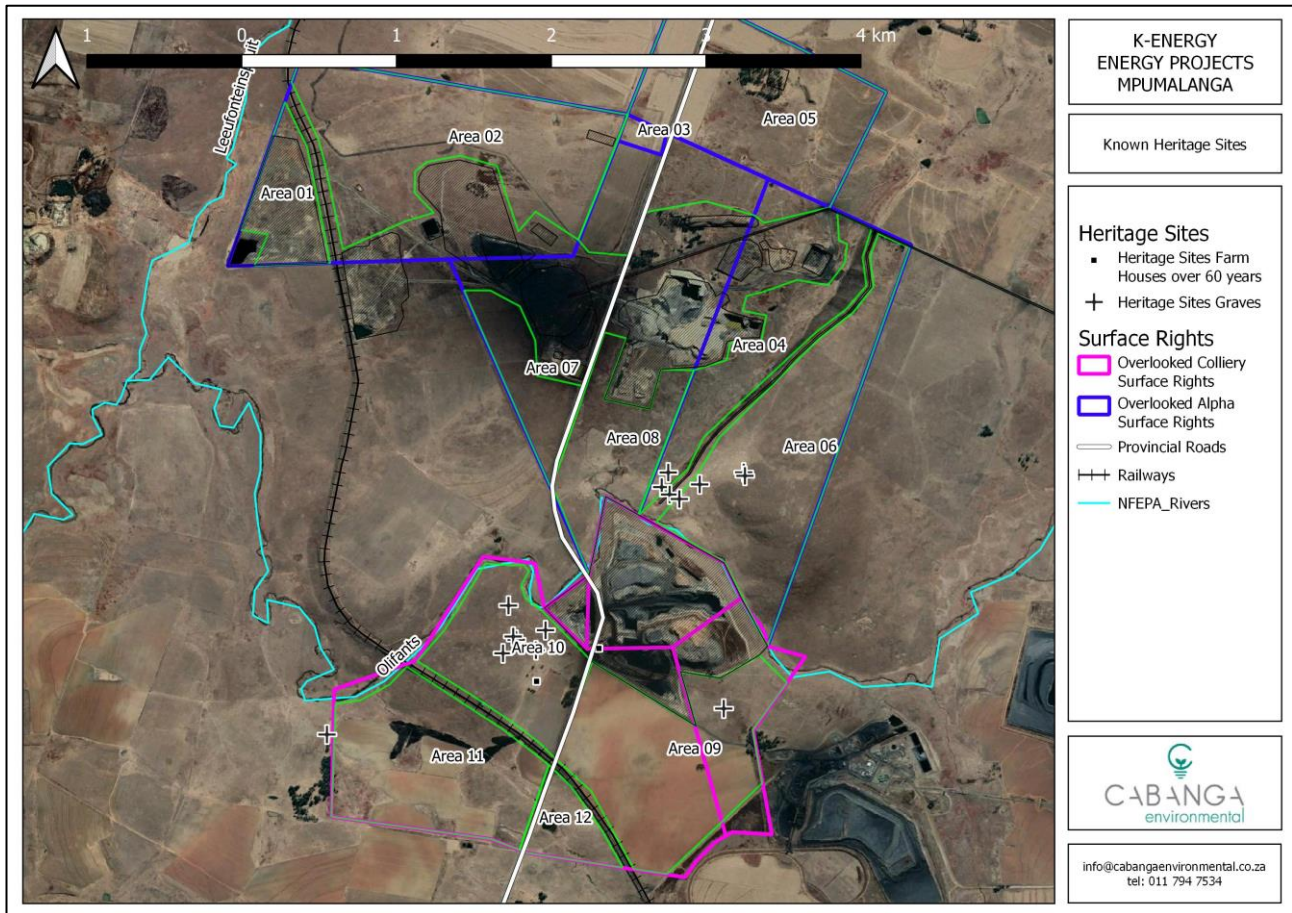
Figure 6: Terrestrial Biodiversity Assessment

### 4.3.3 Heritage resources

Previous Heritage and Archaeological Studies that were completed for the Overlooked and Halfgewonnen Mining operations didn't fully cover the entire Surface Rights Areas. Based on the available information, the following heritage resources are known to exist on the sites:

**Table 8: Criteria – Heritage and Archaeology (See Figure 7)**

Area	Heritage Resources	Conclusion
1	None Known	Study Required
2	None Known	Study Required
3	None Known	Study Required
2&3	None Known	Study Required
4	Two possible graves (GR1 Homestead) and GR7 (packed stones, possible grave) in the southern corner.	Exclude from development
5	None Known	Study Required
6	GR2 (Kraal) - reportedly relocated. GR3 (1/2 graves), GR4 (6/7 graves), GR5 (Headstone) and GR6 (Circular grave) remain	Exclude from development
7	None Known	Study Required
8	None Known	Study Required
4, 6 & 8	Graves within Area 4 and Area 6 must be verified and avoided.	Study Required
9	Mahlangu Graveyard is located in this area.	Exclude from development
10	Ruins as well as several graves are located in this area.	Exclude from development
11	None Known	No restrictions
12	None Known	No restrictions
9, 10, 11 & 12	Ruins as well as several graves are located in this area.	Exclude from development



**Figure 7: Known Heritage Resources**

**4.3.4 Dust considerations**

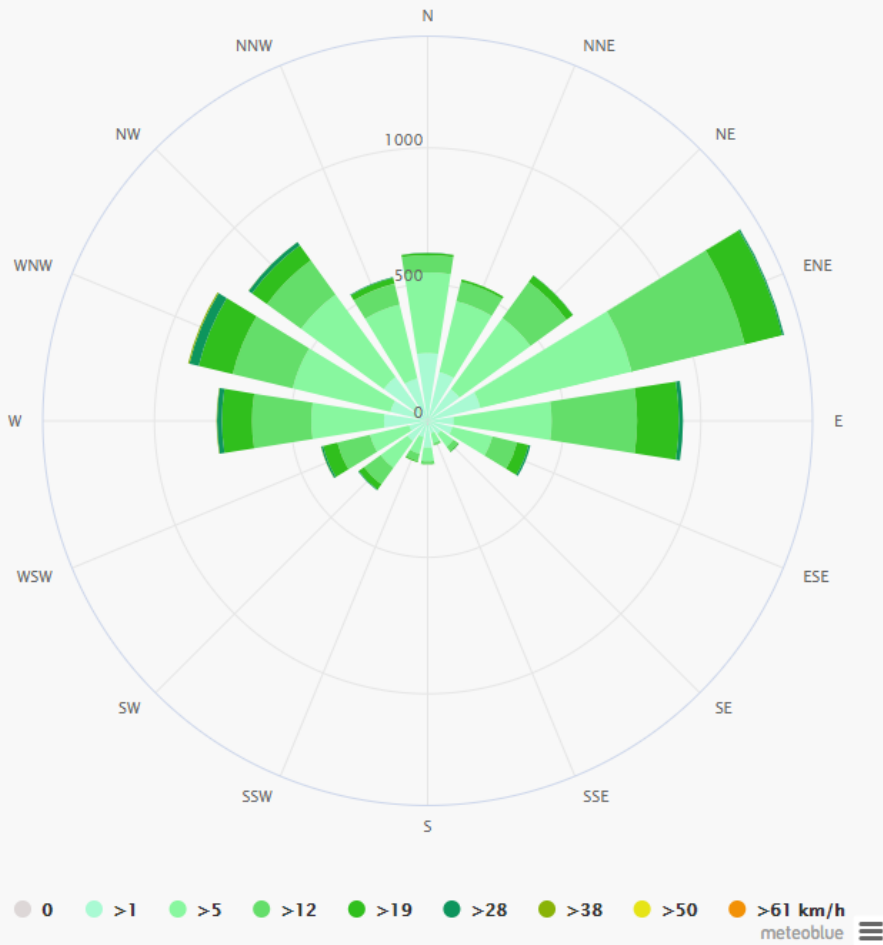
Modelled climatic data indicates that the predominant wind-direction is from the East-North-East (Figure 8). (<https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/-26.259N29.541E>)

Therefore, the PV Projects should preferably be constructed North or East of the main infrastructure areas, to avoid the potential impacts that increased dust from these areas could have on the Solar PV installations.

Area 2; Area 3 and Area 5 are therefore preferable sites for the Solar PV Projects.



### Wind rose



The wind rose for 26.26°S 29.54°E shows how many hours per year the wind blows from the indicated direction. Example SW: Wind is blowing from South-West (SW) to North-East (NE). [Cape Horn](#), the southernmost land point of South America, has a characteristic strong west-wind, which makes crossings from East to West very difficult especially for sailing boats.

**Figure 8: Wind Rose for the area**



## 5 Site Evaluation

Each of the sites included in the desktop assessment are evaluated against the site selection criteria in Table 9.

**Table 9: Desktop Site Evaluation**

Area	Development Potential	Access	Power Access	Power access	Geotechnical stability	Slope	Wetlands	Biodiversity	Heritage	Wind
1	PV1 only	Not preferred	Not preferred	Not preferred	Not preferred	Unknown	Not preferred	Preferred	Study Required	Not preferred
2	PV1 and PV2	Suitable	Not preferred	Suitable	Assumed Suitable	Suitable	Suitable	Not preferred	Study Required	Preferred
3	PV1 or PV2	Preferred	Not preferred	Not preferred	(study required)	Suitable	Not preferred	Preferred	Study Required	Preferred
2&3	Coal Plant, or PV1 and/or PV2	Preferred	Not preferred	Suitable	(study required)	Suitable	Suitable	Preferred	Study Required	Preferred
4	PV1 or PV2	Suitable	Suitable	Not preferred	(study required)	Not preferred	Not preferred	Preferred	Exclude from development	Not preferred
5	PV1 and PV2	Preferred	Not preferred	Not preferred	(study required)	Suitable	Suitable	Preferred	Study Required	Preferred
6	PV1 and PV2	Not preferred	Suitable	Suitable	(study required)	Not preferred	Not preferred	Not preferred	Exclude from development	Not preferred
7	PV1 only	Preferred	Suitable	Suitable	(study required)	Suitable	Suitable	Not preferred	Study Required	Not preferred



Area	Development Potential	Access	Power Access	Power access	Geotechnical stability	Slope	Wetlands	Biodiversity	Heritage	Wind
8	PV1 or PV2	Preferred	Suitable	Suitable	(study required)	Not preferred	Not preferred	Suitable	Study Required	Not preferred
4, 6 & 8	Coal Plant	Preferred	Suitable	Suitable	(study required)	Not preferred	Not preferred	Suitable	Study Required	Not preferred
9	PV1 and PV2	Preferred	Suitable	Suitable	(study required)	Suitable	Suitable	Suitable	Exclude from development	Not preferred
10	PV1 or PV2	Preferred	Preferred	Preferred	(study required)	Suitable	Suitable	Not preferred	Exclude from development	Not preferred
11	PV1 and PV2	Preferred	Suitable	Not preferred	(study required)	Suitable	Not preferred	Suitable	No restrictions	Not preferred
12	None	Preferred	Suitable	Not preferred	(study required)	Suitable	Not preferred	Preferred	No restrictions	Not preferred
9, 10, 11 & 12	Coal Plant	Suitable	Preferred	Preferred	(study required)	Suitable	Not preferred	Suitable	Exclude from development	Not preferred



## 6 Conclusion

Area 1 warrants no further investigation – it is preferred from a terrestrial biodiversity point of view, but presents challenges with access, wetlands, and geotechnical considerations. If the wetland areas are excluded, insufficient space remains on the site to accommodate any of the proposed developments.

Area 2 presents suitable opportunities for development and warrants further investigation (Geotechnical investigation, detailed wetland delineation, Heritage Impact Assessment etc.).

Area 3 may not warrant further investigation on its own, but in conjunction with Area 2 presents suitable development opportunities.

Area 4 does not warrant further investigation on its own but may be further considered in conjunction with Area 6 and Area 8 (neither of these areas present suitable opportunities on their own either).

Area 5 may be further evaluated for the development of Solar PV Projects. Potential to develop Area 5 in conjunction with Area 2 and 3 may also be considered (crossing of the provincial road will have to be assessed from a road traffic safety perspective).

Area 7 may be suitable for the development of PV1 only, however the risk that the existing processing facilities at Halfgewonnen may pose to Solar PV in terms of dust generation must be considered.

Area 9 – 12 present increased opportunity for development if considered together. However, the safety implications of the sites being bisected by the provincial road and railway line must be carefully considered by the relevant engineering team.

From the desktop assessment undertaken, the following can be concluded:

### 6.1 Coal Plant Sites

The possible sites that have been identified for the development of the Coal Plant present significant challenges:

- Area 2 and Area 3 combined may address the area-requirement of 210 Ha, if the potential wetlands on the Areas are included in the development footprint (not preferred). Given the location of these areas north of the processing area at Halfgewonnen, it is anticipated that these areas would be better suited to development of the PV Projects.
- Area 4, 6 and 8 combined addresses the area-requirement of 210 Ha, however, the area contains graves, wetlands, and the Halfgewonnen River Diversion as well as Ysterkop, a topographical high-point that may not be suited to development without significant earth-works being undertaken.
- Area 9, 10, 11 and 12 combined addresses the area-requirement of 210 Ha, however, none of these areas are contiguous to one another (these areas are separated from each other by the Provincial Road and by the Railway line). Furthermore, Area 11 and 12 contain significant wetlands. Area 10 contains numerous heritage resources and is also earmarked for expansion of the Overlooked Mining Activities (via mining permit applications by Soft Wink Properties and Overlooked Colliery).

## 6.2 Solar PV Sites

Areas 2, 3 and 5 all presents suitable opportunities (in conjunction or individually) for the development of Solar PV Projects and should be investigated further as potential development sites for PV1 and PV2.

Area 7 meets the area requirements (30 Ha) for PV1, but it is recommended to exclude this site given its location south-west of the Halfgewonnen Processing area. Considering the dominant wind direction, it is anticipated that a Solar PV Project in this area would not be feasible due to dust from the Halfgewonnen Operations.

## 6.3 Way Forward

It is recommended that additional surface rights be identified for further investigation of the Coal Plant as none of the sites included on the current investigation are considered optimal.

It is recommended to initiate geotechnical, wetland, biodiversity and heritage studies on areas 2, 3 and 5 to further define and confirm the development potential of these areas for the solar PV projects. The recommended site is illustrated in Figure 9.

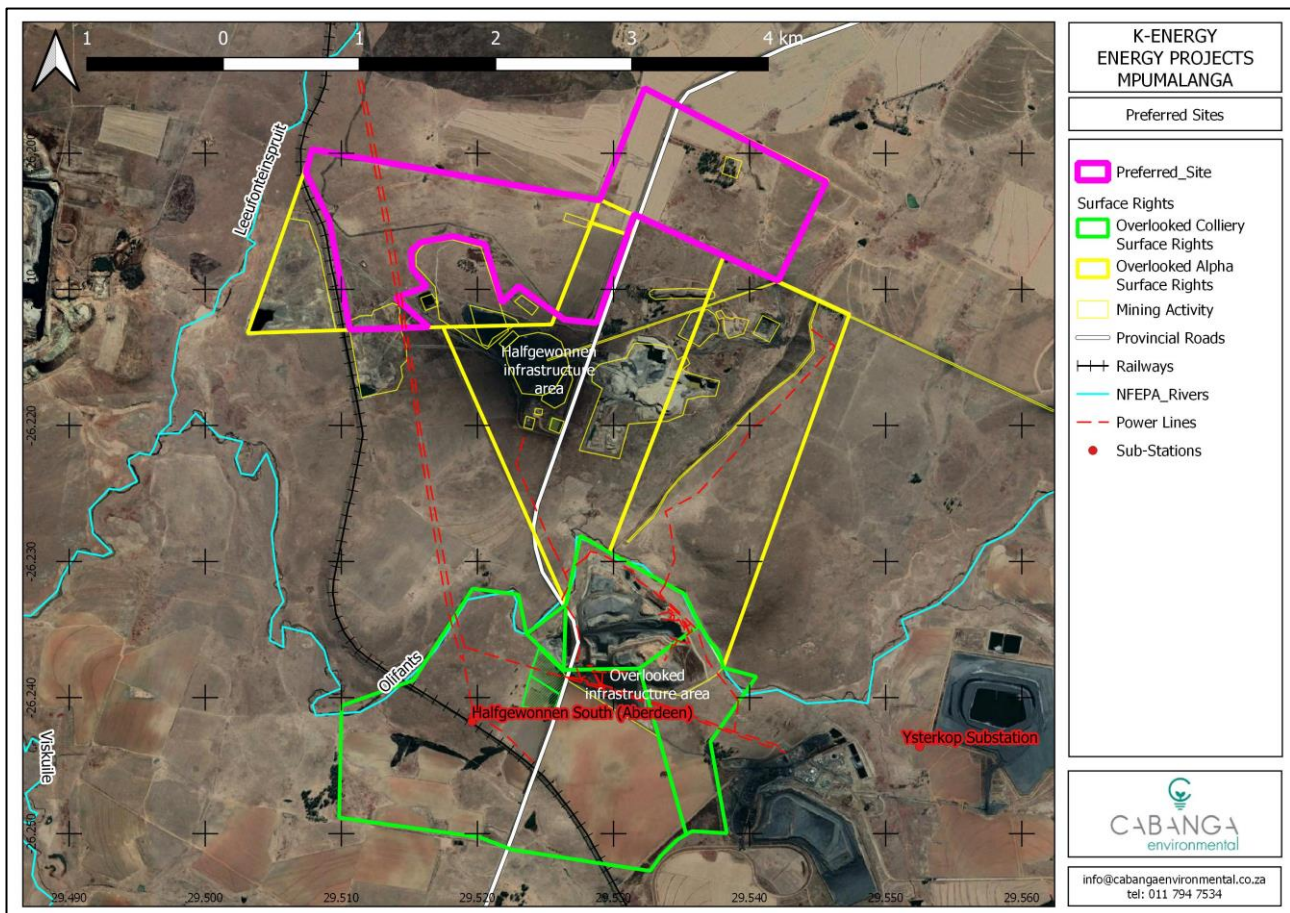


Figure 9: Preferred Site



## 7 Assumptions and Knowledge Gaps

- The water requirements for the development of the proposed Energy Projects are not currently known, and a feasible water source to address the Projects' water requirements will also need to be determined.
- No detailed contour surveys were provided for inclusion in this assessment, where contours are shown, these have been digitized at 20m intervals from available topographic maps.
- No comprehensive surveys of the existing electricity distribution infrastructure (especially related to the Halfgewonnen Mine/Overlooked Alpha properties) were provided. The data on Figure 3 was collated from information provided by the Overlooked Colliery, available topographical maps, site photographs and Google Earth Aerial Imagery. Substation positions were provided by K-Energy via e-mail on 19 October 2020.
- The biodiversity assessment was based on the MBSP and not on detailed site-specific biodiversity studies.
- The wetland assessment was based on the available specialist studies; however, it is noted that these studies are to some extent outdated (especially in the case of the Halfgewonnen Mine/Overlooked Alpha areas).
- The Permit Application Areas affecting Area 10 have been excluded from the area calculations presented in this memo. It is noted that additional space will be required by these projects for the establishment of topsoil stockpiles and overburden dumps.
- It is assumed at this stage that development of the Projects will require authorisation in terms of the NEMA and the National Water Act (Act 36 of 1998) regardless of the development site(s) chosen. A detailed legal assessment will need to be undertaken as part of the application process.
- The Mining Rights indicated in Figure 1 are based on available information – Cabanga did not undertake any detailed reviews of the actual rights, their legal status or validity
- **Portion 16 has been included in the Assessment, it is noted however that this property has not been listed under the definition of "Properties" in the Transactional Agreement between Overlooked Alpha and Sudor Coal (Pty) Ltd.**