

BASIC ASSESSMENT REPORT



agriculture, environmental affairs,
rural development and land reform

Department:
agriculture, environmental affairs,
rural development and land reform .
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

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Basic Assessment Report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

BASIC ASSESSMENT REPORT

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of 07 April 2017. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES	NO
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If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. ACTIVITY DESCRIPTION

a) Describe the project associated with the listed activities applied for

THE PROPOSED ESTABLISHMENT OF AN 132KV OVERHEAD GRIDLINE CORRIDOR ON MULTIPLE PROPERTIES TO SERVICE THE FUTURE HERCULES SOLAR PV FACILITY NEAR DE AAR, EMTHANJENI LOCAL MUNICIPALITY, PIXLEY KA SEME DISTRICT MUNICIPALITY, NORTHERN CAPE.

The proposed development will form part of the auxiliary infrastructure for the authorised future Solar PV Cluster development near De Aar, within the Emthanjeni Local Municipality, within the Pixley ka Seme District Municipality. Once developed, the cluster will have a total maximum generation capacity of up to 1 330 MW and will have an extent of approximately 4 105 ha. The proposed solar PV cluster will extend over three (3) properties:

- The Remainder of the Farm Riet Fountain 6;
- The Remainder of the Farm Hartebeest Hoek 31; and
- The Remainder of the Farm Roode Kraal 26.

The solar photovoltaic environmental authorisation applications for the proposed cluster development have concluded and the environmental authorisations for the respective developments have been obtained. The Hercules Solar PV 1 solar development has been approved on the Remainder of the Farm Riet Fountain 6 (Hanover Major Division) (DFFE REF: 14/12/16/3/3/2/2563).

The current Basic Assessment Report will be solely for overhead gridline infrastructure, proposed over multiple properties, will be aimed toward connecting the future Hercules Solar PV 1 infrastructure to the Kestrel Main Transmission Substation. The proposed development of the gridline infrastructure will have a transmission capacity of up to 132 kV and will also include the Eskom Switching station (located on the Remainder of the Farm Riet Fountain 6 in proximity to the approved Hercules Solar PV1 infrastructure).

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 327, 325 and 324	Description of project activity
Listing Notice 1: Listed Activity 12 The development of facilities or infrastructure for the transmission and distribution of electricity – (i) Outside urban areas or industrial complexes with a capacity of more than 33 or less than 275 kilovolts.	The project aims to establish a 132 kV gridline corridor leading from the Eskom Switching Station located within the boundaries of the approved facility (Hercules Solar PV1) to the approved Kestrel Substation (located on the Remainder of the Farm Wagt en Bittje 5).
Listing Notice 1: Listed Activity 12 The development of- (ii) Infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs: (a) Within a watercourse; (c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	The proposed infrastructure development will see to the establishment of the gridline corridor intercepting a number of watercourses throughout the landscape. Both alternatives to the corridor alignment will see to the impedance with the watercourse identified in the area. The positioning of pylon infrastructure within the watercourses would be unavoidable. Furthermore, the proposed development would require the establishment of access/service roads leading through the watercourses. Therefore, cumulatively, the impact on the watercourses identified within proximity to the proposed developments would exceed the threshold of this activity.
Listing Notice 1: Listed Activity 19 The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	The proposed infrastructure development will see to the establishment of the gridline corridor intercepting a number of watercourses throughout the landscape. Both alternatives to the corridor alignment will see to the impedance with the watercourse identified in the area. The positioning of pylon infrastructure within the watercourses would be unavoidable. Furthermore, the proposed development would require the establishment of

BASIC ASSESSMENT REPORT

Listed activity as described in GN 327, 325 and 324	Description of project activity
	access/service roads leading through the watercourses. Therefore, cumulatively, the impact on the watercourses identified within proximity to the proposed developments would exceed the threshold of this activity.
Listing Notice 1: Listed Activity 24 The development of a road- (i) With a reserve wider than 13.5 metres, or where no reserve exists where the road is wider than 8 metres.	As part of the proposed infrastructure establishment, a servicing road will be required to be established, either directly below or slightly offset from the gridline infrastructure to be established. During the construction phase of the proposed development, it is anticipated that the width of the road will be 9m, however during the operational phase, this road will be up to 6m in width. During the construction phase, the proposed development activities will exceed the thresholds of this activity.
Listing Notice 1: Listed Activity 27 The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.	As part of the proposed development of the infrastructure, an onsite Eskom distribution substation will be constructed for the respective gridline connections. The onsite substation is proposed to have an extent of approximately 1 ha in extent.
Listing Notice 1: Listed Activity 28 Residential, mixed, retail, commercial, industrial or industrial developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.	The construction of the Overhead Powerline Infrastructure (considered to be an industrial development) will be constructed and operated on land currently zoned as agricultural. The total extent of the development footprint (including the construction footprint and the operational footprint) of the gridline infrastructure will exceed the threshold for this listed activity.
Listing Notice 1: Listed Activity 48 The expansion of – (i) Infrastructure or structures where the physical footprint is expanded by 100 square metres or more: where such expansion occurs – (a) Within a watercourse; or (c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	Where existing road tracks are used, these roads will be required to be widened as part of the construction phase activities. The proposed corridor alignments intersect with multiple watercourses across the landscape. Therefore, the cumulative direct impact of the road expansions would trigger this listed activity.
Listing Notice 3: Listed Activity 14 The development of (ii) infrastructure or structures with a physical footprint of 10 square metres or more where such development occurs- (a) Within a watercourse; (c) If no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse. (g) Northern Cape (ii) Outside urban areas: (ff) Critical biodiversity areas or ecosystem services areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	The proposed development will see to the construction of pylon infrastructure and road infrastructure within watercourses located within Ecological Support Areas as identified in the systematic biodiversity plan of the Province. Cumulatively, the disturbance footprint will exceed the minimum thresholds of the activity.
Listing Notice 3: Listed Activity 18	The proposed developments would see to the use of existing roads (farm tracks) for the purpose of accessing and constructing the proposed infrastructure. Where

Listed activity as described in GN 327, 325 and 324	Description of project activity
The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. (g) Northern Cape (ii) Outside urban areas: (ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland	existing track are to be used, these tracks will be widened to a width of up to 9 m for the purpose of construction activities. During the operational phase, the roads will be used as service roads and will be up to 6 m in width. These roads will be located underneath the powerline infrastructure. For the purpose of establishing the roads, a number of watercourses will be intersected by the construction team.

2. FEASIBLE AND REASONABLE ALTERNATIVES

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- the property on which or location where it is proposed to undertake the activity;
- the type of activity to be undertaken;
- the design or layout of the activity;
- the technology to be used in the activity;
- the operational aspects of the activity; and
- the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (preferred alternative) – Eskom On-site Switching Station (The impacts associated with this aspect will be covered by the discussions pertaining to the gridline infrastructure)		
Description	Lat (DDMMSS)	Long (DDMMSS)
On-Site Eskom Switching Station	30° 44' 21.29"	24° 8' 30.07"
Alternative 2 – No alternative to the switching station		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Alternative:

Alternative S1 (preferred)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity

Latitude (S):

Longitude (E):

30° 44' 21.29"	24° 8' 30.07"
30° 40' 35.49"	24° 7' 46.44"
30° 40' 34.04"	24° 7' 9.54"

30° 44' 21.29"	24° 8' 30.07"
30° 43' 10.40"	24° 5' 44.28"

BASIC ASSESSMENT REPORT

• End point of the activity	30° 40' 34.04"	24° 7' 9.54"
Alternative S3 (if any) – There is no third alternative for the pre-negotiated routes		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

b) Lay-out alternatives – No layout alternatives are applicable to this project

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives – No technology alternatives are applicable to this project

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives) – No other alternatives are applicable to this project

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

The "No Go" alternative is the option of not developing the proposed development and associated infrastructure. The no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction and phase as well as a loss of benefits associated with the load-sharing possibilities in terms of electricity transmission from an approved renewable energy facility into the National Electricity Grid.

Paragraphs 3 – 13 below should be completed for each alternative. – Please note all alternatives have the same start and end point coordinates.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

Alternative A1¹ (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

10 000 m ²
m ²
m ²

or, for linear activities:

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Length of the activity:

14 km
14 km
m

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:

454 ha
578 ha
m ²

4. SITE ACCESS

Does ready access to the site exist?

If NO, what is the distance over which a new access road will be built

YES	NO
	m

Describe the type of access road planned:

Access to the proposed development areas can be directly obtained from the N10-Highway via the approved Hercules Solar PV1 development.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
The proposed development area is currently zoned as Agricultural Zone and is currently being used as game farms.			

2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
At a regional scale, the Northern Cape Provincial Spatial Development Framework (NCPSDF) (NCPSDF, 2012) lists a number of sectoral strategies and plans that are to be read and treated as key components of the PSDF. Of these there are a number that are relevant to the proposed STPs. These include: • Sectoral Strategy 1: Provincial Growth and Development Strategy of the Provincial Government. • Sectoral Strategy 2: Comprehensive Growth and Development Programme of the Department of Agriculture, Land Reform and Rural Development. • Sectoral Strategy 5: Local Economic Development (LED) Strategy of the Department of Economic Development and Tourism. • Sectoral Strategy 11: Small Micro Medium Enterprises (SMME) Development Strategy of the Department of Economic Development and Tourism. • Sectoral Strategy 12: Tourism Strategy of the Department of Economic Development and Tourism. • Sectoral Strategy 19: Provincial renewable energy strategy (to be facilitated by the Department of Economic Development and Tourism). In 2020, the Province undertook the review and refinement of the PSDF, this was due to the shortcomings identified to the document in terms of alignment with the National Development Plan (NDP), the Spatial Planning and Land Use Management Act (SPLUMA), limited alignment with departmental sector plans, amongst others. In 2021, the Premier of the Northern Cape signed off on the Revised PSDF. Chapter 6 (Land Use Management) addresses the infrastructural objectives of the Province, as part thereof, the Infrastructure components address Energy Objectives. As such, the proposed development aligns with the objectives of the PSDF as the proposed development will transmit electricity from the Approved Hercules Solar PV1 Facility toward the future Kestrel Main Transmission Substation, supplying electricity from a renewable energy resource into the National Electricity Grid.			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
The proposed development is located beyond the built-up area associated with De Aar and would therefore not be classified as being as part of the Urban edge.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO	Please explain
According to the ELM's IDP (last updated May 2024), the ELM has seen great investment incomes due to the Renewable Energy projects within its boundaries. There are currently 8 Renewable Energy projects established in the ELM with a total maximum generation capacity of up to 483 MW. These projects constitute both Wind and Solar developments. According to the IPP Quarterly Report June 2017 for the Northern Cape, the cumulative jobs over the construction and projected operational life is valued at 7159 jobs over the 20-year production life. The Emthanjeni Municipality's vision is to lead sustainable development for inclusive economic growth. The IDP identifies 7 Key Performance Areas (KPAs) that underpin the vision, namely: ▪ KPA 1: Basic Services and Infrastructure Development ▪ KPA 2: Institutional Development and Municipal Transformation ▪ KPA 3: Good Governance and Public Participation ▪ KPA 4: Financial Viability ▪ KPA 5: Local Economic Development ▪ KPA 6: Safety and Security ▪ KPA 7: Social Development KPAs 1, 2 and 5 are most relevant to the proposed development.			

BASIC ASSESSMENT REPORT

The Manufacturing sector shows potential of growth through the introduction of Renewable energy projects in and near De Aar, where the municipality depends on the Manufacturing sector to promote renewable energy generation. This, coupled with the various planned projects, will immensely promote growth on the economy.

In terms of the IDP (last update May 2024), it is stated that the municipality aims toward a Just transition to a low-carbon economy. This will be achieved through, amongst other items, the implementation of the Just Energy Transition (JET) Investment Plan, whereby which R1.5 trillion will be invested into the economy of the ELM over the next five years through the establishment of renewable energy, green hydrogen and electric vehicles.

As the proposed development aims to allow for the effective connection between an approved Solar PV development (Hercules Solar PV1 development and the approved Kestrel Main Transmission Substation), this project inherently aligns with the local economic development objectives of the ELM.

(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
There is no Structure Plan for the Emthanjeni Local Municipality, however the proposed development aligns with the Municipal and, Provincial SDFs, as well as the National IRP as these documents recognises the importance of the Strategic Transmission Corridor.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO	Please explain
There is no EMF for the Emthanjeni Local Municipality, however the proposed development aligns with the Municipal and, Provincial SDFs.			

(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
The National Development Plan (NDP) (NPC, 2013) contains a plan aimed at eliminating poverty and reducing inequality by 2030. Chapter 4, Economy infrastructure – The foundation of social and economic development, is relevant to, and supports the establishment of the proposed renewable energy development. This section of the document is to be read in conjunction with the DoE's Integrated Resources Plan (IRP) (DMRE, 2019) that seeks to increase the private participation and investment in this field through the involvement of independent investors. The IRP (DMRE, 2019) is an electricity infrastructure development plan based on least-cost electricity supply and demand balance, taking into account security of supply and the environment (minimize negative emissions and water usage). The NDP 2030 (NPC, 2013) notes that South Africa is in dire need of an improved electricity distribution regime. This will be achieved by means of: ▪ Investment into human and physical capital; ▪ Improvement of governmental support for combating illegal use; ▪ The improvement of the demand-side management; and ▪ Widening participation and accelerate investment of the electricity sector through the division of the power grid between Eskom (the National Energy Regulator) and Independent Power Producers (IPPs). As part of the NDP 2030 (NPC, 2013) and by extension the IRP (DMRE, 2019), identified the municipality as a Strategic Transmission Corridor (STC), the area has the capability of becoming a centre of renewable energy. The proposed development is located within the Central Transmission Corridor as promulgated in 2018. The location of the proposed development relative to the STC and REDZ have been indicated in Figure 1 below.			
Figure 1: Strategic Transmission Corridors (STC) and Renewable Energy Development Zones (REDZ) as promulgated (Source: DFFE, as accessed October 2022).			

BASIC ASSESSMENT REPORT

3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	NO	Please explain
As described above, the development is proposed in the Central Transmission Corridor (STC) as adopted and promulgated by the DFFE in 2018. The corridor and need for renewable infrastructure is recognised by the Pixley Ka Seme District Municipality, as the proposed development will see to the connection of the approved Hercules Solar PV1 facility on the Remainder of the farm Riet Fountain 6, with the National Electricity Grid. It is concluded that the proposed land does align with the municipal planning of the District SDF (2025).			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES	NO	Please explain
It is recognised that the proposed development is located in the STC, It should be noted that the economic growth model of the Municipal IDP relies heavily on the development of the proposed developments within this corridor as the Private Sector seek buy-in to the area, upgrading infrastructure and providing employment opportunities for the local communities. The impact of the socio-economic activities associated with the proposed development of the future Hercules Solar PV1 facility relies on the sound connection to the national electricity grid. Therefore, without the development of the currently proposed project, the approved renewable energy infrastructure would not feasibly be able to be constructed. Therefore, in order to see the full economic benefits in the area, there is a need for the proposed gridline infrastructure to be constructed.			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO	Please explain
Please note, the construction phase of the proposed development would not require access to such services as the services provided to the approved Hercules Solar PV1 facility would be used as part of the construction and operational phase (specifically as it pertains to the Onsite substation). The proposed gridline infrastructure will be connected to the future Kestrel Main Transmission Substation, currently under development by the Developer of the current application.			

6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO	Please explain
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The proposed development of the onsite infrastructure is located within the Central STC, which has been incorporated into the Municipal Strategic Planning documents. The proposed development proposed infrastructure is also located in an area currently surrounded by Environmental Authorisations for renewable energy projects and transmission infrastructure projects (see the image below). Furthermore, the corridor for Alternative B of the proposed development follows a network of existing overhead gridline infrastructure, whereas the corridor for Alternative A follows the corridors of already approved future developments in the area.

The image below provides a bird's eye view of the EAs granted within proximity (30 km) to the proposed development and the types of developments approved in the area.

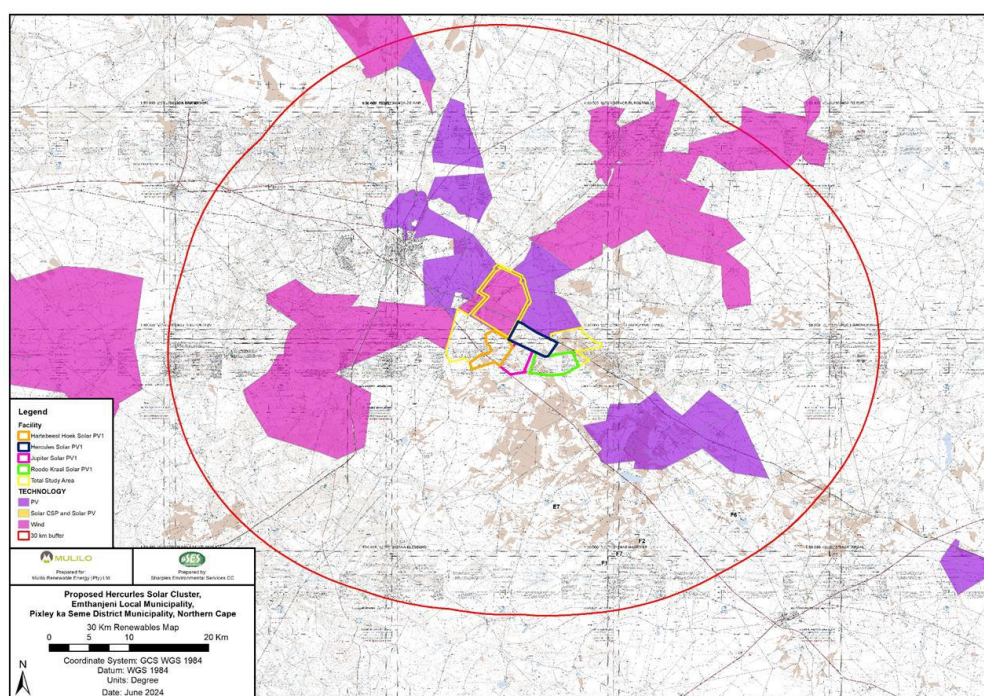


Figure 2. Similar projects located within proximity to the proposed Hercules Development Cluster.

7. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO	Please explain
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The proposed development is in line with the national Integrated Resource Plan (IRP) 2010-2030 (DMRE, 2019) which was instated with the aim of providing a long-term, cost-effective strategy to meet the electricity demand in South Africa. The IRP 2010-2030 (DMRE, 2019) objectives align with that of the Government in terms of increased electricity supply sourced from renewable sources, as well as broader environmental and social responsibilities. Furthermore, the proposed renewable energy development is in line with the national Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) strategy which was instated in 2019. The proposed development aims to connect a project aimed toward inclusion in the REIPPPP to the National Electricity Grid. Therefore, the proposed development inherently forms part of a national programme aimed to address the Country's prolonged Electricity constraints.

BASIC ASSESSMENT REPORT

8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES	NO	Please explain
Due to the project being located within an STC, numerous applications for the construction and installation of renewable energy projects (as indicated in Section 6 above) have been approved or are currently in process. It should also be noted that the area is also very high in solar resources, making it well suited for solar projects. The proposed infrastructure is aimed towards connecting one of such Authorisations (the future Hercules Solar PV1 facility on the Remainder of the Farm Rietfontain 6) to the National Electricity Grid. Although the proposed development site is zoned and currently used as low impact agriculture, the proximity of the site to a number of these approved solar and wind facilities allow for optimal positioning in terms of accessibility to the existing infrastructure (such as substations).			
9. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	NO	Please explain
South Africa is prone to facing electricity supply pressures which could be attributed to a number of factors, including but not limited to, stagnated supplies of energy, peak in demand during extreme weather conditions, structurally insufficient production of electricity, and sudden power failures. Though solar infrastructure projects do have their short-comings (such as lower energy generation during low sunshine events), through proper maintenance and care during the operational phase, the net positive impact of the project would be significantly better than its fossil fuel (coal) counterpart. The proposed development in itself does not necessarily hold substantial weight in terms of the net positive impact, but due to the significant positive contribution of the approved Hercules Solar PV1 facility on the Remainder of Farm Rietfontain 6, which the project is aimed to connect to the National Electricity Grid, the proposed project, the positive impacts of the project would outweigh the negative impacts.			
10. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO	Please explain
The proposed development follows the strategic planning regime of the area with multiple projects approved within proximity to the proposed development area. Both alternatives of the proposed development carry merit, Alternative A follows a similar alignment to a future corridor associated with the Pixley Solar PV Park located north of the proposed Hercules Solar PV1 facility, and Alternative B is proposed in an area where there are numerous existing overhead powerlines (due to the proximity to the Eskom Hyrda Substation).			
11. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
All landowners affected by the proposed development have consented to the use of the properties upon which the development is proposed.			
12. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO	Please explain
The proposed development is located outside of the urban edge and will not impact upon, or aim to expand upon the urban edge of the De Aar area.			
13. Any other need and desirability considerations related to the proposed activity?	Please explain		
In 2015, the United Nations released a set of 17 (seventeen) sustainability goals aimed toward achieving a sustainable future on a global scale. These goals aim to address the global challenges faced including, but not limited to poverty, climate change, environmental degradation, peace and justice.			



Figure 3. Sustainable Development Goals (UN, 2015).

Due to South Africa's Electricity Supply imbalances, the state has adopted a National Load-shedding strategy during times of high electricity demand. The effect of load-shedding can be seen in the impact on the gross domestic product, small businesses, mobile networks (loss of connectivity), food security and other areas as well, leading to loss of income, unstable food production schedules and the loss of sense of place of the citizens of the country. Therefore, it is eminent that sustainable solutions toward the energy supply crisis are implemented. As such, the future Hercules Solar PV1 facility was approved by the DFFE as the project aimed to align with these strategies. The current application for environmental authorisation acts as an extension and realisation of these strategies through the connection to the National Electricity Grid. The follow Goals are either directly, or indirectly applicable to the proposed development of the gridline infrastructure:

1 - No Poverty: The proposed development will provide a number of temporary and permanent employment opportunities within the construction and operational phases. Once connected to the national grid, the overarching goal of the project and the REIPPPP aims to lessen the strain of load-shedding, whilst ensuring community upliftment. Load-shedding has a direct (loss of employment) and indirect (loss of business opportunities as a result of limited power supply) impact on the livelihoods of the residents of the country.

7 – Affordable and clean energy: The proposed development will connect the future Hercules Solar PV1 facility to the National Electricity Grid, therefore providing clean energy (in the form of solar energy) to the National Grid.

13 – Climate action: The proposed development will take cognancy of the impact on the climate through the protection of the sensitive features (including migration corridors and watercourses and associated water features) across the landscape. This will be seen through the connection to a clean energy in the contrary to the non-renewable counterpart (the use of fossil fuels).

Ecological integrity of the receiving environment

The proposed development will be located within the Northern Upper Karoo vegetation type. In terms of the Updated List of Ecosystems that are threatened or in need of protection promulgated in November 2022 in terms of the National Environmental Management: Biodiversity Act, 2004 (NEMBA; Act No. 10 of 2004), the site is not located within a listed ecosystem. The Northern Upper Karoo vegetation type is Not Protected and has a conservation target of 18%. The proposed development is within an Ecological Support Area (ESA) in terms of the Northern Cape Bioregional Spatial Plan (2016) – Northern Cape Critical Biodiversity Areas Map (2016). The proposed Solar PV development will be located within the Shrubland Vegetation Community as identified by the terrestrial biodiversity specialist (The Biodiversity Company, 2025). This said, however, the development areas of the future Hercules Solar cluster took cognizance of the ecological sensitivities

of the area, with all hills, outcrops, watercourses and sills excluded from the developable areas in terms of the main infrastructural components. The nearest Protected Area (the De Aar Municipal Nature Reserve) is located approximately 9.5 km North-West from the proposed development (As indicated in Section 6.3.2.).

The study area, in its entirety, is located within Platberg-Karoo Conservancy (An Important Bird and Biodiversity Area) as identified by Birdlife (2015). The study area is located in an area identified as the headwaters of the Brak River (North-West from the proposed development area). The appointed aquatic specialist (The Biodiversity Company, 2022) identified the portion of the system located within the boundaries of the study area as intermittent rivers with sporadic flow and drainage flats/floodplains which are connected to these areas. Specifically, regarding the proposed Hercules Solar PV1 development, the specialist identified a large wetland traversing the development site. This watercourse corresponds with a wetland identified within the National Wetland Map 5 (South African National Biodiversity Institute, 2018). The infrastructural components of the proposed development are located within the regulatory area of the watercourses located within the project extent.

Risk averse approach followed

The risk lies with providing an accurate representation of the impacts of the proposed development. To mitigate this risk, where needed, specialists were appointed to provide anticipated impacts relative to the themes (As extracted from the DFFE Screening Tool Report, 2024) they were appointed to address. The Gaps in the Knowledge, Uncertainties and Assumptions made during this study have been identified and described below.

In order to limit the impact of the proposed development on the receiving environment, the following studies were key contributors toward identifying the developable areas and the impact of the proposed development:

- Visual Impact Assessment;
- Terrestrial Impact Assessment;
- Aquatic Impact Assessment;
- Palaeontological Impact Assessment;
- Avifaunal Impact Assessment; and
- Agricultural Compliance Statement.

The findings of their reports have been taken cognizance of throughout this Basic Assessment Report. Following the assessment of all impacts (including the cumulative impacts of the proposed development), it was concluded by all specialists that the current Application for Environmental Authorisation can be granted. Therefore, based on the assessment of the proposed development, the project will not result in unacceptable cumulative impacts, on condition that all mitigation measures provided by the respective specialists are implemented on site. It should be noted that although the Applicant's preferred alternative is considered Alternative A, based on the cumulative findings and the existing infrastructure in the landscape, the conclusion to this assessment indicates that Alternative B would be the sound environmental alternative.

14. How does the project fit into the National Development Plan for 2030?	Please explain
The National Development Plan (NDP) (NPC, 2013) contains a plan aimed at eliminating poverty and reducing inequality by 2030. Chapter 4, Economy infrastructure – The foundation of social and economic development, is relevant to, and supports the establishment of the proposed renewable energy development. This section of the document is to be read in conjunction with the DoE's Integrated Resources Plan (IRP) (DMRE, 2019) that seeks to increase the private participation and investment in this field through the involvement of independent investors. The IRP (DMRE, 2019) is an electricity infrastructure development plan based on least-cost electricity supply and demand balance, taking into account security of supply and the environment (minimize negative emissions and water usage). The NDP 2030 (NPC, 2013) notes that South Africa is in dire need of an improved electricity distribution regime. This will be achieved by means of: ▪ Investment into human and physical capital; ▪ Improvement of governmental support for combating illegal use; ▪ The improvement of the demand-side management; and ▪ Widening participation and accelerate investment of the electricity sector through the division of the power grid between Eskom (the National Energy Regulator) and Independent Power Producers (IPPs). As part of the NDP 2030 (NPC, 2013) and by extension the IRP (DMRE, 2019), identified the municipality as a Strategic Transmission Corridor (STC), the area has the capability of becoming a centre of renewable energy. As the proposed development aims to tie into the transmission network of the Country, it aligns with the NDP (2030).	

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Constitution of the Republic of South Africa	No permitting requirements exists in terms of this legislation. Compliance with the legislation is achieved through the submission of an application for environmental authorisation as through seeking environmental approval the respective and cumulative environmental impacts (biophysical, social and economic) of a proposed development have been considered and the best practicable outcome has been explored. Through this promoting sound decision-making and sustainable development. An Environmental Authorisation is required for the proposed development in terms of the Constitution.	Applicable to all authorities	1996
National Environmental Management Act	The various listed activities that would likely be triggered by the proposed development have been identified above. The identified listed activities are currently under consideration and will be assessed as part of the Environmental Impact Assessment phase of the proposed development. The assessment of the	Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAERL) – Competent Authority	1998, as amended 2014, as amended

BASIC ASSESSMENT REPORT

	potential impacts which may be seen as a result of the activities have been identified and discussed in this Basic Assessment Report. An Environmental Authorisation is required for the proposed development in terms of the NEMA.		
Environment Conservation Act	During the construction phase of the proposed development, noise impacts are anticipated. However, based on the location of the proposed development in relation to the nearest town (De Aar) and the homesteads (>500 m), and through the implementation of adequate mitigation, as preliminarily described in the BAR (and the associated EMP to be compiled for the proposed development), minimal noise impacts are expected to be exercised onto the receptors. There is no requirement for a noise permit in terms of the ECA.	DAERL Emthanjeni Local Municipality (ELM)	1989
National Water Act	The proposed development is located within proximity to a number of watercourses classified in terms of the definition as presented in the NWA. Furthermore, the proposed development will require the drilling boreholes which will service the proposed development during the development phase. Therefore, a water use application must be lodged on the Electronic Water Use Licence Application and Authorisation System (e-WULAAS) for Section 21 (a), (c) and (i) water uses. This process will be undertaken once an Environmental Authorisation has been obtained for the proposed development and the project has become a preferred bidder a part of the REIPPPP. A water use licence is required for the proposed development in terms of the NWA.	Department of Water and Sanitation	1998
National Heritage Resources Act	An application must be lodged through the South African Heritage Resource Information System (SAHRIS), through which SAHRA will comment on the proposal. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process.	Northern Cape Heritage Resources Authority / Ngwao-Boswa Jwa Kapa Bokone (NBKB) South African Heritage Resources Agency	1999
Conservation of Agricultural Resources Act	An alien and invasive management plan will be required for the proposed development. A renewable energy facility requires approval from the	Northern Cape Department of Agriculture	1983

BASIC ASSESSMENT REPORT

	National Department of Agriculture, Land Reform and Rural Development (DALRRD) if the facility is on agriculturally zoned land. There are two approvals that apply.		
Civil Aviation Act	These acts aim to ensure the safety of aircrafts within the republic. Through the Obstacles Regulations, a number of activities which needs permission from the Authority has been provided. Furthermore, the CAA provides guidelines towards ensuring visibility of the structures which would potentially compromise the operational activities of the civil aviation industry.	South African Civil Aviation Authority (CAA)	2009
National Environmental Management: Waste Act	Since only limited quantities of waste will be generated during both the construction and operational phases, no activities under the NEM:WA are anticipated to be triggered as part of the proposed project. A Waste Management Plan must be compiled prior to the commencement of construction (by the appointed contractor) and must be compiled and adhered to throughout the construction and operational phases of the proposed development.	DAERL	2008
National Environmental Management: Air Quality Act	The NEM:AQA intends to reform the law regulating air quality in order to protect the environment by providing reasonable measures toward preventing air pollution and subsequent environmental degradation. No activities in terms of the NEM:AQA will be triggered by the proposed development.	Emthanjeni Local Municipality	2004

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?
If YES, what estimated quantity will be produced per month?

YES	NO
Currently the quantity of construction waste is unknown	

How will the construction solid waste be disposed of (describe)?

BASIC ASSESSMENT REPORT

The construction waste will be collected in waste skips on site and will be collected by a reputable waste management company.

Construction waste will be managed through the use of a waste management plan, which takes the core principals of waste management into consideration. As such, the Reuse, Reduce, Recycle principles will be encouraged where possible.

Where will the construction solid waste be disposed of (describe)?

Construction waste will be handled by a reputable waste management company. Waste slips will be required to be provided to the contractor on site and furthermore, it must be a requirement of the Contractor to appoint a service provider who will be disposing of the construction waste at a registered landfill site in proximity to the construction site.

Will the activity produce solid waste during its operational phase?

YES NO

If YES, what estimated quantity will be produced per month?

m³

How will the solid waste be disposed of (describe)?

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

Not applicable to this project.

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

Not applicable to this project.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES NO

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES NO

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES NO

If YES, what estimated quantity will be produced per month?

m³

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES NO

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES NO

If YES, provide the particulars of the facility:

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Cell:

Fax:

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

This is not applicable to the proposed development.

BASIC ASSESSMENT REPORT

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

YES	NO
-----	----

If YES, is it controlled by any legislation of any sphere of government?

YES	NO
-----	----

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

The proposed development entails the construction of

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	NO
-----	----

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?

YES	NO
-----	----

If YES, is it controlled by any legislation of any sphere of government?

YES	NO
-----	----

Describe the noise in terms of type and level:

Construction Activities - As part of construction, construction related noises will be generated, such as vehicle movement and standard construction related sounds. It is not anticipated that high-frequency sounds will be generated as part of the proposed development.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
------------------	-------------	-------------	----------------------------	-------	---------------------------------

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

litres

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

YES	NO
-----	----

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

This is not applicable to the proposed development. The proposed infrastructure will be constructed and installed according to the prerequisites provided by Eskom.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

This is not applicable to the proposed development. The proposed infrastructure will be constructed and installed according to the prerequisites provided by Eskom.

BASIC ASSESSMENT REPORT

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

A

- Paragraphs 1 - 6 below must be completed for each alternative.

- Has a specialist been consulted to assist with the completion of this section?

YES

NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Northern Cape
District Municipality	Pixley Ka Seme District Municipality
Local Municipality	Emthanjeni Local Municipality
Ward Number(s)	6
Farm name and number	Hartebeest Hoek 31 Riet Fountain 6 Roode Kraal 28 Wagt en Bittje 5 Wagt 'n Bietjie Annex C 173 Vetlaagte 4 Carolus Poort 3
Portion number	Remainder, 1 & 4 of the Farm Riet Fountain 6 Remainder of the Farm Hartebeest Hoek 31 Remainder of the Farm Roode Kraal 28 Remainder of the Farm Wagt en Bittje 5 Remainder of Wagt 'n Bietjie Annex C 173 Remainder of the Farm Vetlaagte 4 Remainder & Portion 3 of the Farm Carolus Poort 3
SG Code	C03000000000003100000 C03000000000002800000 C03000000000000600000 C03000000000000600004 C03000000000000600004 C03000000000000500000 C030000000000017300000 C03000000000000400000 C03000000000000300000 C03000000000000300003

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Agriculture Zone 1

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

YES

NO

BASIC ASSESSMENT REPORT

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline	☒	2.4 Closed valley	☐	2.7 Undulating plain / low hills	☒
2.2 Plateau	☐	2.5 Open valley	☐	2.8 Dune	☐
2.3 Side slope of hill/mountain	☐	2.6 Plain	☐	2.9 Seafront	☐
2.10 At sea	☐				

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:		Alternative S2 (if any):		Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	YES	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition ^E	Natural veld with scattered aliens ^E	Natural veld with heavy infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE
Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoonal wetland	YES	NO	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The Biodiversity Company conducted their assessment within the area and formulated that The completion of the aquatic biodiversity desktop and field assessments agree with the **'Very High' sensitivity** presented by the screening report due to these areas containing > 50% natural habitat with potential to support species of conservation concern (SCC), > 100 ha of intact area for any conservation status of ecosystem type which have high habitat connectivity serving as functional ecological corridors with limited road network between intact habitat patches. Lastly the habitat is unlikely to be able to recover fully after a relatively long period (> 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality) due to the ephemeral nature of the system.

The hydrological context of the project is presented in **Error! Reference source not found.** the figure below. The Transmission Infrastructure project falls within the D62D quaternary catchment. This quaternary catchment falls within the Orange Water Management Area (WMA - 6) within the Nama Karoo aquatic ecoregion. The Transmission Infrastructure project area has the potential to impede on several sub quaternary reaches (SQR) (D62D-05553, D62D-05486, D62D-05391, D62D-05332 D62D-05227) of the Brak River and one unnamed SQR (D62D-05569), along with multiple tributaries of these systems.

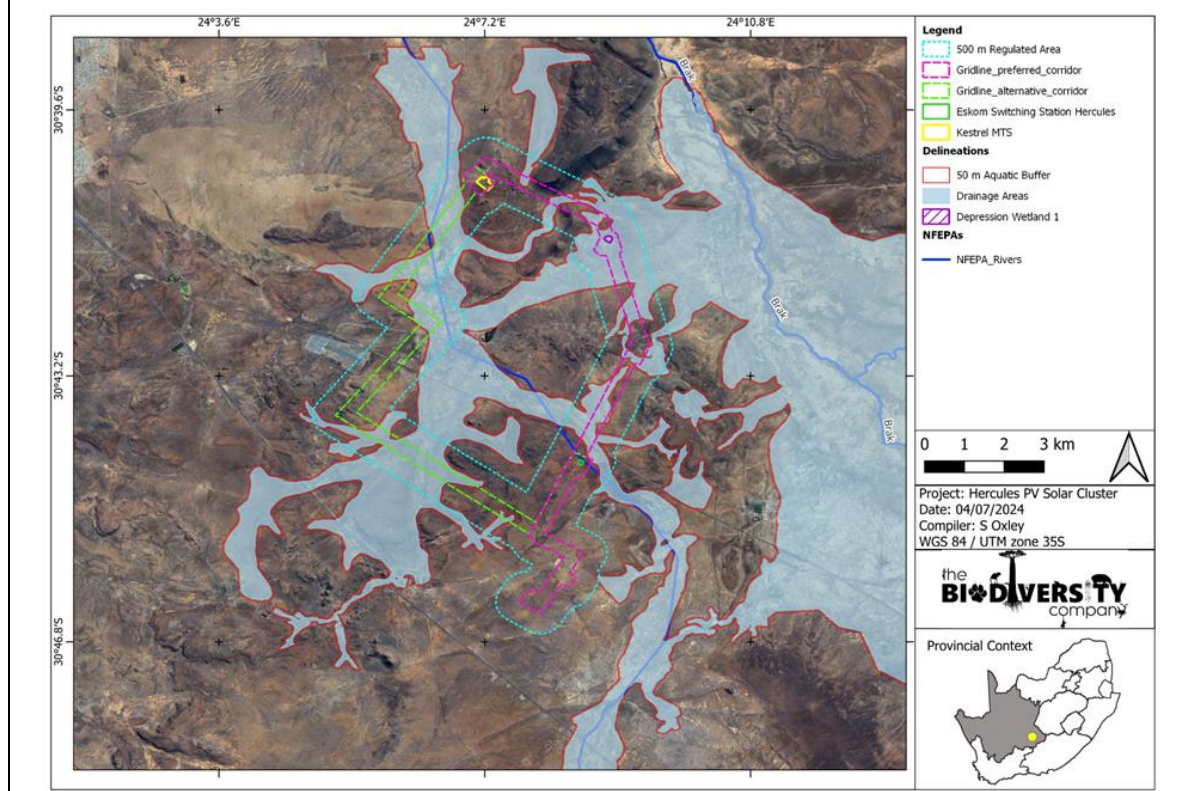


Figure 4. A map providing the hydrology of the area surrounding the proposed development infrastructure (Alternative A & B).

The Present Ecological State (PES) assessment for the sampled watercourse is based on the collective data collected during the 2022 and 2024 surveys by the biodiversity specialist. These indicated that the ephemeral drainage areas (towards the west of the study area) and wetland were in a class B/C 'Largely Natural to Moderately Modified' state, therefore compliant with the REC of class C (Moderately Modified).

The Site Ecological Importance (SEI) of the proposed gridlines that have been assessed and have been determined to be of 'Very High' SEI as assessed by the Biodiversity Company (2025).

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, Koppie or ridge
Heavy industrial ^{AN}	Railway line ^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how this impact will / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO
Core area of a protected area?	YES	NO
Buffer area of a protected area?	YES	NO
Planned expansion area of an existing protected area?	YES	NO
Existing offset area associated with a previous Environmental Authorisation?	YES	NO
Buffer area of the SKA?	YES	NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

YES

NO

Uncertain

A specialist has been appointed to undertake a heritage impact assessment for the proposed development. Please see the summary of his findings below.

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

The palaeontological assessment (compiled by Dr. Gideon Groenewald in June 2025) indicates that both the preferred and alternative transmission corridors and associated infrastructure area for the Hercules Solar PV1 project are underlain by rocks of the Adelaide Subgroup of the Beaufort Group, and by dolerite of the Karoo Supergroup. The former comprise sets of highly significant geological units which vary in age from Permian to Quaternary and which contain evidence of very early life. The Jurassic aged dolerites do not contain fossils.

Field observations and personal experience in the De Aar region by Dr Groenewald indicates that the geology of the sequence underlying the transmission corridor options and associated infrastructure area falls in the upper part of the Adelaide Subgroup, which places the region at De Aar in the important Daptocephalus Assemblage Zone.

The archaeological surveys found a range of archaeological sites and material in the two transmission corridors and associated infrastructure area, principally scatters of LSA hornfels lithics. Most of the lithics on these sites were “fresh” and unpatinated, although in some instances some carried a light grey patination. Most also contained a formal tool element. One of the scatters of tools appears to be a Smithfield assemblage

Some ephemeral scatters of heavily patinated MSA hornfels lithics were also recorded, particularly in the low-lying areas where water movement and wind erosion have deflated this material down into a gravel lag deposit. This type of archaeological material is very common and occurs widely across much of the Karoo and much of it is in secondary context. It is generally regarded as background scatter and is of very low cultural significance.

No ESA material was noted during the site visits.

The other features recorded in and near the transmission corridors were packed stone structures – both kraals and small hut circles. Two of these hut structures are constructed within what appear to be earlier, Khoekhoen kraals just outside the preferred transmission corridor, near the Hydra substation. Also just outside of the preferred transmission corridor and east of the MTS, four hut structures seem to be associated with a large roughly square kraal situated nearby, between two small koppies.

No extant historical built structures are located within the Hercules Solar PV1 transmission corridors or within the footprint of the Main Transmission Station. The surrounding historical farm complexes are at Rietfontein, Hartebeesthoek, Vetlaagte and Carolus Poort, and none are less than 1.3 km from either the transmission corridor or the proposed Main Transmission Station.

No identifiable graves were recorded during the survey of the transmission corridors and associated infrastructure area, but three small mounds of dolerite cobbles, recorded at the base of a koppie within the preferred transmission corridor and within 200 m of several nearby stone structures, could conceivably be graves. The form and size of the mounds and the underlying rockiness of the areas suggests, however, that this is unlikely.

In respect of the cultural landscape, the pre-colonial and historical use of the landscape within and around the Hercules Solar PV1 transmission corridor options and associated infrastructure area has not significantly altered its overall natural character and until relatively recently it could best be described as a lightly used, organically evolved, largely relict landscape.

However, pre-colonial and historical landscape character has been recently altered by the proliferation of electrical infrastructure associated with the numerous renewable energy projects around De Aar and with the nearby Eskom Hydra substation. The proximity of the project area to Hydra means that a large number of overhead transmission lines converge in the area, some of them directly adjacent to the preferred Hercules Solar PV1 transmission corridor and associated infrastructure area.

Although the construction of the transmission corridor and associated infrastructure will substantially alter the current landscape character of the project site, and will contrast markedly with the pre-colonial and historical elements that are present in the landscape, this development will take place in a cultural landscape which can now best be defined as a continuing landscape, within which the evolutionary process towards an increasingly industrial cultural landscape around De Aar is well underway.

The following features were identified as sensitive areas and have subsequently been avoided as part of the proposed alignments:

- The likely hut structure at J058 must be subject to a buffer of 20 m. If this is not possible, the structure must be measured, photographed and accurately recorded by an archaeologist, before it is impacted.
- The ephemeral stone circle and associated artefacts at J059 must be subject to a buffer of 20 m. If this is not possible, the structure must be measured, photographed and accurately recorded by an archaeologist, before it is impacted.
- If any archaeological material is uncovered during development, work in the immediate area must be halted and the find reported to the heritage authorities. The find may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Close to, but outside of the preferred transmission corridor it was recommended that:

- The cluster of structures and sites at JG078-JG090 and the possible kraal at J054 must be avoided, and each cluster must be subject to a buffer of 40 m.
- The cluster of huts at J045-J048 must be subject to a buffer of 40 m.
- The kraal at G003 must be subject to a buffer of 40 m around its outer edge.

With regard to graves and burials, the following was recommended:

- The three stone mounds J054 - J056 must be excluded from the development footprint by means of a buffer of 20 m around each. If avoidance is not possible, then these stone mounds will need to be investigated by an archaeologist and if they are graves, will need to be exhumed prior to the commencement of construction work. This will require a permit from SAHRA under Section 36 of the NHRA.
- Should previously unknown human remains be encountered during construction, work in the vicinity of the find must cease, the remains must be left in situ but made secure, and SAHRA must be notified immediately so that mitigatory action can be determined and be implemented.

The proposed gridline infrastructure has taken these buffers into consideration and these features will be avoided as part of the detailed design phase as well.

Cultural Landscape - No specific measures to mitigate impacts to the cultural landscape are recommended, but the implementation of any recommendations in the visual impact assessment designed to reduce visual impacts would assist in reducing the impact to the cultural landscape.

The figure below provides an indication of the location of the abovementioned features.

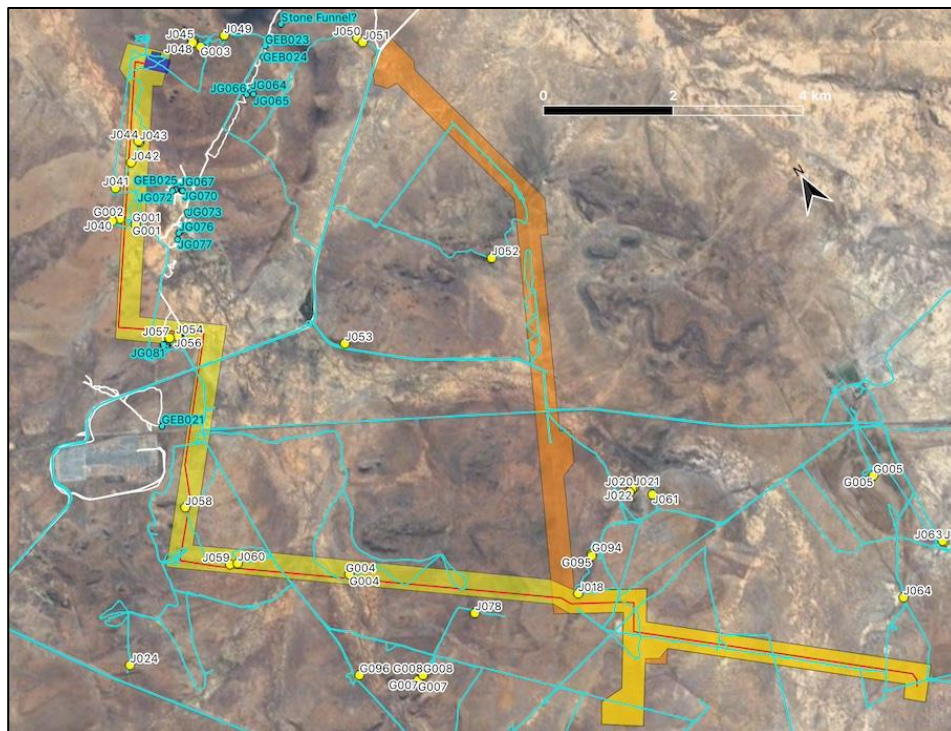


Figure 1: 2022 (pale blue) and 2024 (dark blue) TerraMare Archaeology survey tracks and sites located (white numbered points) within the proposed Hercules Solar PV1 transmission corridors and associated infrastructure

area (blue shaded polygon). The 2020 ACO survey tracks for an adjacent transmission line project are indicated by the white lines and blue coloured numbered points (Google Earth).

Findings of the Visual Impact Assessment Specialist:

David Gibbs was appointed to conduct the visual impact assessment for the proposed development. This section aims to provide a summary of his findings.

The site is set within a continuous rural landscape which is seemingly intact, it has already absorbed electrical gridline infrastructure without substantial loss of character, due to its vast size. The landscape is of good quality and includes certain features of character and identity which have been interpreted as visual indicators for planning and design response.

However, it is not of such exceptional quality as to preclude development of the kind proposed. Thus, from a visual impact perspective, the development is permissible, at least in principle, and by responding to the visual indicators, the layout can be manoeuvred to minimize visual intrusion into the landscape and to maximize a comfortable 'fit'.

This would include avoiding development on ridgelines and koppies, locating rather on the flatter portions of the site, though avoiding drainage lines (as far as practically possible), providing sufficient visual buffers from the farmstead settlements to preserve their curtilage and sense of place; and setting back from the visual corridor of the N10 (and the railway line, assuming that the rail is or will be operational).

Setting back from all cadastral boundaries is also recommended, so that the site layout may take cues rather from organic site geometries rather than artificial rectilinear geometries.

The inclusion of these planning and design parameters should contribute to the mitigation of adverse visual impacts, towards retaining aspects of the cultural landscape that lend identity and character to the sense of place.

Should these visual indicators be onboarded as measures for mitigation, particularly with respect to the refinement of the site layout, the development proposal should meet with the requirements for approval.

Visual Sensitivity

Visual Sensitivity of Area (Landscape Sensitivity)

The portion of the field-of-view dominated by the proposal decreases substantially at distances beyond 500m from the site, as the proposal become continuous with the existing fabric. The area is therefore considered to have medium or **moderate** visual sensitivity.

Visual Sensitivity of Receptors

The Receptors of the anticipated visual impact include existing residential areas which have **moderate** visual sensitivity. The site falls with the urban edge and locates in continuity with a rural cultural landscape with high visual / scenic amenity value.

Significance of Sensitivity to Visual Change

As a function of landscape sensitivity and anticipated magnitude of change resulting from the proposed development, the sensitivity to visual change is of **moderate** significance.

Visual Exposure

Visual Intrusion of Development (Magnitude of visual change)

The development proposes to occupy land already transformed by agriculture. The new development will fit partially into the surroundings but will be noticeable due to the transformation of the site. The proposal would have **moderate visual intrusion**.

Visual Absorption Capacity of Site

Considering the existing vegetation and subtle landform, the Visual Absorption Capacity (VAC) of the site is **Moderate**, with partial screening afforded, but noting that construction activity will entail removal of vegetation (thereby reducing the VAC).

Significance of Anticipated Visual Impacts

As a function of receptor sensitivity and anticipated magnitude of change, the sensitivity to visual change is of **moderate significance**. This will require mitigation through landscape measures.

Conclusion of the Visual Impact Assessment

Whereas the development proposal is congruent with development strategies for the area and no fatal flaws are implicit within the proposed site development plan, localized visual impacts perceived by the receptors can be reduced through the application of the mitigation measures as described.

The planning and design of the development layout has responded to contextual cultural landscape informants, including visual indicators and view considerations extremely well. Further mitigation can reduce the significance of the residual visual impacts to 'neutral', meaning that the proposed development would not cause discernible deterioration to existing views or visual resources.

Considered holistically, therefore, the Visual Impact of the proposed preferred and alternative development option (post mitigation) will cause little detrimental effect upon visual resources, environment or on human well-being; and with the implementation of the mitigation measures as described, should remain within visual, heritage and environmental quality standards, targets, and legal requirements; to the approval of the local authority (Environment and Heritage Resources Management Section).

Subject to the implementation of mitigation measures as described within this report, the proposed development of 'Hercules Transmission Infrastructure – preferred corridor' (Alternative A) is recommended for approval.

Will any building or structure older than 60 years be affected in any way?

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	NO
YES	NO

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

The official unemployment figure for the ELM is 14.5%. The figures also indicate that the majority of the population are not economically active, namely 43.7%. These figures are similar to the official unemployment rate for the Northern Cape Province (14.5%) and Pixley ka Seme District (14.8%). This reflects the limited employment opportunities in the area, which in turn are reflected in the low income and high poverty levels. Given the impact of COVID-19 pandemic, the unemployment levels are likely to be higher in 2021. The figures for Ward 6 were 11.7% (unemployed) and 44% of the economically active population being employed.

Economic profile of local municipality:

The mining sector is the largest contributor to the provincial GDP, contributing 28.9% to the GDP in 2002 and 27.6% in 2008. The mining sector is also important at a national level. In this regard, the Northern Cape produces approximately 37% of South Africa's diamond output, 44% of its zinc, 70% of its silver, 84% of its iron-ore, 93% of its lead and 99% of its manganese.

Agriculture and agri-processing sector are also key economic sectors. Approximately 2% of the province is used for crop farming, mainly under irrigation in the Orange River Valley and Vaalharts Irrigation Scheme. Approximately 96% of the land is used for stock farming, including beef cattle and sheep or goats, as well as game farming. The agricultural sector contributed 5.8% to the Northern Cape GDP per region in 2007 which was approximately R1.3 billion, and it employs approximately 19.5% of the total formally employed individuals (NCPsDF, 2012). The sector is experiencing significant growth in value-added activities, including game-farming. Food production and processing for the local and export market is also growing significantly.

BASIC ASSESSMENT REPORT

The main agricultural produce of the Northern Cape include:

- High-value horticultural products such as table grapes, sultanas and wine grapes, dates, nuts, cotton, fodder, and cereal crops are grown along the Orange River.
- Wheat, fruit, groundnuts, maize and cotton in the Vaalharts irrigation scheme in the vicinity of Hartswater and Jan Kempdorp.
- Vegetables and cereal crops at the confluence of the Vaal River and the Orange Rivers in the vicinity of Douglas.
- Wool, mohair, karakul, Karoo lamb, ostrich meat and leather, and venison throughout most of the province.

Economic development in the Northern Cape is hampered by the vastness of the area and the remoteness of its communities in rural areas. Development is also hampered by the low education and skills levels in the province. As a result, unemployment in the Northern Cape presents a major challenge.

According to Statistics South Africa Labour (2012) the community and social services sector is the largest employer in the province at 29%, followed by the agricultural sector (16%), wholesale and retail trade (14%), finance (8%) manufacturing (6%) and mining (6%), etc.

Level of education:

In terms of education levels, the percentage of the population over 20 years of age in the ELM with no schooling was 17.4% in 2011, compared to 7.9% for the Northern Cape Province and 11.9% for the District. The percentage of the population over the age of 20 with matric was 28.3%, compared to 29.1% for the Province and 25.3% for the District. Only 1.5% and 1.4% of the population over the age of 20 years in the ELM had an undergraduate and postgraduate qualification, respectively. The relatively poor education levels in the ELM pose a potential challenge to the implementation of an effective training and skills development programme for local community members. The figures for Ward 6 are 16.4% with no schooling, 18.6% with matric and 1.9% and 1.3% with an undergraduate and postgraduate degree respectively.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 5.6 billion
What is the expected yearly income that will be generated by or as a result of the activity?	R 200 million
Will the activity contribute to service infrastructure?	YES NO
Is the activity a public amenity?	YES NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	About 1200 jobs created during construction period.
What is the expected value of the employment opportunities during the development and construction phase?	Over R 60 million
What percentage of this will accrue to previously disadvantaged individuals?	25%
How many permanent new employment opportunities will be created during the operational phase of the activity?	60
What is the expected current value of the employment opportunities during the first 10 years?	Over ZAR 1 billion
What percentage of this will accrue to previously disadvantaged individuals?	25%

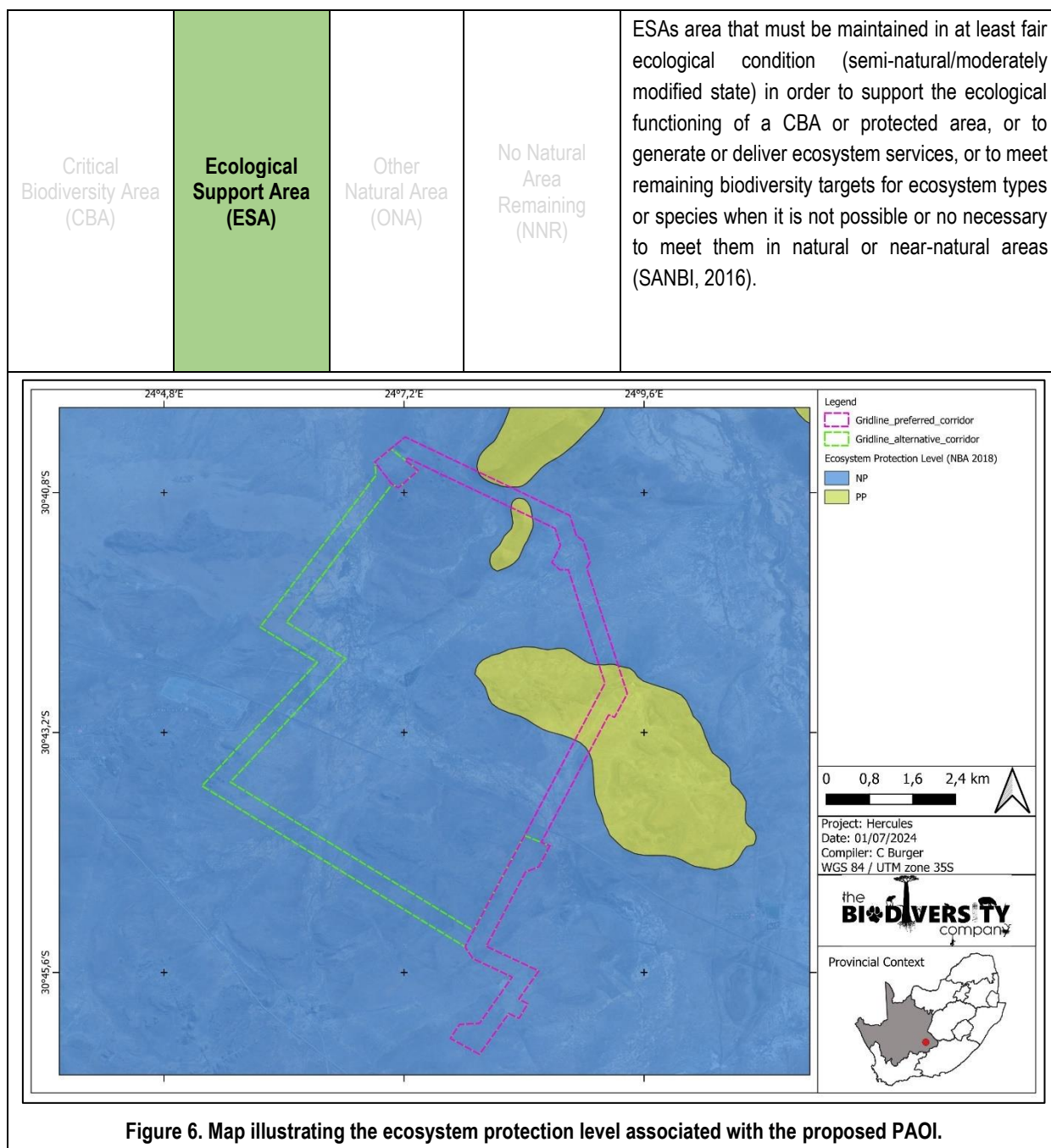
9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
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BASIC ASSESSMENT REPORT



b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	15%	Includes Hills, Outcrops and Sills - Low slopes and rocky hills/outcrops which are disconnected from Mountains and Ridges. Distinctive features within the relatively homogeneous Upper Karoo region.
Near Natural (includes areas with low to moderate level of alien invasive plants)	80%	Classed as Degraded Northern Upper Karoo Shrubland - Semi-natural shrubland, but slightly disturbed due to the grazing by livestock, mismanagement and also human infringement. Terrain consists of a low to zero slope with deep soils in comparison to the sloped habitats. Variable in the presence or absence of grass species and shrub density.

BASIC ASSESSMENT REPORT

		Includes Drainage features and washes (Alluvial Shrubland) - Low to no slope with alluvial soils. Ephemeral systems were both considered for this habitat type. Channels through which surface water naturally collates and flows. Perennial and ephemeral systems were both considered for this habitat type. All the prominent features were identified, as there are numerous inconspicuous drainages features throughout.
Degraded (includes areas heavily invaded by alien plants)	0%	No degraded areas (i.e. areas heavily infested by alien invasive plant species were noted by the specialist.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	5%	This includes homesteads and associated infrastructure as well as prominent roads.

c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems							
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline		
	Endangered								
	Vulnerable								
	Least Threatened	YES	NO	UNSURE	YES	NO	YES	NO	

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

The main habitat types identified across the project area were initially identified largely based on aerial imagery. These main habitat types were refined based on the field coverage and data collected during the survey. Emphasis was placed on limiting timed meander searches along the proposed project area within the natural habitats and therefore habitats with a higher potential of hosting SCC. The habitats observed, coincide with the vegetation types as described by Mucina & Rutherford in 2006 and SANBI (2019) due to the lack of large-scale transformation, these are discussed in detail in the sections that follow. A summary of habitat types delineated within the project area can be seen in Table 1.

Table 1 Summary of habitat types delineated within the project area

Habitat Type	Ecosystem Processes and Services		Habitat Sensitivity
Degraded Upper Shrubland	Northern Karoo	Provides grazing for organisms. Aids in filtration of water permeating through the soil into drainage lines. Acts as corridor for fauna dispersion within the landscape. Acts as buffer for high sensitivity areas. The unit acts as a greenland which supports viable plant species populations and is also used for foraging by fauna.	Medium
Hills, Outcrops and Sills		Provides grazing for livestock. Acts as refuge for fauna away from more accessible areas the landscape. Acts as buffer for high sensitivity areas. Capture and filter precipitation and run-off. Provides unique habitat for species. Provides greater heterogeneity in regional habitat and microclimate.	High
Drainage features and washes (Alluvial Shrubland)		Water Paths, functions as important Water resources. Provides refuge and grazing areas, especially during the dry seasons Provides surface water within the landscape. Aids in trapping sediment and nutrients derived from land runoff.	Medium

Transformed

N/A

Very Low

Degraded Northern Upper Karoo Shrubland

This habitat is the remainder of the shrubland that has been disturbed by the historic and current grazing (**Figure** and **Figure**). This habitat type is regarded as semi-natural shrubland, but slightly disturbed due to the grazing by livestock, mismanagement and also human infringement.

The current ecological condition of this habitat with regard to the main driving forces, are intact, which is evident in the amount of, and importance of the species recorded in the flora and faunal assessment, and also to the type of plant species recorded corresponding to the vegetation type as described by Mucina (2006). Even though this habitat is partly disturbed, it supports largely intact vegetation and has a rehabilitation potential. This habitat type acts as a corridor for fauna dispersion within the landscape as well as a buffer for high sensitivity areas. Its current state is functional ESA. The unit acts as a greenland which supports viable plant species populations and is also used for foraging by fauna.



Figure 7. Degraded Northern Upper Karoo Shrubland



Figure 8. Degraded Northern Upper Karoo Shrubland

Hills, Outcrops and Sills

This habitat includes areas that are rocky outcrops, stony and rocky ridges/hills with varying slopes, bedrock protruding from the soil layer with the associated boulders and large rocks that occur within the shrubland habitat (**Figure** and **Figure**). The habitat is used by faunal species as fine-scale habitats and is important for several lifestages. These habitats can be considered as ecological hotspots being an important habitat for fauna and flora, especially plants as well as reptiles. The habitat has been infringed upon by livestock, which has had an impact on this habitat, although minor. This habitat type has undergone impacts associated with human activity especially due to the use of the area for grazing. This habitat forms part of a unique landscape within the region and provides refugia, food and a more natural environment.



Figure 9. Hills, Outcrops and Sills



Figure 10. Koppies shrubland

Water resources (Drainage features/Alluvial Shrubland)

This habitat is regarded as areas where intermittent rivers sporadically flow and exists as well as the drainage flats/floodplains connected to these areas. This habitat is shrubland that has been disturbed mainly by the historic and current grazing. This habitat type is regarded as semi-natural shrubland, but slightly disturbed due to the grazing by livestock the associated human infringement and use (dams). Current human infringement still occurs throughout, especially in areas close to roads. The current ecological condition of this habitat with regard to the main driving forces, are intact, which is evident in the amount of, and importance of the species recorded in the flora and faunal assessment, and also to the type of plant species recorded corresponding to the vegetation type as described by Mucina (2006).

The drainage lines within the project area can be regarded as non-perennial and possess surface flow only briefly during and following a period of rainfall (ephemeral), which is a feature of semi-arid/arid regions. These seasonal streams create an ecological link between the stream and its surrounding terrestrial landscape and has the same function albeit on a smaller scale than a river. These habitats, jointly, is important as a movement corridor as it creates a link between the system and its surrounding terrestrial landscape for several faunal species, especially birds and mammals, and plays a vital role as a water resource not only for the biodiversity but also the local community. These units act as greenlands which supports viable plant species populations and is also used for foraging by fauna. The unit also serves as a movement corridor for fauna within a landscape fragmented. This habitat unit can be regarded as highly important, not only within the local landscape, but also regionally.



Figure 11. *Stream/drainage feature.*



Figure 12. *Washes (Alluvial shrubland)*

Transformed

This habitat unit has previously been impacted upon and shows a change from their natural state, with little to no remaining natural vegetation due to land transformation. The transformed habitat predominantly comprised of roads, railway tracks and homesteads.

Concluding statement of the Terrestrial Biodiversity Impacts of the proposed development

The study area has been altered both currently and historically. The present land use had a direct impact on both the fauna and the flora in the area, which is evident in the transformed habitats. Historically, grazing from livestock and mismanagement has led to the deterioration of most of the area albeit very limited. The degraded shrubland habitat, hills, outcrops and sills and water resource habitats in the PAOI can be regarded as important, not only within the local landscape, but also regionally; as they are used for habitat, foraging and movement corridors for fauna within a landscape fragmented by development.

The habitat sensitivity of these habitats is regarded as medium to high, due to the species recorded and the role of this intact unique habitat to biodiversity within a very fragmented local landscape, not to mention the sensitivity according to various ecological datasets. The habitats still:

- Functions as ESA's as per the Northern Cape Critical Biodiversity Areas spatial database;
- Act as a Freshwater Ecosystem Priority Area according to the NFEPA database; and
- Support various organisms and may play an important role in the ecosystem, if left to recover from the superficial impacts.

The ecological integrity, importance and functioning of these terrestrial biodiversity areas provide a variety of ecological services considered beneficial, with one key service being the maintenance of biodiversity. The preservation of these systems is the most important aspect to consider for the proposed project.

The habitat physiognomy within the PAOI is diverse and, based on the fauna components recorded within the PAOI and proximal landscape, the area provides important ecosystem services, particularly with regards to the maintenance of dynamic soil properties and pollination services. The SEI of the PAOI was determined to vary from 'Very Low' to 'High', the extent of the area considered and its connectivity to natural areas within the landscape, and the low resilience of the vegetation type.

The main expected impacts of the proposed Project will be the loss of habitat and emigration of fauna. Based on the outcomes of the SEI determination, there are areas within the PAOI that possess a 'High' SEI. This denotes that avoidance mitigation wherever possible must be implemented. This includes changes to project infrastructure design to limit the amount of habitat impacted. Moreover, the avoidance and minimisation mitigation measures are the most important with respect to the mitigation hierarchy.

Two alternative transmission routes were evaluated for this assessment. From a terrestrial ecological perspective, both routes are considered viable, provided that the High SEI area is avoided to the greatest extent possible. This can be achieved by spanning the transmission line across these areas with minimal pylon construction. If one had to be decided on, the preferred alternative is preferred (Alternative B), as it overlaps with less high SEI area.

Avifaunal Impact Assessment

The Biodiversity Company was appointed to undertake the Avifaunal Impact Assessment for the proposed development. This section provides a summary of the findings of the field based assessments undertaken.

The first avifaunal field survey was completed between 17-21 October 2022 for 5 days, the second survey was completed between 17-20 February 2023 for 4 days, and the third survey was completed between 18-21 May 2023 for 4 days. Sampling

is deemed sufficient for a regime 3 assessment. Sampling consisted of standardised point counts as well as random diurnal incidental surveys. Standardised point counts (Buckland et al, 1993) were conducted to gather data on the composition of species and the relative abundance of species within the broad habitat types identified. The standardised point count technique was utilised as it was demonstrated to outperform line routes (Cumming & Henry, 2019). Each point count was run over a 10-minute period. The horizontal detection limit was set at 150 m. At each point, the observer would document the date, start time, and end time, habitat, numbers of each species, detection method (seen or heard), behaviour (perched or flying) and general notes on habitat and nesting suitability for conservation important species. Diurnal incidental searches were conducted to supplement the species inventory with cryptic and illusive species that may not be detected during the rigid point count protocol. This involved the opportunistic sampling of species between point count periods, random meandering and road cruising. Effort was made to cover all the different habitat types within the limits of time and access.

Species List of First Field Survey

The first avifaunal field survey was completed between the 17-21 October 2022 for 5 days, the second survey was completed between the 17-20 February 2023 for 4 days, and the third survey was completed between the 18-21 May 2023 for 4 days. These three site visits constitute both dry and wet season surveys, to determine the presence of Species of Conservation Concern (SCC). Effort was made to cover all the different habitat types, within the limits of time and access.

Seven SCC were recorded during the first survey period (Table).

Table 1. SCC recorded in the first assessment.

Common Name	Scientific Name	Conservation Status	
		Regional	Global
Secretarybird	<i>Sagittarius serpentarius</i>	VU	EN
Ludwig's Bustard	<i>Neotis ludwigii</i>	EN	EN
Blue Crane	<i>Anthropoides paradiseus</i>	NT	VU
Martial Eagle	<i>Polemaetus bellicosus</i>	EN	EN
Tawny Eagle	<i>Aquila rapax</i>	EN	VU
Verreaux's Eagle	<i>Aquila verreauxii</i>	NA	LC
Greater Flamingo	<i>Phoenicopterus roseus</i>	NT	LC

Risk Species

As aforementioned, Priority Species are considered threatened, rare or prone to impacts from energy development (Ralston Paton *et al*, 2017). TBC has defined Risk Species as those species that are listed in Ralston Paton *et al* (2017) as Priority Species, as well as those listed in the Eskom poster of Birds and Power Lines (Eskom and EWT, no date), which together include all species, common or red-listed that may be at risk of collision, electrocution or habitat loss as a result of the proposed activity. Twenty-six (26) of the species observed within the PAOI are regarded as priority species (Table and Figure).

Table 2. Summary of Priority Species recorded within and around the proposed development.

Common Name	Scientific Name	Collision	Electrocution	Disturbance/Habitat Loss
Black-winged Kite	<i>Elanus caeruleus</i>		x	
Black-winged Stilt	<i>Himantopus himantopus</i>	x		x
Blue Crane	<i>Grus paradisea</i>	x		x
Cape Teal	<i>Anas capensis</i>	x		x

BASIC ASSESSMENT REPORT

Egyptian Goose	<i>Alopochen aegyptiaca</i>	x	x	
Greater Flamingo	<i>Phoenicopterus roseus</i>	x		x
Greater Kestrel	<i>Falco rupicoloides</i>	x	x	
Jackal Buzzard	<i>Buteo rufofuscus</i>	x	x	
Kittlitz's Plover	<i>Charadrius pecuarius</i>			x
Little Grebe	<i>Tachybaptus ruficollis</i>	x		x
Ludwig's Bustard	<i>Neotis ludwigii</i>	x		
Martial Eagle	<i>Polemaetus bellicosus</i>			
Northern Black Korhaan	<i>Afrotis afraoides</i>	x		
Pale Chanting Goshawk	<i>Melierax canorus</i>	x	x	
Pied Avocet	<i>Recurvirostra avosetta</i>	x		x
Pied Crow	<i>Corvus albus</i>	x	x	
Red-knobbed Coot	<i>Fulica cristata</i>	x		x
Rock Kestrel	<i>Falco rupicolus</i>	x	x	
Secretarybird	<i>Sagittarius serpentarius</i>	x	x	x
South African Shelduck	<i>Tadorna cana</i>	x		x
Spur-winged Goose	<i>Plectropterus gambensis</i>	x		x
Tawny Eagle	<i>Aquila rapax</i>	x	x	x
Three-banded Plover	<i>Charadrius tricollaris</i>			x
Verreaux's Eagle	<i>Aquila verreauxii</i>	x	x	x
White-necked Raven	<i>Corvus albicollis</i>	x	x	
Yellow-billed Duck	<i>Anas undulata</i>	x		x

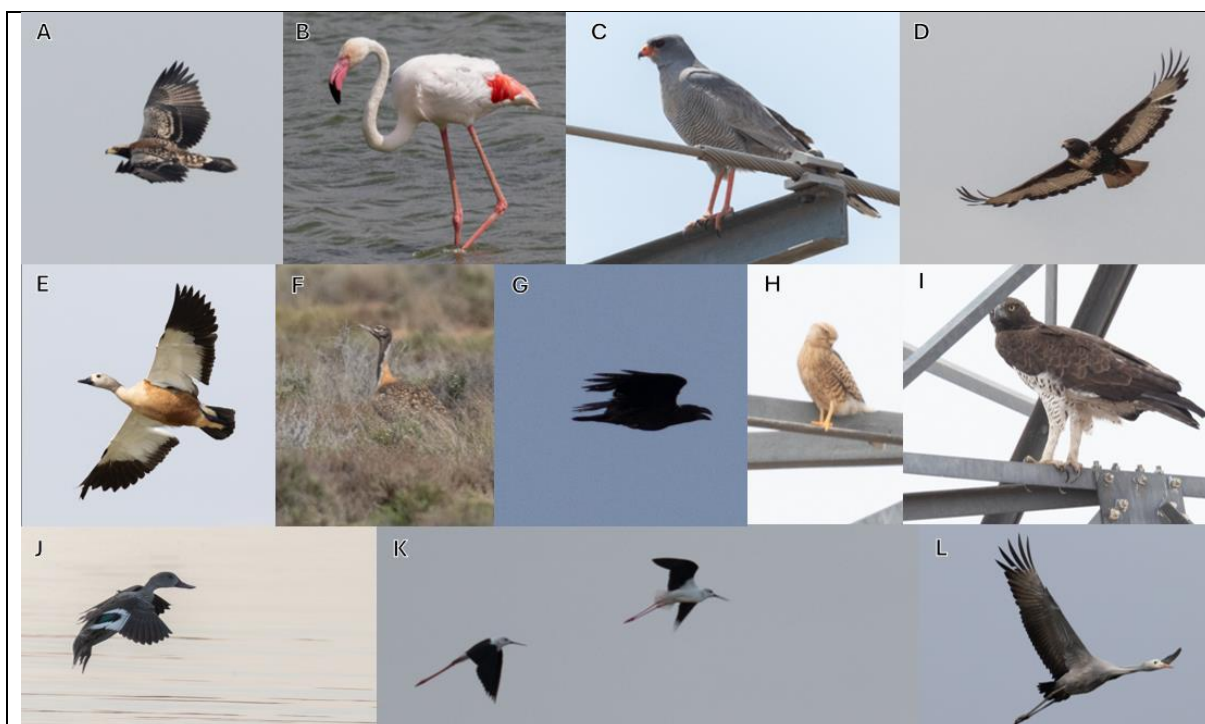


Figure 13. Photos illustrating some of the SCC and Priority Species observed on the 1st survey: A) Verreaux's Eagle (*Aquila verreauxii*), B) Greater Flamingo (*Phoenicopterus roseus*), C) Pale Chanting Goshawk (*Melierax canorus*), D) Jackal Buzzard (*Buteo rufofuscus*), E) South African Shelduck (*Tadorna cana*), F) Ludwig's Bustard (*Neotis ludwigii*), G) White-necked Raven (*Corvus albicollis*), H) Greater Kestrel (*Falco rupicoloides*), I) Martial Eagle (*Polemaetus bellicosus*), J) Cape Teal (*Anas capensis*), K) Black-winged Stilt (*Himantopus Himantopus*), L) Blue Crane (*Anthropoides paradiseus*).

Dominant Species

Table 3 provides the relative abundance of the dominant species as well as the frequency with which each species appeared in the point count samples. The most abundant species was the Eastern Clapper Lark (*Mirafra fasciolata*), with a relative abundance of 0.114 and a frequency of occurrence of 71.429% (Table 3).

Table 3. Relative abundance and frequency of occurrence of dominant avifauna species recorded during the standardised point counts within and around the proposed development during the field survey.

Common Name	Scientific Name	Family Name	Relative abundance	Frequency (%)
Eastern Clapper Lark	<i>Mirafra fasciolata</i>	Alaudidae	0,114	71,429
Red-billed Quelea	<i>Quelea quelea</i>	Ploceidae	0,105	3,571
Desert Cisticola	<i>Cisticola aridulus</i>	Cisticolidae	0,086	82,143
Pied Crow	<i>Corvus albus</i>	Corvidae	0,056	53,571
Spike-heeled Lark	<i>Chersomanes albofasciata</i>	Alaudidae	0,052	42,857
Southern Red Bishop	<i>Euplectes orix</i>	Ploceidae	0,051	1,7857
African Pipit	<i>Anthus cinnamomeus</i>	Motacillidae	0,037	46,429
Ant-eating Chat	<i>Myrmecocichla formicivora</i>	Muscicapidae	0,032	25,000

BASIC ASSESSMENT REPORT

Northern Korhaan	Black	<i>Afrotis afraoides</i>	Otididae	0,032	42,857
Lark-like Bunting		<i>Emberiza impetuani</i>	Emberizidae	0,027	21,429
Helmeted Guineafowl		<i>Numida meleagris</i>	Numididae	0,023	8,929
Large-billed Lark		<i>Galerida magnirostris</i>	Alaudidae	0,021	30,357
Rufous-eared Warbler		<i>Malcorus pectoralis</i>	Cisticolidae	0,021	26,786
Blue Crane		<i>Grus paradisea</i>	Gruidae	0,020	16,071
African Quail-finch		<i>Ortygospiza atricollis</i>	Estrildidae	0,017	10,714
Greater Flamingo		<i>Phoenicopterus roseus</i>	Phoenicopteridae	0,017	1,7857
Egyptian Goose		<i>Alopochen aegyptiaca</i>	Anatidae	0,016	12,500
Cloud Cisticola		<i>Cisticola textrix</i>	Cisticolidae	0,015	23,214
Cape Sparrow		<i>Passer melanurus</i>	Passeridae	0,013	5,357
Grey-backed Sparrow-lark		<i>Eremopterix verticalis</i>	Alaudidae	0,013	5,357
South Shelduck	African	<i>Tadorna cana</i>	Anatidae	0,012	5,357
Southern Weaver	Masked	<i>Ploceus velatus</i>	Ploceidae	0,012	8,929
Greater Swallow	Striped	<i>Cecropis cucullata</i>	Hirundinidae	0,011	8,929
Wattled Starling		<i>Creatophora cinerea</i>	Sturnidae	0,011	3,571

Species List of Second Field Survey

The first avifaunal field survey was completed between the 17-21 October 2022 for 5 days, the second survey was completed between the 17-20 February 2023 for 4 days, and the third survey was completed between the 18-21 May 2023 for 4 days. These three site visits constitute both dry and wet season surveys, to determine the presence of Species of Conservation Concern (SCC). Effort was made to cover all the different habitat types, within the limits of time and access. Eight SCC were recorded during the second survey period.

Table 4. SCC recorded in the second assessment

Common Name	Scientific Name	Conservation Status	
		Regional	Global
Ludwig's Bustard	<i>Neotis ludwigii</i>	EN	EN
Tawny Eagle	<i>Aquila rapax</i>	EN	VU
Blue Crane	<i>Anthropoides paradiseus</i>	EN	VU
Martial Eagle	<i>Polemaetus bellicosus</i>	EN	EN
Verreaux's Eagle	<i>Aquila verreauxii</i>	EN	VU
Karoo Korhaan	<i>Eupodotis vigorsii</i>	NT	LC

Secretarybird	<i>Sagittarius serpentarius</i>	VU	EN
African Rock Pipit	<i>Anthus crenatus</i>	NT	LC

Risk Species

As aforementioned, Priority Species are considered threatened, rare or prone to impacts from energy development (Ralston Paton *et al*, 2017). TBC has defined Risk Species as those species that are listed in Ralston Paton *et al* (2017) as Priority Species, as well as those listed in the Eskom poster of Birds and Power Lines (Eskom and EWT, no date), which together include all species, common or red-listed that may be at risk of collision, electrocution or habitat loss as a result of the proposed activity. Thirteen (13) of the species observed within the PAOI are regarded as priority species (Table).

Table 5. Summary of Priority Species recorded within and around the proposed development

Common Name	Scientific Name	Collision	Electrocution	Disturbance/Habitat Loss
Greater Kestrel	<i>Falco rupicoloides</i>	x	x	
Helmeted Guineafowl	<i>Numida meleagris</i>	x		
Pale Chanting Goshawk	<i>Melierax canorus</i>	x	x	
Pied Crow	<i>Corvus albus</i>	x	x	
Egyptian Goose	<i>Alopochen aegyptiaca</i>	x		x
Northern Black Korhaan	<i>Afrotis afraoides</i>	x		
Karoo Korhaan	<i>Eupodotis vigorsii</i>	x		
Ludwig's Bustard	<i>Neotis ludwigii</i>	x		
Tawny Eagle	<i>Aquila rapax</i>	x	x	
Verreaux's Eagle	<i>Aquila verreauxii</i>	x	x	
African Rock Pipit	<i>Anthus crenatus</i>			x

Dominant Species

Table 6 provides the relative abundance of the dominant species as well as the frequency with which each species appeared in the point count samples. The most abundant species was African Pipit (*Anthus cinnamomeus*) with a relative abundance of 0.110 and a frequency of occurrence of 16.33% (Table 6).

Table 6 Relative abundance and frequency of occurrence of dominant avifauna species recorded during the standardised point counts within and around the proposed development during the field survey.

Common Name	Scientific Name	Family Name	Relative abundance	Frequency (%)
African Pipit	<i>Anthus cinnamomeus</i>	Motacillidae	0,110	16,33
Spike-heeled Lark	<i>Chersomanes albofasciata</i>	Alaudidae	0,088	34,69
Red-billed Quelea	<i>Quelea quelea</i>	Ploceidae	0,071	2,04
Large-billed Lark	<i>Galerida magnirostris</i>	Alaudidae	0,058	16,33
Cape Sparrow	<i>Passer melanurus</i>	Passeridae	0,054	16,33
Pied Crow	<i>Corvus albus</i>	Corvidae	0,052	24,49
European Bee-eater	<i>Merops apiaster</i>	Meropidae	0,052	4,08
Rufous-eared Warbler	<i>Malcorus pectoralis</i>	Cisticolidae	0,046	28,57
Ant-eating Chat	<i>Myrmecocichla formicivora</i>	Muscicapidae	0,046	6,12

BASIC ASSESSMENT REPORT

Grey-backed Sparrow-Lark	Eremopterix verticalis	Alaudidae	0,038	6,12
Lark-like Bunting	Emberiza impetuari	Emberizidae	0,029	16,33
Desert Cisticola	Cisticola aridulus	Cisticolidae	0,025	22,45
South African Cliff Swallow	Petrochelidon spilodera	Hirundinidae	0,023	2,04
Southern Fiscal	Lanius collaris	Laniidae	0,021	6,12
Southern Masked Weaver	Ploceus velatus	Ploceidae	0,019	6,12
Northern Black Korhaan	Afrotis afroides	Otididae	0,019	14,29
Red-capped Lark	Calandrella cinerea	Alaudidae	0,017	8,16
Capped Wheatear	Oenanthe pileata	Muscicapidae	0,017	12,24
Bokmakierie	Telophorus zeylonus	Malaconotidae	0,013	12,24
Helmeted Guineafowl	Numida meleagris	Numididae	0,013	2,04
Egyptian Goose	Alopochen aegyptiaca	Anatidae	0,010	6,12
Black-winged Stilt	Himantopus himantopus	Recurvirostridae	0,010	4,08
Crowned Lapwing	Vanellus coronatus	Charadriidae	0,010	4,08
Greater Striped Swallow	Cecropis cucullata	Hirundinidae	0,010	4,08

Species List of Third Field Survey

The first avifaunal field survey was completed between the 17-21 October 2022 for 5 days, the second survey was completed between the 17-20 February 2023 for 4 days, and the third survey was completed between the 18-21 May 2023 for 4 days. These three site visits constitute both dry and wet season surveys, to determine the presence of Species of Conservation Concern (SCC). Effort was made to cover all the different habitat types, within the limits of time and access.

Five SCC were recorded during the third survey period (Table 7 Table).

Table 7. SCC recorded in the third assessment

Common Name	Scientific Name	Conservation Status	
		Regional	Global
Ludwig's Bustard	<i>Neotis ludwigii</i>	EN	EN
Tawny Eagle	<i>Aquila rapax</i>	EN	VU
Verreaux's Eagle	<i>Aquila verreauxii</i>	EN	VU
Karoo Korhaan	<i>Eupodotis vigorsii</i>	NT	LC
African Rock Pipit	<i>Anthus crenatus</i>	NT	LC

Risk Species

As aforementioned, Priority Species are considered threatened, rare or prone to impacts from energy development (Ralston Paton *et al*, 2017). TBC has defined Risk Species as those species that are listed in Ralston Paton *et al* (2017) as Priority Species, as well as those listed in the Eskom poster of Birds and Power Lines (Eskom and EWT, no date), which together include all species, common or red-listed that may be at risk of collision, electrocution or habitat loss as a result of the proposed activity. Thirteen (13) of the species observed within the PAOI are regarded as priority species.

Table 8. Summary of Priority Species recorded within and around the proposed development

Common Name	Scientific Name	Collision	Electrocution	Disturbance/Habitat Loss
Greater Kestrel	<i>Falco rupicoloides</i>	x	x	

BASIC ASSESSMENT REPORT

Grey Heron	<i>Ardea cinerea</i>	x		
Helmeted Guineafowl	<i>Numida meleagris</i>	x		
Pale Chanting Goshawk	<i>Melierax canorus</i>	x	x	
Pied Crow	<i>Corvus albus</i>	x	x	
South African Shelduck	<i>Tadorna cana</i>	x		x
Spur-winged Goose	<i>Plectropterus gambensis</i>	x		x
Northern Black Korhaan	<i>Afrotis afraoides</i>	x		
Karoo Korhaan	<i>Eupodotis vigorsii</i>	x		
Ludwig's Bustard	<i>Neotis ludwigii</i>	x		
Tawny Eagle	<i>Aquila rapax</i>	x	x	
Verreaux's Eagle	<i>Aquila verreauxii</i>	x	x	
African Rock Pipit	<i>Anthus crenatus</i>			x

Dominant Species

Table 9 provides the relative abundance of the dominant species as well as the frequency with which each species appeared in the point count samples. The most abundant species was Lark-like Bunting (*Emberiza impetuanii*) with a relative abundance of 0.232 and a frequency of occurrence of 28.00%.

Table 9. Relative abundance and frequency of occurrence of dominant avifauna species recorded during the standardised point counts within and around the proposed development during the field survey.

Common Name	Scientific Name	Family Name	Relative abundance	Frequency (%)
Lark-like Bunting	<i>Emberiza impetuanii</i>	Emberizidae	0,232	28,00
Spike-heeled Lark	<i>Chersomanes albobasciata</i>	Alaudidae	0,161	52,00
Pied Crow	<i>Corvus albus</i>	Corvidae	0,104	44,00
Namaqua Sandgrouse	<i>Pterocles namaqua</i>	Pteroclididae	0,095	12,00
Cape Sparrow	<i>Passer melanurus</i>	Passeridae	0,059	10,00
Ring-necked Dove	<i>Streptopelia capicola</i>	Columbidae	0,038	14,00
Karoo Korhaan	<i>Eupodotis vigorsii</i>	Otididae	0,031	12,00
Familiar Chat	<i>Oenanthe familiaris</i>	Muscicapidae	0,031	16,00
Bokmakierie	<i>Telophorus zeylonus</i>	Malaconotidae	0,024	12,00
Large-billed Lark	<i>Galerida magnirostris</i>	Alaudidae	0,024	14,00
Speckled Pigeon	<i>Columba guinea</i>	Columbidae	0,024	2,00
Spur-winged Goose	<i>Plectropterus gambensis</i>	Anatidae	0,024	2,00

Habitat Assessment (Habitat deletations align with that of the Terrestrial Biodiversity specialist)

Fine-scale habitats within the landscape are important in supporting a diverse avifauna community as they provide differing nesting, foraging and reproductive opportunities.

The main habitat types identified across the PAOI were initially delineated largely based on aerial imagery, and these main habitat types were then refined based on the field coverage and data collected during the survey. Four (4) habitats were delineated in total (Figure Error! No text of specified style in document.-2), a full description of the habitats are provided below.

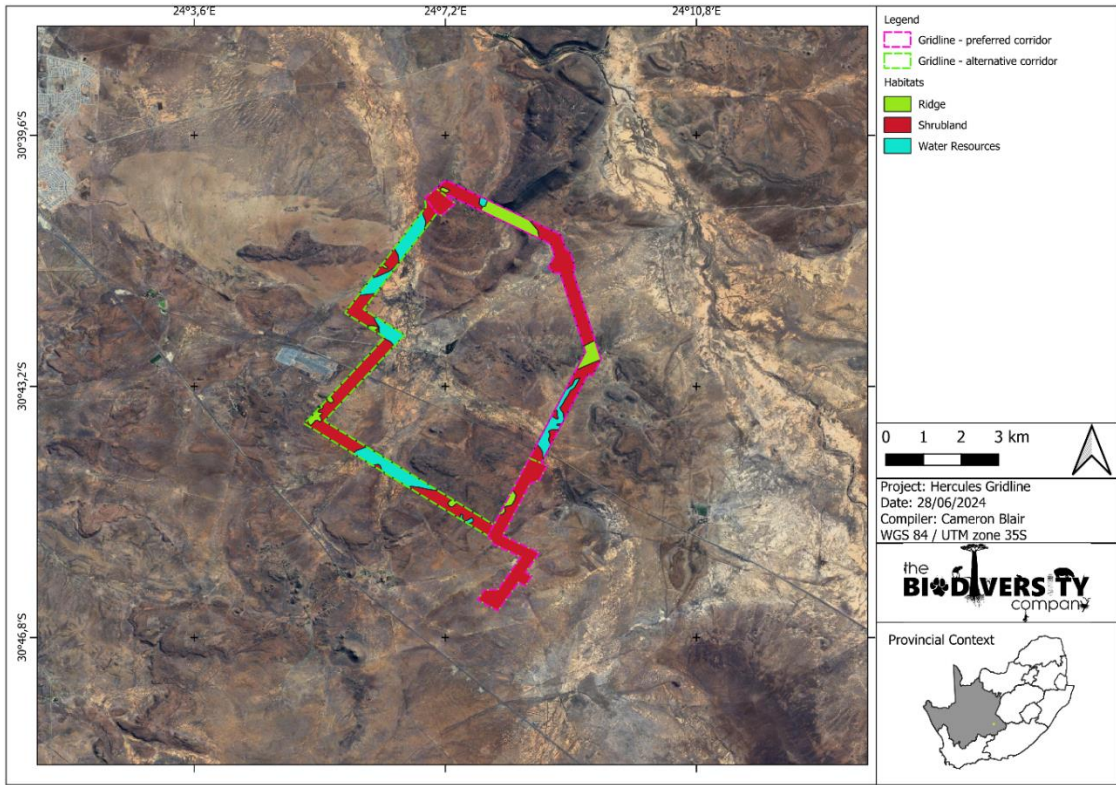


Figure Error! No text of specified style in document.-2 Habitats identified within the assessment area of each proposed corridor alternative.

Site Ecological Importance

BASIC ASSESSMENT REPORT

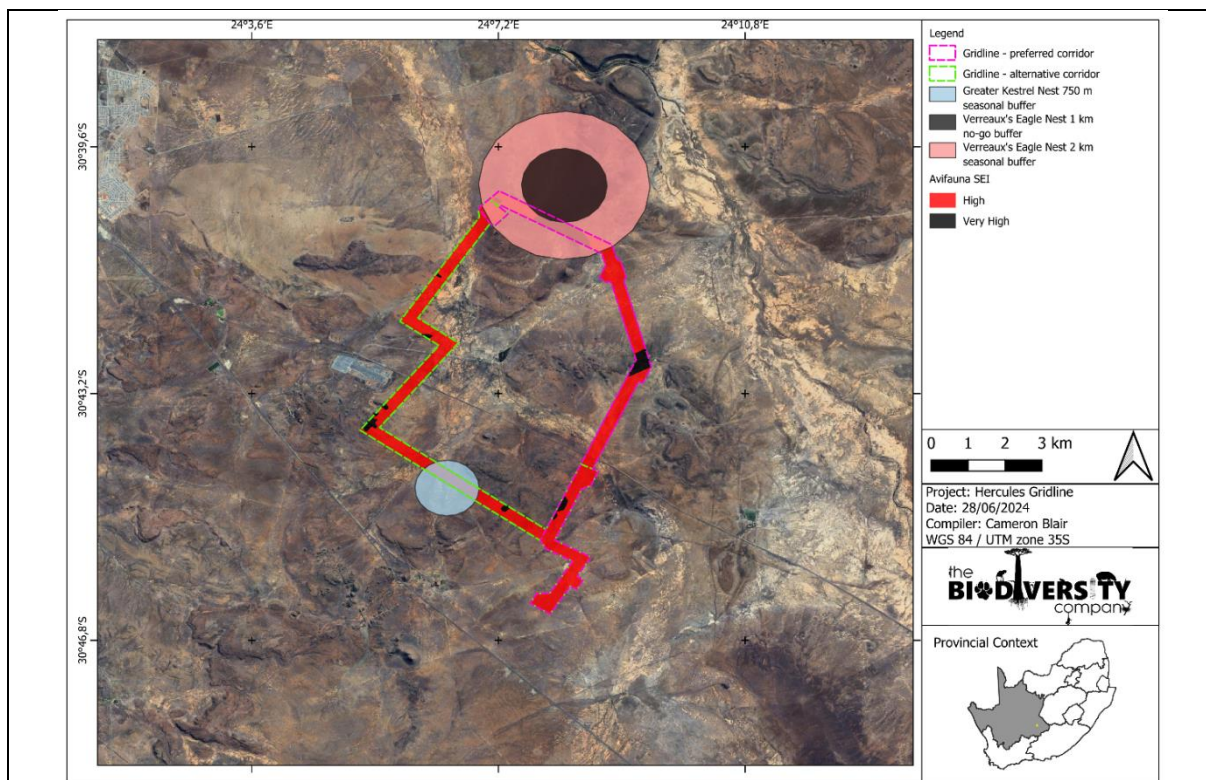


Figure Site ecological importance, with mitigation measures applied, along with no-go and seasonal buffers, for each proposed corridor. Including the No-Go areas and Seasonal Buffered areas.

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Project component in relation to habitat type	Receptor Resilience	Site Importance Guidelines	Ecological
Shrubland	<u>High</u> Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km ² . IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	<u>High</u> Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type	High	Without mitigation	<u>Low</u> Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality.	<u>Very High</u> Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.	
				With mitigation	<u>Medium</u> Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of: (i) remaining at a site even when a disturbance or	<u>High</u> Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.	

BASIC ASSESSMENT REPORT

				impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed		
Ridge	<u>High</u> Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	<u>High</u> Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type	High	Without mitigation	<u>Low</u> Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality.	<u>Very High</u> Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
				With mitigation	<u>Low</u> Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality.	<u>Very High</u> Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
Water Resources	<u>High</u> Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	<u>High</u> Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type	High	Without mitigation	<u>Low</u> Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality.	<u>Very High</u> Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
				With mitigation	<u>Medium</u> Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of: (i) remaining at a site even when a disturbance or impact is occurring,	<u>High</u> Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.

BASIC ASSESSMENT REPORT

	or (ii) returning to a site once the disturbance or impact has been removed	
Verreaux's Eagle nest 1 km no go buffer		No-Go development
Verreaux's Eagle nest 2 km seasonal buffer (no development permitted during April – September)		<u>High</u> Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities. No development permitted during the breeding season (April – September).
Greater Kestrel nest 750 m no go buffer		<u>High</u> Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities. No development permitted during the breeding season (June to February).
<u>Concluding Statement on the Avifaunal Impact of the proposed development</u> It is the opinion of the specialist that the development can be favourably considered for the alternative gridline (Alternative B), should the mitigation measures and management actions be implemented. In a memorandum dated 26 June 2026, following layout amendments, the specialists concluded that the revision of the corridors (aimed towards avoiding the 1 km No-Go area) will not require any additional impacts or mitigations for the gridline reports and is favorably accepted as it was the preferred alternative. The 'fatally flawed' statement of the Avifaunal specialist reports is retracted.		

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	De Aar Echo	
Date published	16 February 2026	
Site notice position	Latitude	Longitude
	30°43'20.15"S	24° 3'39.43"E
Date placed	19 February 2026	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Mr. B. Fisher	The Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	Bfisher@ncpg.gov.za
Ms. N Uys		Nuys.denc@gmail.com
Ms. D. van Heeden		dvaheeden@ncpg.gov.za
Ms. O. Ndzumo		onyndzumo@gmail.com
Mr. A. Abrahams		Abraham.denc@gmail.com
Mr. M. Smit		msmit@ncpg.gov.za
Mr. L. Baloyi	Department of Water and Sanitation;	BaloyiL@dws.gov.za
Mr. P. Swart	Department of Energy Resources	pieter.swart@dmr.gov.za
Ms. N. Higgitt	South African Heritage Resources Agency	nhiggitt@sahra.org.za
Mr. D. Moleko	Northern Cape Department of Agriculture	dmoleko@ncpg.gov.za
Ms. R.A Timothy	Northern Cape Heritage Resources Authority (NCHRA)	rtimothy@nbkb.org.za
Mr. K. Nogwili	Northern Cape Department of Roads and Public Works	ncorns@ncpg.gov.za
Ms. N Abrahams	South African National Roads Agency SOC Ltd (SANRAL)	abrahamsn@nra.co.za
Mr. D. Harding	Eskom Holdings	HardinD@eskom.co.za
Mr. F. Mathebula	Transnet	futhi.mathebula@transnet.net
Ms. E. Shogole	Civil Aviation Authority	ShogoleE@caa.co.za
Ms. T. Nape	South African Radio Astronomy Observatory	tnape@ska.ac.za
Mr. I Visser	Emthanjeni Local Municipality	visser@emthanjeni.co.za
Mr. Pieterse	Pixley Ka Seme District Municipality	mm@pksgdm.gov.za
Mr. G. Nyl	Ward Councillor – Ward 6	gnyl@emthanjeni.co.za
A. Mkykeje	Department of Cooperative Governance and Traditional Affairs	annam@cogta.gov.za

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
This will be completed upon conclusion of the PPP for the project.	

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Please refer to the Table included in Section 2 above. This table will be updated and included as part of the FBAR.					

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

BASIC ASSESSMENT REPORT

Pre-Construction/Planning Phase Impacts

	Legislative Compliance and Sustainability Impacts		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Failure to secure applicable legislative permits/licenses/authorizations/agreements, or failure to or plan for the incorporation of their relevant conditions, can lead to delays in terms of timeframes, as well as cost implications. Where legal non-compliance/s are observed, this can have legal penalties for the applicant.		No Impact, as no legal requirements will be required of the applicant, as the applicant is not the landowner and their agreement is only applicable if the development occurs.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Site Specific; Long Term	Site Specific; Long Term	-N/A
Probability of occurrence:	Probable	Probable	-N/A
Degree to which the impact can be reversed:	Completely Reversible	Completely Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	Marginal loss of resources	-N/A
Cumulative impact prior to mitigation:	Medium - High	Medium - High	-N/A
Significance rating of impact prior to mitigation	Medium	Medium	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	General: - The Contractor is to appoint a suitably qualified Environmental Site Officer, to undertake environmental monitoring. - Appoint a suitably qualified and/or experienced Environmental Control Officer (ECO), to ensure that any relevant environmental (pre-construction conditions are complied with). - Ensure all applicable permits/licenses/agreements/authorizations are obtained prior to commencement of the relevant activities in line with these applicable permits/licenses/agreements/authorizations. Planning and Budget:		-N/A

BASIC ASSESSMENT REPORT

	Legislative Compliance and Sustainability Impacts		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
	- The consulting engineer/applicant responsible for compiling any contract documentation for potential/appointed contractors/ subcontractors/ consultants/ sub-consultants, must ensure that the documentation takes into consideration any relevant activities/conditions, that require compliance, including conditions of the approved EMP. - Cost and time allowances must be made for all relevant conditions/requirements/measures. - Planning must take into account the restrictions raised by specialists, including seasonal limitations (where applicable), when planning activities, including programme of works, establishment of site camp/s, access roads and material delivery, material and other storage areas. - Where activities cannot be performed on site, for example maintenance of vehicles, pre-arrangements must be made to identify areas off-site to undertake these activities. Site Camp: - The ECO must be consulted when selecting the site camp, designating storage areas, and main access areas to the site camp. - Designated areas must be identified for: - Site office position/s. - Portable toilet positioning. - Storage areas for waste. - Storage areas for material. - Storage areas for hazardous substances. - Areas for mixing concrete (if required, and may only be on transformed surfaces, or on surfaces intended to be transformed into hardened surfaces and are bunded. - Parking areas. - Transplanting areas for temporary storage of plant species to be utilized for landscaping. - Consideration needs to be given to the type of fencing to be utilized around the temporary site camp. - Identify registered waste landfill and re-use sites.		
Cumulative impact post mitigation:	Low	Low	-N/A
Significance rating of impact after mitigation	Low	Low	-N/A

BASIC ASSESSMENT REPORT

Construction Phase Impact Tables

Note: There is only one site location proposed for the development, however two layout Alternatives are being assessed (**Alternative 1 and Alternative 2**). These two alternatives have been assessed compared to the NO-GO (**Alternative 3**).

	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Agricultural Potential Impact – Loss of Agricultural Land		
	Loss of agricultural land that has the potential to be used for Grazing .The land proposed for the development site has been mapped to have a low agricultural potential land use.		No impact, as agricultural land would still be available for use however this would need to go through a NEMA process if transformed to cultivated land.
Nature of impact:	Negative	Negative	No impact
Extent and duration of impact:	Site Specific; Long Term	Site Specific; Long Term	N/A
Probability of occurrence:	Define	Definite	N/A
Degree to which the impact can be reversed:	Completely Reversible	Irreversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss to resource	Complete loss of resource	-N/A
Cumulative impact prior to mitigation:	Low	Low	-N/A
Significance rating of impact prior to mitigation	Low	Low	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	Specialist Recommendations: <u>Stormwater Management:</u> ➤ Ensure that a system of storm water management, which will prevent erosion, is an inherent part of the engineering on site. ➤ Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there. <u>Excavations:</u>		-N/A

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
	➤ Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 20 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. ➤ When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface. ➤ Topsoil should only be stripped in areas that are excavated. Across the majority of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place.		
Cumulative impact post mitigation:	Low	Low	-N/A
Significance rating of impact after mitigation	Low - Negligible (-)	Low - Negligible (-)	-N/A
	Botanical Impact - Destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including protected species		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Site clearing before construction will result in the blanket clearing of vegetation within the affected footprint. A number of Species of Conservation Concern have been identified within the study area. Majority of the vegetation on site could be considered as Ecological Corridors for migrating fauna. These areas are also considered important foraging and nesting habitats. Three distinct vegetation communities were identified within the study area, with the Shrubland vegetation being the largest contributor to the natural landscape (in terms of extent).		No Impact, as no clearing would occur.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Definite	Definite	-N/A
Degree to which the impact can be reversed:	Irreversible	Irreversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resource	Significant loss of resource	-N/A
Cumulative impact prior to mitigation:	Very High	Very High	-N/A
Significance rating of impact prior to mitigation	Moderately High (-)	Moderately High (-)	-N/A

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
Degree to which the impact can be mitigated:	Can be barely mitigated	Can be barely mitigated	-N/A
Proposed mitigation:	General: • Ensure all permits relevant to any activity that may require the trimming/removal/disturbance of a specific flora species, is obtained prior to the commencement of clearance activities. • Ensure mitigation measures as per specialist recommendation are implemented in full. • Ensure labour undergoes environmental inductions which should include as a minimum: ➢ Faunal mitigation measures as detailed in table 9.5.4. ➢ Specialist recommendations. • Transplant the rescued species until such a time that the species can be located back into the landscape. • Remove alien invasive plants and rehabilitate. • Ensure sufficient quality, quantity and connectivity of habitat is available. • Develop and implement fire management program. • Development of an Environmental Management Programme (EMPr) to control construction impacts • Only existing infrastructure must be used as access routes. • A minimum impact approach must be followed during the construction phase, specifically during the formalisation of the access roads leading to the proposed development areas. Specialist Recommendation: • All 'High' SEI areas should be cautiously considered. Should development take place in the high SEI areas, the pylon placement should be considered to reduce the number of pylons in these areas. • The footprint area must be minimised and clearing must also be restricted to the direct impact area. • Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage. • Existing access routes, particularly roads must be made use of, especially in the High SEI areas. • Water resources must be avoided for pylon placement and access roads as far as possible, and a no-go buffer as per the aquatic assessment must be applied around them. • Once the final line and associated pylon have been confirmed, a walkthrough is required for these areas, to ensure that sensitive areas are excluded for construction of pylons, through 'micro siting' of the proposed pylon locations. • Do not clear areas of indigenous vegetation outside of the direct development footprint within the PAOI. • Minimise vegetation clearing to the minimum required. • Any individual of the SCC/protected plants that was observed needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. High visibility flags must be placed near any protected plants in order to avoid any damage or destruction of the species. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program. • Consult a fire expert and compile and implement a fire management plan to minimise the risk of veld fires around the Project site.		-N/A

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
	• Compile and implement a rehabilitation plan from the onset of the Project. • Rehabilitate areas as soon as they are no longer impacted by construction. • The rehabilitated areas must be revegetated with indigenous vegetation. • Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas. • Reduce the dust generated by operational vehicles and earth moving machinery, through wetting the soil surface and putting up signs to enforce speed limits to enforce reduced speeds. • No non-environmentally friendly suppressants may be used as this could result in pollution of water sources. • Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank. Surplus rehabilitation material can be applied to other others in need of stabilisation and vegetation cover. • Vegetation clearing to commence only after the necessary permits have been obtained. • Environmental Officer (EO) to provide supervision and oversight of vegetation clearing activities.		
Cumulative impact post mitigation:	Medium	High	-N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	-N/A
	Botanical Impact – Introduction of alien spp, especially plants		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The establishment of these species could potentially lead to the loss of vegetation and habitat. Indirectly, alien and/or invasive species could cause the spread of potentially dangerous diseases due to invasive and pest species.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Highly Probable	Highly Probable	-N/A
Degree to which the impact can be reversed:	Barely Reversible	Barely Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Complete Loss of resource	Complete Loss of resource	-N/A

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
Cumulative impact prior to mitigation:	Very High	Very High	-N/A
Significance rating of impact prior to mitigation	–Moderately High	– Moderately High	-N/A
Degree to which the impact can be mitigated:	Highly likely	Highly likely	-N/A
Proposed mitigation:	General: • Alien invasive species that are removed, must be contained within a suitable bin/skip, that will not allow for the dispersal of the contents, should bad weather conditions occur. • Manage alien invasive species in line with the Alien Invasive Management Plan. • No waste material may be stored on site for more than 90-days. Specialist Recommendation: • Compile and implement an alien vegetation management plan from the onset of construction. The plan must identify areas for action (if any) and prescribe the necessary removal methods and frequencies to be applied. This plan must be also prescribing a monitoring plan and be updated as/when new data is collated. • Implementation of a waste management plan, this plan must also prescribe a monitoring plan and be updated as/when new data is collated. Waste management must be a priority and all waste must be collected, stored and disposed of adequately. It is recommended that all waste be removed from site on a weekly basis (as a minimum) to prevent rodents and pests entering the site. • Refuse bins will be emptied and secured. • Temporary storage of domestic waste shall be in covered waste skips. • Maximum domestic waste storage period will be 7 days. • A pest control plan must be put in place and implemented; it is imperative that poisons not be used.		-N/A
Cumulative impact post mitigation:	Medium	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Low(-)	-N/A
	Faunal Impact - Displacement of faunal community due to habitat loss, direct mortalities and disturbance (road collisions, noise, dust, vibration and poaching)		
	Alternative 1	Alternative 2	Alternative 3: NO – GO

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Activities associated with vegetation clearing, can result in displacement of faunal community due to habitat loss, direct mortalities and disturbance (road collisions, noise, dust, vibration and poaching).		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Highly Probable	Highly Probable	-N/A
Degree to which the impact can be reversed:	Barely reversible	Barely reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significance loss of resources	Significance loss of resources	-N/A
Cumulative impact prior to mitigation:	Medium-High	Medium-High	-N/A
Significance rating of impact prior to mitigation	Moderately High	Moderately High	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	Specialist Recommendations: • Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage. • Prior to vegetation clearing activities, the area to be cleared should be walked on foot by 1-2 individuals to create a disturbance in order for fauna to move off. Sites should be disturbed only prior to the area having to be cleared, not more than 1 day in advance. • Any fauna threatened by the construction activities should be removed safely by an appropriately qualified environmental officer or removal specialist. • All construction vehicles should adhere to a speed limit of maximum 40 km/h to avoid collisions. Appropriate speed control measures and signs must be erected. • A movement corridor within the PV area must be incorporated into the design in order to allow fauna to move to and from the rocky habitats and Degraded shrubveld habitats. • Minimise vegetation clearing to the minimum required. Areas should be cleared and disturbed on a needs basis only, as opposed to clearing and disturbing a number of sites simultaneously.		-N/A

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
	- All personnel and contractors to undergo Environmental Awareness Training to all personnel and contractors. A signed register of attendance must be kept for proof. Discussions The training must include. - The timing between clearing of an area and subsequent development must be minimized to avoid fauna from re-entering the site to be disturbed. - Any holes/deep excavations must done in a progressive manner on a needs basis only. No holes/excavations may be left open overnight. In the event holes/excavations are required to remain open overnight, these areas must be covered to prevent fauna falling into these areas and subsequently inspected prior to backfilling - Where possible, work should be restricted to one area at a time and be systematic. This is to reduce the number and extent of on-site activities, allowing fauna to move off as the Project progresses. This will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories. - Considering that many of the mammal fauna recorded within the project area are nocturnal, no construction activity is to occur at night.		
Cumulative impact post mitigation:	Low	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Low(-)	-N/A
	Avi-faunal Impact – Gridline collisions to avian species within the project area		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The proposed gridline infrastructure has the potential to avian cause collisions with various bird species within the area.		No Impact, as no clearing would occur.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Definite	Definite	-N/A
Degree to which the impact can be reversed:	Irreversible	Irreversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resource	Significant loss of resource	-N/A

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
Cumulative impact prior to mitigation:	High	Very High	-N/A
Significance rating of impact prior to mitigation	Very High (-)	Moderately High (-)	-N/A
Degree to which the impact can be mitigated:	Can be barely mitigated	Can be barely mitigated	-N/A
Proposed mitigation:	A nest walkdown must be performed prior to clearance of the site by an avifauna specialist. If nests are found a suitably qualified specialist must be contacted to advise on the way forward.		-N/A
Cumulative impact post mitigation:	High	High	-N/A
Significance rating of impact after mitigation	High	Low (-)	-N/A
	Avi-faunal Impact – The proposed gridlines may cause habitat destruction due to the construction of the gridlines		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The proposed gridline infrastructure has the potential to cause avian collisions, causing mortality and loss of habitat.		No Impact, as no clearing would occur.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Medium	Local; Medium	-N/A
Probability of occurrence:	Probable	Probable	-N/A
Degree to which the impact can be reversed:	Completely	Completely	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal	Marginal	-N/A
Cumulative impact prior to mitigation:	Medium (-)	Medium (-)	-N/A
Significance rating of impact prior to mitigation	Low (-)	Low (-)	-N/A

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	General: • Ensure all permits relevant to any activity that may require the trimming/removal/disturbance of a specific flora species, is obtained prior to the commencement of clearance activities. • Ensure mitigation measures as per specialist recommendation are implemented in full. • Implement the search and rescue plan. • Transplant the rescued species until such a time that the species can be located back into the landscape. • Remove alien invasive plants and rehabilitate. • Ensure sufficient quality, quantity and connectivity of habitat is available. • Develop and implement fire management program. • Development of an Environmental Management Programme (EMPr) to control construction impacts • Only existing infrastructure must be used as access routes. • A minimum impact approach must be followed during the construction phase, specifically during the formalisation of the access roads leading to the proposed development areas. Specialist Recommendation: • All 'High' SEI areas should be cautiously considered. Should development take place in the high SEI areas, the pylon placement should be considered to reduce the number of pylons in these areas. • The footprint area must be minimised and clearing must also be restricted to the direct impact area. • Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage. • Existing access routes, particularly roads must be made use of, especially in the High SEI areas. • Water resources must be avoided for pylon placement and access roads as far as possible, and a no-go buffer as per the aquatic assessment must be applied around them. • Once the final line and associated pylon have been confirmed, a walkthrough is required for these areas, to ensure that sensitive areas are excluded for construction of pylons, through 'micro siting' of the proposed pylon locations. • Do not clear areas of indigenous vegetation outside of the direct development footprint within the PAOI. • Minimise vegetation clearing to the minimum required. • Any individual of the SCC/protected plants that was observed needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. High visibility flags must be placed near any protected plants in order to avoid any damage or destruction of the species. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program. • Consult a fire expert and compile and implement a fire management plan to minimise the risk of veld fires around the Project site. • Compile and implement a rehabilitation plan from the onset of the Project.		-N/A

[illegible]

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
	•		
	Avi-faunal Impact – The proposed gridlines may cause habitat destruction due to the construction of the gridlines		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The proposed gridline infrastructure has the potential to cause avian collisions, causing mortality and loss of habitat.		No Impact, as no clearing would occur.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Medium	Local; Medium	-N/A
Probability of occurrence:	Probable	Probable	-N/A
Degree to which the impact can be reversed:	Completely	Completely	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal	Marginal	-N/A
Cumulative impact prior to mitigation:	Medium (-)	Medium (-)	-N/A
Significance rating of impact prior to mitigation	Low (-)	Low (-)	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	General: • Ensure all permits relevant to any activity that may require the trimming/removal/disturbance of a specific flora species, is obtained prior to the commencement of clearance activities. • Ensure mitigation measures as per specialist recommendation are implemented in full. • Ensure labour undergoes environmental inductions which should include as a minimum:		-N/A

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
	➤ Faunal mitigation measures as detailed in table 9.5.4. ➤ Specialist recommendations. • Implement the search and rescue plan. • Transplant the rescued species until such a time that the species can be located back into the landscape. • Remove alien invasive plants and rehabilitate. • Ensure sufficient quality, quantity and connectivity of habitat is available. • Develop and implement fire management program. • Development of an Environmental Management Programme (EMPr) to control construction impacts • Only existing infrastructure must be used as access routes. • A minimum impact approach must be followed during the construction phase, specifically during the formalisation of the access roads leading to the proposed development areas. Specialist Recommendation: The specialist advised that the impacts assessed require a deeper approach to the handling of avi assessments • All 'High' SEI areas should be cautiously considered. Should development take place in the high SEI areas, the pylon placement should be considered to reduce the number of pylons in these areas. • The footprint area must be minimised and clearing must also be restricted to the direct impact area. • Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage. • Existing access routes, particularly roads must be made use of, especially in the High SEI areas. • Water resources must be avoided for pylon placement and access roads as far as possible, and a no-go buffer as per the aquatic assessment must be applied around them. • Once the final line and associated pylon have been confirmed, a walkthrough is required for these areas, to ensure that sensitive areas are excluded for construction of pylons, through 'micro siting' of the proposed pylon locations. • Do not clear areas of indigenous vegetation outside of the direct development footprint within the PAOI. • Minimise vegetation clearing to the minimum required. • Any individual of the SCC/protected plants that was observed needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. High visibility flags must be placed near any protected plants in order to avoid any damage or destruction of the species. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program. • Consult a fire expert and compile and implement a fire management plan to minimise the risk of veld fires around the Project site. • Compile and implement a rehabilitation plan from the onset of the Project. • Rehabilitate areas as soon as they are no longer impacted by construction. • The rehabilitated areas must be revegetated with indigenous vegetation. • Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas. • Reduce the dust generated by operational vehicles and earth moving machinery, through wetting the soil surface and putting up signs to enforce speed limits to enforce reduced speeds.		

BASIC ASSESSMENT REPORT

	Alternative 1	Alternative 2	Alternative 3: NO – GO
	- No non-environmentally friendly suppressants may be used as this could result in pollution of water sources. - Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank. Surplus rehabilitation material can be applied to other others in need of stabilisation and vegetation cover. - Vegetation clearing to commence only after the necessary permits have been obtained. - Environmental Officer (EO) to provide supervision and oversight of vegetation clearing activities.		
Cumulative impact post mitigation:	High	High	-N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	-N/A

Freshwater	Freshwater impact – Loss or degradation of watercourse		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The proposed development will not lead to significant loss or degradation of the watercourses as the proposed development will be located outside of the 50 m buffer placed around the watercourses. The proposed development will see to the use and formalisation of existing tracks and servitudes that leads through the watercourses. Existing infrastructural corridors will be used as far as possible.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Probable	Probable	-N/A
Degree to which the impact can be reversed:	Partly Reversible	Partly Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	Marginal loss of resource	-N/A
Cumulative impact prior to mitigation:	High	High	-N/A
Significance rating of impact prior to mitigation	High	High	-N/A

BASIC ASSESSMENT REPORT

Degree to which the impact can be mitigated:	Can be mitigated	Can be barely mitigated	-N/A
Proposed mitigation:	- Use the watercourse shapefiles provided by TBC to clearly demarcate (on the ground) the edge of the buffer on watercourses (50 m buffer). Regard these as strict no-go areas and signpost as environmentally sensitive. - All activities (including driving and equipment storage) must remain outside of the watercourse and associated buffer identified on site that will be conserved. - All infrastructure during both construction (e.g., laydown yards) and operation (e.g., offices, control room/s, storage facilities, inverters, and transformers) must remain outside of the watercourse and associated buffer identified on site that will be conserved - Hold off on the clearing of vegetation as long as possible, ensuring that all environmental and water use authorisations are in place, the site construction materials are in place and the PV infrastructure is sourced and ready for construction prior to clearing. - Take every measure to ensure that the bulk of the site clearing and earth moving activities take place in winter when rainfall is lowest (and the grass sward is thinnest) to minimize environmental damage, erosion, sedimentation, and contamination. - While clearing keep a nursery of plant sods (prioritise hydrophytes) in an on-site nursery rehabilitation of disturbed areas. - Minimize the disturbance footprint and the unnecessary clearing of vegetation outside of this area. - Use existing access roads wherever possible.		-N/A
Cumulative impact post mitigation:	Low	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Medium (-)	-N/A
	Freshwater impact – Increased bare surfaces, flood peaks and potential for erosion		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Vegetation clearing and exposure of bare soils within and upslope of the aquatic habitat during construction will decrease the soil binding capacity and cohesion of the upslope soils and thus increase the risk of erosion and sedimentation downslope. This may cause the burying of aquatic habitat and also cause aquatic faunal fatalities. It may lead to the wetland ceasing to function. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows. Formation of rills and gullies from increased concentrated runoff. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface. This is likely to be one of the most significant impacts upon the watercourses. Any development on the steeply sloped areas, including roads, magnifies the potential for the watercourses to be impacted upon.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Highly Likely	Definite	-N/A

BASIC ASSESSMENT REPORT

Degree to which the impact can be reversed:	Partly Reversible	Partly Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resource	Significant loss of resource	-N/A
Cumulative impact prior to mitigation:	High	High	-N/A
Significance rating of impact prior to mitigation	High	High	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	• Use the watercourse shapefiles provided by TBC to clearly demarcate (on the ground) the edge of the buffer on watercourses (50 m buffer). Regard these as strict no-go areas and signpost as environmentally sensitive. • All activities (including driving and equipment storage) must remain outside of the watercourse and associated buffer identified on site that will be conserved. • All infrastructure during both construction (e.g., laydown yards) and operation (e.g., offices, control room/s, storage facilities, inverters, and transformers) must remain outside of the watercourse and associated buffer identified on site that will be conserved • Hold off on the clearing of vegetation as long as possible, ensuring that all environmental and water use authorisations are in place, the site construction materials are in place and the PV infrastructure is sourced and ready prior to clearing. • Take every measure to ensure that the bulk of the site clearing and earth moving activities take place in winter when rainfall is lowest (and the grass sward is thinnest) to minimize environmental damage, erosion, sedimentation and contamination. • Ensure soil stockpiles and concrete / building sand are sufficiently safeguarded against rain wash. • Scrape the area where mixing and storage of sand and concrete occurred to clean and re-grass once finished. • Revegetate all denuded areas beyond the buildings as soon as possible		-N/A
Cumulative impact post mitigation:	Low	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Medium (-)	-N/A
	Freshwater impact – Introduction and spread of alien and invasive vegetation		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Sources of modification that result from livestock within the game farms include where livestock trample watercourse banks removing vegetation and causing erosion. These disturbed areas create habitat availability for alien invasives to inhabit such as Mexican prickly		Due to the fact that alien invasive species have already been within the property boundaries, there is a chance that

BASIC ASSESSMENT REPORT

	poppy (<i>Argemone ochroleuca</i>) observed in the riparian areas. Exotic macrophytes were also observed within select instream dams in the form of oxygen weed (<i>Lagarosiphon</i>)		further colonisation of these species could occur if not properly managed.
Nature of impact:	Negative	Negative	Negative
Extent and duration of impact:	Local; Permanent	Local; Permanent	Local; Permanent
Probability of occurrence:	Improbable	Improbable	Probable
Degree to which the impact can be reversed:	Partly Reversible	Partly Reversible	Partly Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal Loss of resource	Marginal Loss of resource	Marginal Loss of resource
Cumulative impact prior to mitigation:	Medium (-)	Medium (-)	Medium (-)
Significance rating of impact prior to mitigation	Medium (-)	Medium (-)	Medium (-)
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	Can be partly mitigated
Proposed mitigation:	- Promptly remove all alien and invasive plant species that may emerge during construction (i.e. weedy annuals and other alien forbs). - Appropriately stockpile topsoil cleared from the site. - Minimize unnecessary clearing of vegetation beyond the infrastructure footprints. - Lightly till any disturbed soil around the development to avoid compaction.		As duty of care by the landowner is applicable in the case of the no-go alternative, the onus will rest on the landowner to ensure that an alien management and rehabilitation programme is compiled and implemented order to minimise the impact of further colonization.
Cumulative impact post mitigation:	Low	Medium	Low-Medium (-)
Significance rating of impact after mitigation	Low (-)	Medium (-)	Low-Medium (-)
	Freshwater impact – Decreased flow inputs to watercourses		
	Alternative 1	Alternative 2	Alternative 3: NO – GO

BASIC ASSESSMENT REPORT

DESCRIPTION OF IMPACT:	During the construction and installation phase of the proposed development, excavation of the soils will be required. This will lead to the alteration of the Hydrological Regime of the site, leading to decreased flow inputs to the watercourses.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Definite	Definite	-N/A
Degree to which the impact can be reversed:	Partly reversible	Partly reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resources	Significant loss of resources	-N/A
Cumulative impact prior to mitigation:	High (-)	High (-)	-N/A
Significance rating of impact prior to mitigation	High (-)	High (-)	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be partly mitigated	-N/A
Proposed mitigation:	• Use the watercourse shapefiles provided by TBC to clearly demarcate (on the ground) the edge of the buffer on watercourses (50 m buffer). Regard these as strict no-go areas and signpost as environmentally sensitive. • All activities (including driving and equipment storage) must remain outside of the watercourse and associated buffer identified on site that will be conserved. • All infrastructure during both construction (e.g., laydown yards) and operation (e.g., offices, control room/s, storage facilities, inverters, and transformers) must remain outside of the watercourse and associated buffer identified on site that will be conserved • Aim to maximise infiltration of rainwater and maintain diffuse subsurface drainage below PVs in seeps. • Develop a sound stormwater management plan that is engineered to promote rainfall infiltration, maintain diffuse subsurface flows in seep areas, minimise the development of preferential flow paths. • The stormwater plan would also benefit from Lidar based topography maps and / or site-specific contours that allow for the identification of flow paths. • All low points, flow paths or clean water drains should be engineered to minimize erosion through the installation of small drop downs and flow attenuation structures especially out outlets into the drainage areas. • Stormwater leaving the site should not be concentrated in a single exit drain but spread across multiple drains around the site each fitted with energy dissipaters (e.g. slabs of concrete with rocks cemented in). • Minimise the extent of concreted / paved / gravel areas.		-N/A

BASIC ASSESSMENT REPORT

	Introduce coarse, preferably washed, gravel beneath PV arrays.		
Cumulative impact post mitigation:	Low (-)	Medium (-)	-N/A
Significance rating of impact after mitigation	Low (-)	Medium (-)	-N/A
	Freshwater impact – Increased sediment loads to downstream reaches		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Removal of vegetation, particularly in the drainage areas has the potential to decrease infiltration and increase surface runoff. It also has the potential to result in erosion of the drainage area while at the same time increasing sediment loads and potentially toxicants delivered downstream.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Definite	Definite	-N/A
Degree to which the impact can be reversed:	Partly reversible	Partly reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resources	Significant loss of resources	-N/A
Cumulative impact prior to mitigation:	High (-)	High (-)	-N/A
Significance rating of impact prior to mitigation	High (-)	High (-)	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated	-N/A
Proposed mitigation:	- Use the watercourse shapefiles provided by TBC to clearly demarcate (on the ground) the edge of the buffer on watercourses (50 m buffer). Regard these as strict no-go areas and signpost as environmentally sensitive. - All activities (including driving and equipment storage) must remain outside of the watercourse and associated buffer identified on site that will be conserved.		-N/A

BASIC ASSESSMENT REPORT

	- All infrastructure during both construction (e.g., laydown yards) and operation (e.g., offices, control room/s, storage facilities, inverters, and transformers) must remain outside of the watercourse and associated buffer identified on site that will be conserved - Hold off on the clearing of vegetation as long as possible, ensuring that all environmental and water use authorisations are in place, the site construction materials are in place and the PV infrastructure is sourced and ready prior to clearing. - Take every measure to ensure that the bulk of the site clearing and earth moving activities take place in winter when rainfall is lowest (and the grass sward is thinnest) to minimize environmental damage, erosion, sedimentation and contamination. - Ensure soil stockpiles and concrete / building sand are sufficiently safeguarded against rain wash. - Scrape the area where mixing and storage of sand and concrete occurred to clean and re-grass once finished. - Revegetate all denuded areas beyond the buildings as soon as possible. - Introduce coarse, preferably washed, gravel beneath PV arrays.		
Cumulative impact post mitigation:	Medium (-)	High (-)	-N/A
Significance rating of impact after mitigation	Medium (-)	High (-)	-N/A
	Contamination & Pollution Impact – Associated with Construction Activities		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Construction activities will generate waste. In addition, fuel, oil, lubricants and other pollutants may leak from vehicles/ machinery and contaminate the soil. Pollution and soil contamination could also occur from chemical toilets, cement mixing directly on the soil (should cement mixing occur on-site) and stormwater runoff may flow over the site camp area and carry contaminants off-site.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Medium term	Local; Medium term	-N/A
Probability of occurrence:	Probable	Probable	-N/A
Degree to which the impact can be reversed:	Barely reversible	Barely reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	Marginal loss of resources	-N/A
Cumulative impact prior to mitigation:	Low-Medium	Medium	-N/A

BASIC ASSESSMENT REPORT

Significance rating of impact prior to mitigation	Low-Medium	Medium	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be partly mitigated	-N/A
Proposed mitigation:	The appointed Environmental Control Officer (ECO) must undertake at least one site inspection per month, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation (EA) and the approved EMP. General Pollution Management: - No pollution of surface water or ground water resources may occur due to any activity on the site. - No storm water runoff containing waste, or water containing waste emanating from construction activities may be discharged into the environment. - Polluted stormwater must be contained on the site. - Cement batching / mixing may not take place directly on the soil surface, it must be done on an impervious lining that will prevent cement particles from contaminating the soil. General Waste Management: - Dedicated waste bins or skips must be provided on site and kept in a demarcated area on an impermeable surface. - Separate waste bins/skips must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. - Waste must be placed in the appropriate waste bins/skips/ stockpiles. - Hazardous waste bins must be kept on an impermeable bunded surface capable of holding at least 110% of the volume of the bins. - Skips/ bins must be provided with secure lids or covering that will prevent scavenging and windblown waste or dust. - Waste bins/skips must be regularly emptied and must not be allowed to overflow. - Construction workers must be instructed not to litter and to place all waste in the appropriate waste bins provided on site. - The Contractor must ensure that all workers on site are familiar with the correct waste disposal procedures to be followed. - Waste generated on site must be classified and managed in accordance with the National Environmental Management: Waste Act – Waste Classification and Management Regulations (GN No. R. 634 of August 2013). - Disposal of waste to landfill must be undertaken in accordance with the National Environmental Management: Waste Act – National Norms and Standard for the Assessment of Waste for Landfill Disposal (GN No. R. 635 of August 2013). - All waste, hazardous as well as general, which result from the proposed activities must be disposed of appropriately at a licensed Waste Disposal Facility (WDF). Pollution Management – hydrocarbons (oil, fuel etc.) - Vehicles and machinery must be in good working order and must be regularly inspected for leaks.		-N/A

BASIC ASSESSMENT REPORT

	• If a vehicle or machinery is leaking pollutants it must, as soon as possible, be taken to an appropriate location for repair. The ECO has the authority to request that any vehicle or piece of equipment that is contaminating the environment be removed from the site until it has been satisfactorily repaired. • Repairs to vehicles/ machinery may take place on site, within a designated maintenance area at the site camp. Drip trays, tarpaulin or other impermeable layer must be laid down prior to undertaking repairs. • Refuelling of vehicles/ machinery may only take place at the site camp or vehicle maintenance yard. Where refuelling must occur, drip trays should be utilised to catch potential spills/ drips. • Drip trays must be utilised during decanting of hazardous substances and when refilling chemical/ fuel storage tanks. • Drip trays must be placed under generators (if used on site) water pumps and any other machinery on site that utilises fuel/ lubricant, or where there is risk of leakage/spillage. • Where feasible, fuel tanks should be elevated so that leaks are easily detected. • A spill kit to neutralise/treat spills of fuel/ oil/ lubricants must be available on site, and workers must be educated on how to utilise the spill kit. • Soil contaminated by hazardous substances must be excavated and disposed of as hazardous waste. Pollution Management – Ablution facilities • Chemical toilets should be kept at the site camp, on a level surface and secured from blowing over. • Toilets must be located well outside of any storm water drainage lines, and may not be linked to the storm water drainage system in any way. • Chemical toilets must be regularly emptied, by an appropriately experienced company, and the waste disposed of at an appropriate waste water disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets. Pollution Management – Hazardous Substances • Any hazardous substances (materials, fuels, other chemicals etc.) that may be required on site must be stored according to the manufacturers' product-storage requirements, which may include a covered, waterproof bunded housing structure. • Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases. • Hazardous chemicals and fuels should be stored on bunded, impermeable surfaces with sufficient capacity to hold at least 110% of the capacity of the storage tanks. Cement Batching: • Cement batching must take place on an impermeable surface large enough to retain any slurry or cement water run-off. If necessary, plastic/ bideem lined detention ponds (or similar) should be constructed to catch the run-off from batching areas. Once the water content of the cement water/ slurry has evaporated the dried cement should be scraped out of the detention pond and disposed of at an appropriate disposal facility authorised to deal with such waste • Cement batching should take place on already transformed areas within the footprint of the facility. • Unused cement bags must be stored in such a way that they will be protected from rain. Empty cement bags must not be left lying on the ground and must be disposed of in the appropriate waste bin.	
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BASIC ASSESSMENT REPORT

	Washing of excess cement/concrete into the ground is not allowed. All excess concrete/ cement must be removed from site and disposed of at an appropriate location.		
Cumulative impact post mitigation:	Low	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Medium (-)	-N/A
	Dust & Noise Impact – Associated with Construction Activities		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Dust impacts may result due to construction activities and excavation activities on the site. Excavations and associated earth-moving activities may generate noise and vibration which may pose a nuisance to surrounding residents and other land users. Movement of heavy vehicles to & from the site may generate noise, which may affect surrounding residents.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Site Specific; Temporary	Site Specific; Temporary	-N/A
Probability of occurrence:	Highly probable	Highly probable	-N/A
Degree to which the impact can be reversed:	Irreversible	Irreversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	No loss of resource	-N/A
Cumulative impact prior to mitigation:	Low	Low	-N/A
Significance rating of impact prior to mitigation	Medium	Medium	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated	-N/A
Proposed mitigation:	General: - Speed limits must be instated throughout the construction area. - Dust suppression measures (such as water spraying) must be used throughout the construction phase, as required.		-N/A

BASIC ASSESSMENT REPORT

	- Regular maintenance must be done on all construction vehicles. All construction plant must be kept in good condition. - Any sirens and alarms (including reverse alarms on construction vehicles) are not to exceed the allowance of the regulations governing these impacts. - The OSHA is to be complied with throughout the construction phase of the proposed development. Dust Mitigation: - Land clearing and earthmoving activities should not be undertaken during strong winds, where possible. - Cleared areas should be provided with a suitable cover as soon as possible, and not left exposed for extended periods of time. - Stockpiles of topsoil, spoil material and other material that may generate dust must be protected from wind erosion (e.g. covered with netting, tarpaulin or other appropriate measures. Note that topsoil should not be covered with tarpaulin as this may kill the seedbank). - The location of stockpiles must take into account the prevailing wind direction, and should be situated so as to have the least possible dust impact to surrounding residents, road-users and other land-users. - Speed limits must be enforced in all areas, including public roads and private property to limit the levels of dust pollution. - The speed limit should be set at 20-40km/h. - Dust must be suppressed on access roads and the construction site during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that will not result in the generation of excessive run off. - Dust suppression measures such as the wetting down of sand heaps with non-potable water as well as exposed areas around the site must be implemented especially on windy days. - If dust appears to be a continuous problem the option of using shade cloth to cover open areas may be necessary or the erecting of shade netting above the fenced off area may need to be explored. - All vehicles transporting sand need to have tarpaulins covering their loads which will assist in any windblown sand occurring off the trucks. - Work on site must be well-planned and should proceed efficiently so as to minimise the handling of dust generating material. - Dust levels specified in the <i>National Dust Control Regulations</i> (GN 827 of November 2013) may not be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m²/day, measured using reference method ASTM D1739; - A Complaints Register must be available at the site office for inspection by the ECO of dust complaints that may have been received. Noise Mitigation: - A noise complaints register will be opened. - Excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible. - Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. - Vehicles and equipment must be kept in good working condition. - Machinery and equipment should be fitted with mufflers/ exhaust silencers. - No unnecessary disturbances should be allowed to emanate from the construction site. - Workers should be educated on how to control noise-generating activities that have the potential to become disturbances, particularly over an extended period of time. - Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate.	
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BASIC ASSESSMENT REPORT

	- Affected parties must be informed of the excessive noise factors. - The noise management and monitoring measures prescribed in the EMPr must be adhered to.		
Cumulative impact post mitigation:	Low	Low	-N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	-N/A
	Heritage Impact – Loss of heritage resources		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The loss of Heritage Resources, including Archaeological and Paleontological Resources, due to land clearing and excavations on the site.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Site Specific; Permanent	Site Specific; Permanent	-N/A
Probability of occurrence:	Improbable	Probable	-N/A
Degree to which the impact can be reversed:	Irreversible	Irreversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	Marginal loss of resource	-N/A
Cumulative impact prior to mitigation:	Medium	High	-N/A
Significance rating of impact prior to mitigation	Medium	High	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated	-N/A
Proposed mitigation:	General: In the event that any heritage resources (human remains, grave stones, stone tools, artefacts, old coins and pottery, fossil shell middens, rock art and engravings, remains of old built structures etc.) are encountered during construction:		-N/A

BASIC ASSESSMENT REPORT

	- The finding should be protected from further disturbance (ideally left in situ) and the ECO and relevant Heritage Authority should be notified. - The finding should be handled and/or removed from site as per instructions issued by the Heritage Authority or delegated heritage specialist. • In areas of high and very-high palaeontological sensitivity, the excavation depths are not to exceed 1.5 m.		
Cumulative impact post mitigation:	Low	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Medium (-)	-N/A
	Socio-Economic Impact –Creation of Business & Employment Opportunities		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The majority of work during the construction phase is likely to be undertaken by local contractors and builders. The proposed development will therefore represent a positive benefit for the local construction and building sector in the Pixley Ka Seme District Municipality and Emthanjeni Local Municipality (GLM). The majority of the building materials associated with the construction phase will be sourced from locally based suppliers from the EDM and GLM. A significant portion of the annual wage bill will be spent in the local EDM and GLM.		The no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction. A high negative socio-economic impact significance would occur if the proposed development is not constructed.
Nature of impact:	Positive (+)	Positive (+)	Negative
Extent and duration of impact:	Regional; temporary	Regional; temporary	Regional; temporary
Probability of occurrence:	Definite	Definite	Definite
Degree to which the impact can be reversed:	N/A – this is a positive impact, proposed to be enhanced	N/A – this is a positive impact, proposed to be enhanced	N/A
Degree to which the impact may cause irreplaceable loss of resources:	N/A – this is a positive impact, proposed to be enhanced	N/A – this is a positive impact, proposed to be enhanced	No loss of resource
Cumulative impact prior to mitigation:	Medium (positive)	Medium (positive)	Medium (negative)
Significance rating of impact prior to mitigation / enhancement:	Low (positive)	Low (positive)	High (negative)

BASIC ASSESSMENT REPORT

Degree to which the impact can be mitigated:	N/A – this is a positive impact, proposed to be <u>enhanced</u>	N/A – this is a positive impact, proposed to be <u>enhanced</u>	The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Proposed <u>enhancement</u> /mitigation:	In order to enhance local employment and business opportunities associated with the construction phase of the project the following measures are proposed to be implemented: - It is proposed that the developer inform the local authorities, local community leaders, organizations and councillors of the project and the potential job opportunities for local builders and contractors; - The developer will be encouraged to establish a database of local construction companies in the area, specifically SMME's owned and run by HDI's, prior to the commencement of the tender process. These companies would be notified of the tender process and invited to bid for project related work; - Where possible, the developer in consultation with the appointed contractor/s will look to employ a percentage of the labour required for the construction phase from local area in order to maximize opportunities for members from the local HD communities. Employment - Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. - Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area. - Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. - Before the construction phase commences the proponent should meet with representatives from the EM to establish the existence of a skills database for the area. If such a database exists, it should be made available to the contractors appointed for the construction phase. - The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project. - Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase. - The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. Business - The proponent should liaise with the EM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work. - Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.		The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Cumulative impact post mitigation:	High	High	Medium (negative)

BASIC ASSESSMENT REPORT

Significance rating of impact after <u>enhancement</u>	Medium (+)	Medium (+)	High (-)
	Socio-Economic Impact – Impact of construction workers on local communities		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The presence and behaviour of construction workers can impact negatively on local communities. Members from the local communities in the area, specifically De Aar, would be at potential risk depending on where non-local construction workers are accommodated during the construction phase.		No impact
Nature of impact:	Negative (-)	Negative (-)	N/A
Extent and duration of impact:	Local; temporary	Local; temporary	N/A
Probability of occurrence:	Probable	Probable	N/A
Degree to which the impact can be reversed:	Reversible	Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal Loss of Resource	Marginal Loss of Resource	N/A
Cumulative impact prior to mitigation:	Low (-)	Low (-)	N/A
Significance rating of impact prior to mitigation / <u>enhancement</u> :	Low (-)	Low (-)	N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	N/A
Proposed mitigation:	In order to enhance local employment and business opportunities associated with the construction phase of the project the following measures are proposed to be implemented: - The developer will inform the local authorities, local community leaders, organizations and councillors of the project and the potential job opportunities for local builders and contractors; - The developer will establish a database of local construction companies in the area, specifically SMME's owned and run by HDI's, prior to the commencement of the tender process. These companies will be notified of the tender process and invited to bid for project related work;		N/A

BASIC ASSESSMENT REPORT

	- The developer in consultation with the appointed contractor/s will look to employ a percentage of the labour required for the construction phase from local area in order to maximize opportunities for members from the local HD communities. - Where possible, the project team will integrate any outsourced employment opportunities with the locals. Mitigation: - Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. - The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences. - All farm gates must be closed after passing through. - Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. - The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the CoC to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below). - The proponent should implement a Grievance Mechanism that provides local farmers with an effective and efficient mechanism to address issues related to report issues related to damage to farm infrastructure, stock theft and poaching etc. - The Environmental Management Plan Report (EMPr) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested. - Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. - Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the CoC. All dismissals must be in accordance with South African labour legislation. - It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		
Cumulative impact post mitigation:	Low (-)	Low (-)	N/A
Significance rating of impact after enhancement	Low (-)	Low (-)	N/A

BASIC ASSESSMENT REPORT

	Socio-Economic Impact – Influx of job seekers		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The construction phase of the proposed development can cause an influx of jobseekers to the area, this has the potential to impact negatively on local communities. However, the potential for the influx of jobseekers is also influenced by the location of the project. Projects located in relatively remote, rural areas are less likely to attract jobseekers.		No impact
Nature of impact:	Negative	Negative	N/A
Extent and duration of impact:	Local; temporary	Local; temporary	N/A
Probability of occurrence:	Probable	Probable	N/A
Degree to which the impact can be reversed:	Reversible	Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal Loss of Resource	Marginal Loss of Resource	N/A
Cumulative impact prior to mitigation:	Low (-)	Low (-)	N/A
Significance rating of impact prior to mitigation / enhancement:	Low (-)	Low (-)	N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	N/A
Proposed mitigation:	As this is a common occurrence in South Africa, and is subsequently difficult to discourage, the developer will strive to enhance local employment and business opportunities associated with the construction phase of the project. The following will be done to mitigate the impact: - The developer will inform the local authorities, local community leaders, organizations and councillors of the project and the potential job opportunities for local builders and contractors; - The developer will establish a database of local construction companies in the area, specifically SMME's owned and run by HDI's, prior to the commencement of the tender process. These companies will be notified of the tender process and invited to bid for project related work;		N/A

BASIC ASSESSMENT REPORT

	- The developer in consultation with the appointed contractor/s will look to employ a percentage of the labour required for the construction phase from local area in order to maximize opportunities for members from the local HD communities. Specialist recommendations: - Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. - Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. - The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents. - Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories. - The proponent should consider the option of establishing a Monitoring Committee (MC) for the construction phase that representatives from local landowners, farming associations, and the local municipality. This MC should be established prior to commencement of the construction phase and form part of the SEP. - The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP. - The proponent and the contractor should implement an HIV/AIDS and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP. - The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site. - The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end. - No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		
Cumulative impact post mitigation:	Low (-)	Low (-)	N/A
Significance rating of impact after <u>enhancement</u>	Low (-)	Low (-)	No impact
	Socio-Economic Impact – Risk to safety, livestock and farm infrastructure		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The presence on and movement of construction workers on and off the site poses a potential safety threat to local famers and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged, or stock theft linked either directly or indirectly to the presence of construction workers on the site. The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction workers on and off the site workers during the construction phase.		No impact

BASIC ASSESSMENT REPORT

Nature of impact:	Negative	Negative	N/A
Extent and duration of impact:	Local; temporary	Local; temporary	N/A
Probability of occurrence:	Probable	Probable	N/A
Degree to which the impact can be reversed:	Reversible	Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal Loss of Resource	Marginal Loss of Resource	N/A
Cumulative impact prior to mitigation:	Medium (-)	Medium (-)	N/A
Significance rating of impact prior to mitigation / enhancement:	Medium (-)	Medium (-)	N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	N/A
Proposed mitigation:	- Regular maintenance to the property fences, tracks and access roads must be undertaken. - Security measures around the proposed development is to ensure that no wanderers are allowed in the area, specifically within proximity to the properties in to be impacted upon. Mitigation: - Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. - The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences. - All farm gates must be closed after passing through. - Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. - The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the CoC to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below). - The proponent should implement a Grievance Mechanism that provides local farmers with an effective and efficient mechanism to address issues related to report issues related to damage to farm infrastructure, stock theft and poaching etc. - The Environmental Management Plan Report (EMPr) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.		N/A

BASIC ASSESSMENT REPORT

	- Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. - Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the CoC. All dismissals must be in accordance with South African labour legislation. - It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		
Cumulative impact post mitigation:	Low (-)	Low (-)	N/A
Significance rating of impact after <u>enhancement</u>	Low (-)	Low (-)	N/A
	Socio-Economic Impact – Increased risk of grass fires		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could, in turn pose, a threat to livestock, crops, wildlife and farm infrastructure. The potential risk of grass fires will be higher during the dry, windy winter months from May to October. The impacts will be largely local and can be effectively mitigated.		No impact
Nature of impact:	Negative	Negative	N/A
Extent and duration of impact:	Local; temporary	Local; temporary	N/A
Probability of occurrence:	Improbable	Improbable	N/A
Degree to which the impact can be reversed:	Reversible	Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal Loss of Resource	Marginal Loss of Resource	N/A
Cumulative impact prior to mitigation:	Medium (-)	Medium (-)	N/A
Significance rating of impact prior to mitigation:	Medium (-)	Medium (-)	N/A

BASIC ASSESSMENT REPORT

Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	N/A
Proposed mitigation:	- Smoking must not be permitted within the construction area of the proposed development. - If deemed necessary, a designated smoking area must be assigned. This smoking area must be located within the construction site camp and must be located away from construction plant and refuelling areas. - Fire extinguishers must be kept within the site camp and must be maintained as per specifications. Specialist recommendation: - The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase proven to be associated with the project will be compensated for. The agreement should be signed before the construction phase commences. - Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas. - Smoking on site should be confined to designated areas. - Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months. - Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle. - Contractor should provide fire-fighting training to selected construction staff. - No construction staff, except for security staff, to be accommodated on site overnight. - As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.		N/A
Cumulative impact post mitigation:	Low (-)	Low (-)	N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	N/A

BASIC ASSESSMENT REPORT

	•		
	Traffic & Safety Impact – Associated with Construction Vehicles		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The proposal will entail the delivery of a significant amount of materials and equipment to the site during the construction phase of the development. Numerous truck trips will be required every day that could cause a temporary disturbance to traffic in the area. Potential traffic impacts may occur due to increased truck and construction vehicle traffic expected during the construction phase. Construction vehicles may impact on the existing road conditions (road capacity and congestion). Vehicles may impact on road safety conditions due to an increase in construction phase vehicles entering and exiting the site and they may impact on the condition of the existing road network.		No Impact.
Nature of impact:	Negative	Negative	-No Impact
Extent and duration of impact:	Local; Temporary	Local; Temporary	-N/A
Probability of occurrence:	Highly Probable	Highly Probable	-N/A
Degree to which the impact can be reversed:	Completely reversible	Completely reversible	-N/A

BASIC ASSESSMENT REPORT

Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	No loss of resource	-N/A
Cumulative impact prior to mitigation:	Medium	Medium	-N/A
Significance rating of impact prior to mitigation	Medium	Medium	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated	-N/A
Proposed mitigation:	- All construction vehicles must adhere to traffic laws when travelling to and from the site. - All drivers and machinery operators must be sensitised to the fact that they are working in an area with a potentially high volume of foot and vehicle traffic, and must exercise due caution when entering/ exiting the site. - Appropriate signage should be erected to warn other road users about the presence of construction vehicles. - Speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. - Construction vehicles must adhere to the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles. - The Contractor must ensure that any large or abnormal loads (including hazardous materials) that must be transported to/ from the site are routed appropriately, and that appropriate safety precautions are taken during transport to prevent road accidents. - Where possible, construction traffic that may obstruct traffic flow on the surrounding roads should be scheduled for outside of peak traffic times. - Where possible, heavy machinery should be parked within a secure demarcated area within the footprint of the site instead of moving the machinery to and from the site each day.		-N/A
Cumulative impact post mitigation:	Low	Low	-N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	-N/A
	Visual Impact – Associated with Construction Activities		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The construction phase is associated with temporary disturbance as a result of construction (trench excavations, vehicles, machinery, fencing & signage) that may have a negative visual impact to the area. The visual impacts will be potentially occur from the pre-identified view-points, which included the N10-Highway, the Transnet Railway line and the three homesteads located within proximity to the proposed development.		No Impact.

BASIC ASSESSMENT REPORT

Nature of impact:	Negative	Negative	-No Impact
Extent and duration of impact:	Site Specific. Temporary	Site Specific. Temporary	-N/A
Probability of occurrence:	Definite	Definite	-N/A
Degree to which the impact can be reversed:	Partly reversible	Partly reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	No loss of resource	-N/A
Cumulative impact prior to mitigation:	Medium	Medium	-N/A
Significance rating of impact prior to mitigation	Medium – High	Medium – High	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated	-N/A
Proposed mitigation:	- Consult with the ECO when determining the appropriate location for the site camp. - The site camp must be kept neat and tidy and free of litter at all times (Clean-house policy to apply). - Waste must be managed according to the EMPr and the mitigation measures listed above in terms of waste management. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy. - The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. - Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimizing the disturbance time. - The site camp may require visual screening via shade cloth or other suitable material. - Special attention should be given to the screening of highly reflective material. - Use of lighting (if required) should take into account surrounding residents and land users and should present little or no nuisance. Downward facing, spill-off type lighting is recommended. - Construction vehicles must enter and leave the site during working hours. Mitigation: - Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. - Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. - The movement of construction vehicles on the site should be confined to agreed access road/s.		-N/A

BASIC ASSESSMENT REPORT

	- Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads. - The movement of heavy vehicles associated with the construction phase should be timed to avoid times days of the week, such as weekends, when the volume of traffic travelling along the access roads may be higher. - Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads. - Dust suppression measures should be implemented, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. - All vehicles must be road worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.		
Cumulative impact post mitigation:	Low	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Medium (-)	-N/A

BASIC ASSESSMENT REPORT

Operation Phase Impact Tables

	Botanical Impact – Continued invasion by exotic and alien species		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not only become invasive but also prevent natural flora from becoming established. Continued encroachment and displacement of the natural vegetation community due to alien invasive plant species, erosion and edge effects.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Site Specific; Long term	Site Specific; Long term	-N/A
Probability of occurrence:	Definite	Definite	-N/A
Degree to which the impact can be reversed:	Reversible	Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resource	Significant loss of resource	-N/A
Cumulative impact prior to mitigation:	Medium-High	Medium-High	-N/A
Significance rating of impact prior to mitigation	Medium-High	Medium-High	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	- All 'Very High' SEI habitats and Water resource and associated buffer zones are to be avoided. - It should be made an offence for any staff to /take bring any plant species into/out of any portion of the PAOI. No plant species whether indigenous or exotic should be brought into/taken from the PAOI, to prevent the spread of exotic or invasive species or the illegal collection of plants. - Implementation of an alien vegetation management plan. - Regular monitoring for IAP encroachment during the operation phase to ensure that no alien invasion problems have developed as result of the disturbance. This should be every 3 months during the first two years of the operational phase of the gridline and substation development, and every six months for the substation thereafter. - All IAP species must be removed/controlled using the appropriate techniques as indicated in the IAP management plan		-N/A

BASIC ASSESSMENT REPORT

	• Compile and implement a Solid Waste Management Plan. Waste management must be a priority and all waste must be collected, stored and disposed of adequately. It is recommended that all waste be removed from site on a weekly basis as a minimum. • A Rehabilitation Plan must be written for the development area and ensured that it be adhered to. • Access roads should have run-off control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk. • All erosion observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.		
Cumulative impact post mitigation:	Low	Low	-N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	-N/A
	Botanical Impact – Erosion from surface run-off due to increase in impervious and panel surfaces		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not only become invasive but also prevent natural flora from becoming established. Continued encroachment and displacement of the natural vegetation community due to alien invasive plant species, erosion and edge effects		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Site Specific; Long term	Site Specific; Long term	-N/A
Probability of occurrence:	Highly Probable	Highly Probable	-N/A
Degree to which the impact can be reversed:	Reversible	Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resource	Significant loss of resource	-N/A
Cumulative impact prior to mitigation:	Medium	Medium	-N/A
Significance rating of impact prior to mitigation	Medium	Medium	-N/A

BASIC ASSESSMENT REPORT

Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	- Access roads should have run-off control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk. - All erosion observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques. - There must be follow-up rehabilitation and re-vegetation of any remaining denuded areas with local indigenous perennial shrubs and succulents from the area. - Speed limits must be put in place to reduce erosion. - Reducing the dust generated by the listed activities above, especially the earthmoving machinery, through wetting the soil surface; putting up signs to enforce speed limit; and speed bumps built to force slow speeds; - Signs must be put up to enforce this. - A stormwater management plan must be compiled and implemented.		-N/A
Cumulative impact post mitigation:	Low	Low	-N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	-N/A
DESCRIPTION OF IMPACT:	Faunal Impact - Continued displacement and fragmentation of the faunal community, particularly the disruption of natural faunal movement corridors		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	A number of faunal Species of Conservation Concern, have been identified within the study area. A majority of the vegetation on site could be considered as Ecological Corridors for migrating fauna. These areas are also considered important foraging and nesting habitats.		No Impact.
Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Long Term	Local; Long Term	-N/A
Probability of occurrence:	Probable	Definite	-N/A
Degree to which the impact can be reversed:	Barely Reversible	Barely Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	Significant loss of resource	-N/A

BASIC ASSESSMENT REPORT

Cumulative impact prior to mitigation:	Medium	High	-N/A
Significance rating of impact prior to mitigation	Medium	High	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	- For the purpose of the substation, outside lighting should be designed and limited to minimize impacts on fauna. Lighting fixtures should be fitted with baffles, hoods or louvers and directed downward. Outside lighting should be directed away from highly sensitive areas such as the wetland. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (yellow) lights should be used wherever possible; - For the purpose of the substation, where feasible, motion detection lighting must be used to minimise the unnecessary illumination of areas - Minimise traffic and the use of vehicle lights of the road during the night. - Noise must be kept to a minimum from dusk to dawn to minimize all possible disturbances to amphibian species and nocturnal mammals - All personnel and contractors must undergo Environmental Awareness Training and must include awareness about not harming or collecting species. - Any fauna threatened by the maintenance and operational activities should be removed to a safe location by an appropriate individual. - All vehicles accessing the site should adhere to a max 40 km/h max to avoid collisions. Appropriate signs must be erected. - If any excavations are dug these must not be left open for more than a few hours without ramps for trapped fauna to leave and must be filled at night.		-N/A
Cumulative impact post mitigation:	Low	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	-N/A
	Freshwater Impact - Proliferation of alien and invasive species		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	Infrastructure create migration barriers to biota, resulting in reach to zone scale instream biological impacts. Localised scour around structures or flow impediments may result and alter the natural bank and channel, channel bank stability and floodplain processes. Road and pipeline crossings that concentrate diffuse flows and can also inadvertently trigger gully formation. The stormwater infrastructure of the proposed development has the potential to increase and concentrate flows into the watercourses. This may lead to erosion in the systems that compromises remaining habitat. The project will promote the establishment of disturbance-tolerant biota, including colonization by invasive alien species, weeds and pioneer plants within the remaining habitat. Although this impact is initiated during the construction phase it is likely to persist into the operational phase.		No Impact.

BASIC ASSESSMENT REPORT

Nature of impact:	Negative	Negative	No Impact
Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Highly Likely	Highly Likely	-N/A
Degree to which the impact can be reversed:	Barely Reversible	Barely Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	No loss of resource	-N/A
Cumulative impact prior to mitigation:	Medium	Medium	-N/A
Significance rating of impact prior to mitigation	Medium	Medium	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	-N/A
Proposed mitigation:	- Continue to remove all alien and invasive plant species as they arise (i.e. weedy annuals and other alien forbs) for the first year post construction. - Attempt to plant only locally indigenous plant species within the at the substation..		-N/A
Cumulative impact post mitigation:	Low	Low	-N/A
Significance rating of impact after mitigation	Low (-)	Low (-)	-N/A
	Freshwater Resources Impact – Nutrient enrichment of watercourses		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The greater the extent of hardened surfaces (e.g. roofs, parking lots etc.), the lower the infiltration of stormwater and therefore the greater the surface runoff and increase in flood peaks (specifically regarding the Substation). A change in water distribution generally results in altered wetness regimes, which in turn affect the biophysical processes and the vegetation patterns.		No Impact.
Nature of impact:	Negative	Negative	No Impact

BASIC ASSESSMENT REPORT

Extent and duration of impact:	Local; Permanent	Local; Permanent	-N/A
Probability of occurrence:	Highly Likely	Highly Likely	-N/A
Degree to which the impact can be reversed:	Reversible	Reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resource	Significant loss of resource	-N/A
Cumulative impact prior to mitigation:	High	High	-N/A
Significance rating of impact prior to mitigation	High	High	-N/A
Degree to which the impact can be mitigated:	Can be mitigated	Can be partly mitigated	-N/A
Proposed mitigation:	Release only clean water into the environment.		-N/A
Cumulative impact post mitigation:	Low	Medium	-N/A
Significance rating of impact after mitigation	Low (-)	Medium (-)	-N/A
	Socio-Economic Impact – Improve energy security and support renewable sector		
	Alternative 1	Alternative 2	Alternative 3: NO – GO
DESCRIPTION OF IMPACT:	The primary goal of the proposed project is to improve energy security in South Africa by generating additional energy. The proposed development also reduces the carbon footprint associated with energy generation. The project should therefore be viewed within the context of the South Africa's current reliance on coal powered energy to meet the majority of its energy needs, and secondly, within the context of the success of the REIPPPP.		The No-Development option would represent a lost opportunity in terms of the benefits associated with the provision of additional energy security.
Nature of impact:	Positive	Positive	Negative
Extent and duration of impact:	Local, Regional and National; permanent	Local, Regional and National; permanent	Local, Regional and National; permanent
Probability of occurrence:	Definite	Definite	Definite

BASIC ASSESSMENT REPORT

Degree to which the impact can be reversed:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	Irreversible
Degree to which the impact may cause irreplaceable loss of resources:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	No loss of resource
Cumulative impact prior to mitigation:	High (+)	High (+)	Medium (-)
Significance rating of impact prior to mitigation / enhancement :	High (+)	High (+)	High (-)
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Proposed enhancement / mitigation:	The proposed development represents an enhancement measure on its own.		The NO-GO Alternative assumes no mitigation – status quo remains
Cumulative impact post mitigation:	Medium (+)	Medium (+)	Medium (negative)
Significance rating of impact after enhancement	Medium (+)	Medium (+)	Medium (-)

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (preferred alternative)

The proposed project is located within the Strategic Transmission Corridor as promulgated in 2018 (GNR 113 of 2018) in terms of the NEMA (Act 107 of 1998). Through the assessment of the various alternatives, including the consideration of the advantages and disadvantages of each alternative, and the impact assessment undertaken, it is concluded that the proposed preferred site layout plan as described in Section 4, remains the preferred development layout for the proposed development. Please see the figure below for a representation of the proposed preferred development layout plan overlain by the various site sensitivities. This site development plan takes into account all site sensitivities as presented by the following independent specialists:

- Terrestrial Biodiversity, animal and plants specialist;
- Aquatic Specialist;
- Avifaunal Specialist;
- Visual Specialist; and the
- Heritage and Palaeontological specialists.

As part of the impact assessments and compliance statements undertaken, multiple no-go areas were identified by the various specialists within the cluster area. For the purpose of this proposed development, the following Sensitive and No-Go areas were identified within the proposed development footprints:

- Avifaunal important habitats (including hills and koppies) (small scale localised infrastructure allowable, if approved. As well as the No-Go Areas associated with the identified Verreux Eagle nests (1 km buffer and a 2 km seasonality buffer).
- Highly sensitive aquatic areas and 50 m buffer areas (small scale localised infrastructure allowable, if approved). Due to the limited footprints of the proposed pylon infrastructure, these areas are not considered No-Go, however the areas must be treated as sensitive and all mitigation measures must be adhered to.
- Heritage Sensitive features – The heritage consultant identified numerous sensitive areas within the gridline corridor, these features have been avoided for both Alternative A and Alternative B.
- Various sensitivities identified by the Visual impact assessment specialist, including the Railway line, ridges and koppies, watercourses, the N10-Highway, and the 500 m farmstead buffer).

The conclusions provided by the various specialists indicate the following:

- Avifaunal Specialist: The specialist concluded that Corridor Alternative B would be the preferred alternative for the proposed project due to the existing impacts exercised along this alternative.
- Terrestrial Specialist: The specialist concluded that Corridor Alternative B would be the preferred alternative for the proposed project due to the existing impacts exercised along this alternative.
- Aquatic Specialist: Both Alternatives were considered acceptable by the specialist.
- Visual Specialist: The visual impact assessment considers both the preferred corridor and the alternative corridor, noting that the visual impacts for each are very similar.
- Heritage and Palaeontology Specialists: All sensitive features within proximity to the proposed infrastructure alignments have been avoided. Either alternative would be acceptable should the buffers be adhered to.

Cumulatively speaking, both alternatives follow best practice principles, whereby which sensitive features are avoided (with mitigation and limitations). However, based on the final conclusions of the specialists, Alternative B would be considered the best practicable environmentally sound alternative. That being said, it should be noted that Alternative A follows a similar corridor associated with those approved for the Pixley Park Solar PV cluster. Therefore, recommendations have been made accordingly.

No-go alternative (compulsory)

The “No Go” alternative is the option of not developing the proposed development and associated infrastructure. The no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction and phase as well as a loss of benefits associated with the load-sharing possibilities in terms of electricity transmission from an approved renewable energy facility into the National Electricity Grid. Furthermore, the job opportunities associated with the proposed development will also not be seen.

Therefore, the implementation of the “no-go” alternative will have long term socio-economic activities.

The “no-go” alternative will result in the visual environment staying the same with the natural character of the area contributing to the “sense of place”.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES

NO

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

All mitigation measures described in this EIAR and the EMPr (attached as Appendix I of this report) must be implemented during the construction, and where applicable, post-construction phase.

- An Independent Environmental Control Officer (ECO) must be appointed to oversee the implementation of the EMPr and all recommendations brought forth by the various specialists.
 - Due to the sensitivity of the proposed development site, the ECO is to do weekly site visits; and
 - Monthly ECO Reports must be compiled and submitted to the Compliance Unit of the DFFE.
- All areas beyond the approved working areas must be considered no-go areas unless the necessary approvals have been obtained to access those areas.
- Alien invasive species management must occur concurrently with the construction activities and in line with a management programme (as attached to the EMPr).

From a cumulative environmental perspective, it is recommended that Alternative B be approved as the preferred alternative. To this effect, the following condition is recommended as part of the EA, if granted:

- Both alternatives proposed by the developer were assessed and deemed acceptable. However, in the event where the future development of the Pixley Solar PV Park is not developed, Alternative A must be considered the preferred alternative to be developed for the proposed project. This is done so, so as to protect the environmental integrity of the receiving environment.

No specific recommendations were made by the various specialists for inclusion to the Environmental Authorisation. The following mitigation measures provided by the specialists are, however, highlighted:

- Terrestrial Biodiversity Specialist:
 - Compilation and implementation an alien vegetation management plan from the onset of construction. The plan must identify areas for action (if any) and prescribe the necessary removal methods and frequencies to be applied. This plan must be also prescribe a monitoring plan and be updated as/when new data is collated.
- Aquatic Biodiversity Specialist:
 - An adaptive rehabilitation plan needs to be implemented from the onset of the project. The key focus should be placed on stormwater and erosion prevention strategies for the development area. The plan should be adhered to for all stages of the project life (construction and operational).
- Avifaunal Specialist:
 - All mitigation measures provided by the Avifaunal Specialist must be adhered to during all phases of the proposed development.
 - A fire management plan needs to be complied to restrict the impact of fire.
 - All areas to be developed must be walked through prior to any activity to ensure no SCC nests or avifauna species are found in the area. Should any Species of Conservation Concern be found and not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.
 - All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.
 - An ornithological management plan must be put in place for the construction and post construction monitoring.
- Palaeontologist:
 - All excavations that will expose sedimentary strata may impact significant fossils. The appointment of a palaeontologist to conduct a comprehensive Phase 2 PIA assessment (fossil collection during

BASIC ASSESSMENT REPORT

construction) will be the minimum requirement for monitoring of excavations into the Adelaide Subgroup strata.
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Is an EMPr attached?

YES

NO

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Madeleine Knoetze

NAME OF EAP

SIGNATURE OF EAP

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information