

# Dwarsrug Access Road

Northern Cape Province

Basic Assessment Report

April 2019

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## the denc

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File Reference Number:	<input type="text"/>
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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.**

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**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.

## PROJECT DETAILS

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**Title** : Basic Assessment Report: Dwarsug Access Road, Northern Cape Province.

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**When used as a reference this report should be cited as:** Savannah Environmental (2019) Environmental Basic Assessment Report for the Dwarsug Access Road, Northern Cape Province

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**Appendix B: Site Photographs**

**Appendix C: Facility Illustration(s)**

**Appendix D: Specialist(s)**

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- » *Appendix D2: Freshwater Report*
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**Appendix I: Specialist Declarations**

**Appendix J: Additional Information**



## SECTION A: ACTIVITY INFORMATION

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

YES X

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

##### Background

South African Mainstream Renewable Power Developments (Pty) Ltd is proposing the construction of an Access Road for the Dwarsug Wind Energy Facility (WEF) near Loeriesfontein, Northern Cape Province.

Two alternative access roads which will be assessed are proposed, including:

- » Alternative 1 - Gravel road from Granaatboskolk to the project site (approx. 11km); (PREFERRED ALTERNATIVE)
- » Alternative 2 - Gravel road from Granaatboskolk to the project site (approx. 8km).

##### Location

The proposed access road is approximately 60km north of Loeriesfontein, in the Northern Cape Province, and falls within the jurisdiction of the Hantam Local Municipality and within the greater Namakwa District Municipality. The potentially affected properties will include the following:

- » Remainder of the Farm Brakpan No. 212;
- » Stinkputs No. 229;
- » Portion 1 of the Farm Aan de Karee Doorn Pan No. 213;
- » Remainder of the Farm Sous No. 226; and
- » Narosies No. 228.

At present, untarred roads are planned for a maximum of 12m width, which will be rehabilitated to approximately 6 to 8m wide road following construction (and the agricultural use and zoning thereof restored following decommissioning). The planned power purchasing agreement and project life cycle (unless extended at a later point in time), will most likely be 20 years, for the entirety of which the proposed access road will be actively used (i.e. operational lifetime of approximately 20 years).

Laydown areas required for the project will be identical to those for the already approved Dwarsug WEF, and as such no additional laydown, storage or site camp facilities will be employed or required for this component of the project – i.e. the only novel infrastructure proposed is the actual road itself. Alternative 1, the preferred alternative, is approximately 11km long, while alternative 2 is approximately 8km long.

The construction period for the proposed access road is approximately 3 months, which will need to be

wholly completed to enable access provision for the construction of the associated Dwarsrug WEF. The WEF has a proposed, approved, 132kV steel monopole evacuation power line that would be connecting the onsite substation at the Dwarsrug WEF to the Helios Substation, for connection and further distribution into the national grid. The preferred road alternative occurs along that route, which coincides partially with the existing Eskom 400kV lines to and from Helios Substation. The proposed access road will thus be adjacent this Eskom service road for a moderate portion of the proposed road length. While negotiations are ongoing regarding the potential thereof, the applicant aim to combine this proposed road (for which this Basic Assessment process is being submitted), and the existing Eskom distribution line service road. This road will then service both the Eskom power line and the Dwarsrug WEF traffic for the portion where they align. Should combining the road with the Eskom service road not be possible, the road will be constructed immediately adjacent the existing Eskom service road, with sufficient space provided to avoid the Eskom road and power line servitude.

The proposed access road will service the construction phase traffic for the associated Dwarsrug WEF. Thereafter it will be reduced to an approximately 6 to 8m wide road which will be utilised during the operation phase. Topsoil material will be removed and stockpiled in an appropriate manner adjacent the road, where it is sufficiently far away from the road to not prove an obstacle during operation of the road, or hampers the road safety. This topsoil will, as far as possible, be utilised for the rehabilitation of the road at both at the end of construction and decommissioning. Solid wastes produced during the construction phase of the road will be either utilised in the construction phase of the associated Dwarsrug WEF or collected on site and disposed of at a licensed disposal facility. Should the amount of available construction fill material be insufficient, commercially sourced material may be utilised to make up the shortfall, or a separate, approved borrow pit will be utilised (to be authorised under a separate process).

The precise method statements for the development of the road will be determined prior to construction following the completion of engineering assessments and design, and contractor appointment, however the following general activities may be involved:

- i. Staking;
- ii. Clearing and grubbing;
- iii. Subgrade development;
- iv. Fill and cut operations (if necessary);
- v. Compaction;
- vi. Levelling and grading; and
- vii. Signage or markings (if necessary).

The following machinery may likely be employed during construction:

- i. Bulldozers;
- ii. Front end Loader;
- iii. Hydraulic excavators;
- iv. Dump trucks or scrapers; and
- v. Farm tractors.

» The road will be suitably maintained, in line with municipal/provincial requirements or approvals, during both the construction and operation phase. Any waste material from the road construction

will firstly be reused, where possible, in the larger construction of the Dwarsrug WEF, or alternatively disposed to the nearest licensed waste disposal site.

### Existing Services

At present the only servicing within the region is Telkom landline communications, electricity via the Helios substation (individual farms are connected), the Granaatboskolk dirt access road, and mobile telecommunications where reception is available. No formal sewerage reticulation exists in the area and each of the farmers in the area service their homes via septic tanks or other localised solutions. Small, single lane dirt tracks exist where farmers use them for access to various regions of their farm, but the Granaatboskolk dirt road is the only formal access to the project site. Currently there is no formal potable water supply to the project site, with farm dams and reservoirs being the only water sources available. The proponent intends on sourcing water from farm dams (in agreement with the landowners) for the construction water needs, and will send through water trucks for potable water supply to the construction staff as required. Furthermore, no refuse collection services are available. The proponent intends on removing construction and general waste from the construction crew via licenced subcontractors on a regular basis.

### Specialist Assessments:

In order to adequately inform this process, the following specialist studies were conducted:

Study	Specialist
<b>Ecological Impact Assessment</b>	Mr Simon Todd (3Foxes Biodiversity)
<b>Heritage Impact Assessment</b>	Mr Ilan Smeyatsky (PGS Heritage)
<b>Aquatic Impact Assessment</b>	Mr Shaun Taylor (Savannah Environmental)

The findings of these reports have been included into this report where required, and into the associated EMPr. Please find copies of the reports in the Appendices to this report.

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

Detailed description of listed activities associated with the project		
Relevant notice	Listed activity as described in GN R.327 and 324.	Relevance of regulation to the project activity
GN R. 327 Activity 19	(i) 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- (i) a watercourse.	The access road will require the excavation and removal or moving of soil and will traverse drainage lines and watercourses. The access road will follow the current Eskom power lines for a portion of the route, in order to minimise environmental impacts.
GN R.327	The development of a road –	The proposed access road for the

Activity 24	(ii) With a reserve wider than 13, 5 metres, or where no reserve exists where the road is wider than 8 metres.	Dwarsrug Wind Farm which will be a maximum of 12m width, and which will be rehabilitated to approximately a 6 to 8m wide road following construction.
GN R. 327 Activity 27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.	The construction of the proposed access road will require the clearance of less than 20 hectares of vegetation.
GN R. 327 Activity 12	The development of- (ii) infrastructure or structures with a physical footprint of 100 square meters or more; (a) within a watercourse	The construction of the proposed access road will the development of infrastructure with a physical footprint of more than 100 square meters, within a watercourse.
GN R.324 Activity 4 (g)	The development of a road wider than 4 metres with a reserve less than 13.5 metres (ii) outside urban areas (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act as adopted by the competent authority	The proposed access road for the Dwarsrug Wind Farm will be wider than 4 with a reserve less than 13.5 metres and falls within a sensitive area.
GN R.324 Activity 12 (g)	(iv) The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan: (ii) On land, where, at the time of coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.	The construction of this road will require the clearance of 300 square metres or more of indigenous vegetation.

## 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—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) 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**

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 1 is a 11km gravel access road from the existing Granaatboskolk road to the Dwarsug WEF (which has already received Environmental Authorisation).	30°29'59.15"S	19°37'55.57"E
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2 is an 8km gravel access road, located south of Alternative 1, from the existing Granaatboskolk road to the Dwarsug WEF.	30°29'59.61 S	19°37'51.74"E
<b>Alternative 3</b>		

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

**Latitude (S):**

**Longitude (E):**

30°29'59.15"S	19°37'55.57"E
30°28'1.13"S	19°36'10.08"E
30°30'21.98"S	19°33'25.21"E

Alternative S2 (if any)

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

30°29'59.61"S	19°37'51.74"E
30°30'39.70"S	19°36'2.15"E
30°30'49.88"S	19°33'22.18"E

Alternative S3 (if any)

- 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**

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
The preferred alternative (Alternative 1) is a gravel road, approximately 11km in length from the existing Granaatboskolk road to the Dwarsug WEF. The road will be 12m in width, which will be rehabilitated to approximately 6 to 8m wide road following construction. This route coincides partially with the existing Eskom 400kV lines to and from Helios Substation, and is thus the preferred layout alternative from the feasibility perspective. The proposed access road will thus be adjacent to the Eskom service road for approximately 4km. The access road concludes at the Dwarsug WEF on site substation.	30°29'59.15"S (start)	19°37'55.57"E
	30°29'19.69"S	19°37'44.15"E
	30°28'1.13"S	19°36'10.08"E
	30°28'35.16"S	19°35'14.46"E
	30°29'55.47"S	19°34'29.86"E
	30°30'21.98"S	19°33'25.21"E
	(end)	
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2 is a gravel road, approximately 8km in length from the existing from the existing Granaatboskolk road to the Dwarsug WEF. The road will be 12m in width, which will be rehabilitated to approximately 6 to 8m wide road following construction. The access road concludes at the Dwarsug WEF on site substation. The access road concludes at the Dwarsug WEF on site substation.	30°29'59.61"S (start)	19°37'51.74"E
	30°30'1.59"S	19°36'26.50"E
	30°30'9.10"S	19°36'12.27"E
	30°30'17.60"S	19°36'5.26"E
	30°30'39.70"S	19°36'2.15"E
	30°30'46.54"S	19°35'58.97"E
	30°30'50.48"S	19°35'52.15"E
	30°30'52.77"S	19°35'45.46"E
30°30'49.88"S (end)	19°33'22.18"E	
<b>Alternative 3</b>		

**c) Technology alternatives**

<b>Alternative 1 (preferred alternative)</b>
The preferred (alternative 1) technology option is the construction of a gravel access road. The construction of this access road will require mainly clearing of vegetation, compaction and levelling

and grading. This alternative is preferred from an environmental perspective since no tar or hazardous chemicals will be required. This is also the preferred alternative from a cost perspective since the construction of a gravel access road would be less expensive than a tarred access road.

**Alternative 2**

The second technology alternative for the proposed access road would involve a tarred road. This alternative is not preferred from an environmental perspective as it would require hydrocarbons (oils, tar, bitumen, etc.), involve a construction methodology that induces more environmental impact (layer works & material laydowns, which will require more and this would be associated with higher risks in terms of spills and pollution.

**Alternative 3**

**d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)**

**Alternative 1 (preferred alternative)**

**Alternative 2**

**Alternative 3**

**e) No-go alternative**

The no-go alternative refers to the cessation of the project. This would mean the benefits of the project will not materialise (i.e. no job creation, no improved safety), while the negative impacts (biodiversity impacts) will also not materialise. The need for access to the proposed WEF and the positive contribution of employment and safety has been evaluated as greater in importance than the expected biodiversity impacts (after mitigation). The no-go alternative is thus not considered the preferred alternative in terms of this development.

Paragraphs 3 – 13 below should be completed for each alternative.

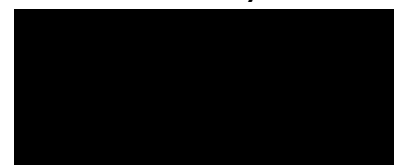
**3. PHYSICAL ACTIVITY OF THE ACTIVITY**

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

**Alternative:**

Alternative A1<sup>1</sup> (preferred activity alternative)  
Alternative A2 (if any)  
Alternative A3 (if any)

**Size of the activity:**



<sup>1</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

or, for linear activities:

**Alternative:**

Alternative A1 (preferred activity alternative)  
Alternative A2 (if any)  
Alternative A3 (if any)

**Length of the activity:**

11 km
8 km

**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:**

11 km
8 km

**4. SITE ACCESS**

Does ready access to the site exist?

YES	
X	

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

Describe the type of access road planned:

Access to the proposed access road for the Dwarsrug WEF will be gained from the existing Granaatboskolk road.

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). Refer to Appendix A for the Locality Map.

## **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):

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>	YES <b>X</b>		Please explain
The site is currently zoned for agricultural use, however agreements between the landowners and the proponent will be put in place to ensure the access road development is agreed to by all parties.			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	YES <b>X</b>		Please explain
According to the PSDF of the Northern Cape, energy from renewable energy sources such as wind and solar are to constitute 25% of the province's energy generation capacity by 2020. The Dwarsug WEF will contribute to electricity generation from renewable resources and is therefore aligned with the goals of the PSDF. Th Dwarsug Access road is by extension aligned with the goals of the PSDF.			
<b>(b) Urban edge / Edge of Built environment for the area</b>		NO <b>X</b>	Please explain
The proposed access road is located in a remote area, approximately 60km north of the town of Loeriesfontein. The site does not fall in with the urban edge or the edge of the built environment of the area.			
<b>(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?).</b>	YES <b>X</b>		Please explain
The Hantam Local Municipality IDP and the SDF has outlined electricity, amongst other municipal services, as a priority issue warranting attention within the municipality, in particular the provision of and the improvement of the electricity infrastructure (Hantam Local Municipality 2009-2010).			
<b>(d) Approved Structure Plan of the Municipality</b>	YES <b>X</b>		Please explain
The municipality is aware of the Dwarsug WEF and associated infrastructure. The proposed activity linking the facility to the access road supports this approved project and does not compromise the structure of the municipal plan.			

<p><b>(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?)</b></p>	<p>Not applicable</p>	
<p>Not applicable. There is no EMF for the study area.</p>		
<p><b>(f) Any other Plans (e.g. Guide Plan)</b></p>	<p>Not applicable</p>	
<p>There are no other plans within this municipality.</p>		
<p><b>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)?</b></p>	<p>YES X</p>	<p>Please explain</p>
<p>In 2008, the Namakwa District Municipality conducted viability studies on the possibility of creating green energy in the Namakwa District for exporting purposes. Studies were to be done on wind, solar and ocean energy. The Dwarsug WEF is therefore aligned with the goals of the municipal IDPs and SDFs and the Dwarsug Access road is by extension aligned with the IDPs and SDFs.</p>		
<p><b>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.)</b></p>	<p>YES X</p>	<p>Please explain</p>
<p>The proposed activity is not a societal priority for the community, however the proposed construction of an access road will benefit the local community through jobs creation, skills development opportunities and training where the contractor will require the appointment of unskilled labour from local communities.</p>		
<p><b>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.)</b></p>	<p>YES X</p>	<p>Please explain</p>
<p>South African Mainstream Renewable Power has sufficient services to accommodate the proposed construction of an access road. South Africa Mainstream Renewable Power Developments will supply services (by means of portable water tankers, etc.) to construction workers during the construction phase. The access road would however not require services during the operational phase.</p>		

<p><b>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.)</b></p>		<p>NO X</p>	<p>Please explain</p>
<p>The proposed access road aims to service access needs to the Dwarsrug WEF, which is located in a rural area and not serviced formally by the municipality (sewerage, refuse or water). As such, this development represents no further strain on the municipal system than currently experienced.</p>			
<p><b>7. Is this project part of a national programme to address an issue of national concern or importance?</b></p>		<p>NO X</p>	<p>Please explain</p>
<p>The proposed construction of an access road for the Dwarsrug WEF farm will support operations of the Dwarsrug WEF by linking the facility with access roads. The Dwarsrug WEF will contribute to electricity generation from renewable resources and the electricity generated will be injected into the national grid. Renewable energy was highlighted as an issue of national importance by the Department of Energy in the Integrated Resource Plan (2010-2030).</p>			
<p><b>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.)</b></p>	<p>YES X</p>		<p>Please explain</p>
<p>The Dwarsrug access road will link the Dwarsrug WEF to the existing Granaatboskolk road and is therefore needed in this specific location in order to achieve its intended purpose in providing access to the Dwarsrug WEF. Due to the nature of the development no other location would thus make sense. In addition, the approved Dwarsrug WEF is located within this part of the country due to a wide variety of technical, financial and environmental reasons, but importantly due mainly to the strong wind resource within the area. Access roads to the WEF are thus required within this location as the WEF has already been approved for this area and wind resource.</p>			
<p><b>9. Is the development the best practicable environmental option for this land/site?</b></p>	<p>YES X</p>		<p>Please explain</p>
<p>The development is informed by the specialist assessments and the preferred alternative was found to be the least environmentally damaging alternative (please see impact assessment section and Appendix F for more detail on the ecological, heritage and hydrological impacts of the two alternatives).</p>			
<p><b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b></p>	<p>YES X</p>		<p>Please explain</p>
<p>The access road will provide support services to the Dwarsrug WEF and will create employment for local workers via the direct construction contribution, as well as the access to the WEF (with an associated construction and operation thereof). As such, this project supports the development of the WEF and thus indirectly also promotes the positive impacts thereof, including short- and medium-term job creation and infrastructure development. This contribution was deemed significantly greater than the negative impacts (e.g. waste generation, noise pollution, etc.) that is associated with the proposed development (regardless of alternative).</p>			

<b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b>		NO X	Please explain
Because of the good wind resources associated with this area, other WEF will most likely be proposed for this area in the future. These WEFs will require access roads in order to link the facilities to existing access roads. As such the development of the WEFs within the greater project region is regarded as the precedent setting activity, not the proposed access road development.			
<b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b>		NO X	Please explain
The proposed Dwarsrug WEF will not negatively impact upon person's rights as correct channels and procedures have been followed in the planning of this project, and land use agreements with all landowners will be secured prior to the implementation of this project.			
<b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b>		NO X	Please explain
The access road is located approximately 60km north of Loeriesfontein. The proposed activity will take place within the study area and will therefore not compromise the urban edge as defined by the local municipality.			
<b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>		NO X	Please explain
The proposed activity is for the purpose of constructing an access road to access the Dwarsrug wind farm. It will therefore not contribute directly to any of the 17 Strategic Integrated Projects (SIPS).			
<b>15. What will the benefits be to society in general and to the local communities?</b>	Please explain		
Employment opportunities will be created during the construction of the Dwarsrug Wind Farm access road as local people might be appointed during the construction phase of the road.			
<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain		
The Dwarsrug access road will support operations of the Dwarsrug WEF by linking the facility with access roads. The Dwarsrug WEF will contribute to electricity generation from renewable resources which addresses need and desirability considerations outlined in the Integrated Resource Plan (2010-2030). The development of this access road thus contributes to indirectly to the benefits obtained from the associated WEF, which includes short- and medium-term employment creation, infrastructure development and upgrades and electricity generation for contribution to the national grid.			
<b>17. How does the project fit into the National Development Plan for 2030?</b>	Please explain		
One of the goals of the National Development for 2030 includes Economy and employment with an aim to eliminate poverty and created employment opportunities. This project will be in line with the goals of the National Development Plan as local labour will be employed during construction phase of the project.			

**18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.**

The general objectives of Integrated Environmental Management have been taken into account for this Basic Assessment report by means of identifying, predicting and evaluating the actual and potential impacts on the environment and socio-economic condition. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, maximise benefits, and promote compliance with the principles of environmental management.

The general objectives of Integrated Environmental Management have been taken into account through the following aspects:

- The proponent appointed a qualified Environmental Assessment Practitioner (EAP) to ensure that the requirements of NEMA have been met;
- A comprehensive public participation process (PPP) has been conducted which provides the public with an opportunity to raise any concerns relating to the activity;
- Appropriate specialist assessments have been conducted to assess the direct impact of the activity on the environment;

The objectives of NEMA have also been taken into consideration by means of assessing various alternatives; assessing direct as well as indirect impacts and by prescribing various mitigation measures to minimise these impacts.

Furthermore, the following regulations were considered during the preparation of this Basic Assessment report.

**19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.**

The principle of environmental management as set out in section of NEMA states that:

- » Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably;
- » Development must be sustainable socially (people), environmentally (planet) and economically (prosperity);and
- » Sustainable development requires the consideration of all the relevant factors.

These principles have been taken into account for this Basic Assessment report as this BAR identifies potential impacts and provides mitigation measures to avoid/ reduce /minimise environmental impacts and disturbance to the surrounding environment.

## 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
<b>National Legislation</b>			
The Constitution of South Africa (Act 108 of 1996)	The Constitution is the highest law of South Africa and any activities and conduct must be consistent with the Constitution. The Bill of Rights gives effect to a number of provisions, relevant to securing protection of the environment. Section 24 states that “everyone has the right to (a) an environment that is not harmful to their health or well-being and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”. The Constitution therefore, gives effect to people's environmental rights.	The Constitutional Court of South Africa	1996

<p>National Environmental Management Act (Act No. 107 of 1998) and Environmental Impact Assessment (EIA) Regulations, 2017</p>	<p>The EIA Regulations have been promulgated in terms of Chapter 5 of NEMA. Listed activities which may not commence without an environmental authorisation are identified within these Regulations.</p> <p>In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>In terms of GN R. 327 and GN R. 324 of 2014 (as amended in 2017) a Basic Assessment Process is required to be undertaken for the proposed project.</p> <p>This Basic Assessment Report will be submitted to the competent and commenting authority in support of the application for authorisation.</p> <p>In terms of the Duty of Care provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with a project is avoided, stopped or minimized.</p>	<p>Department of Environmental Affairs (DEA), the Northern Cape Department of Environment and Nature Conservation (NC DENC) – commenting authority and the Department of Environmental Affairs and Development Planning (DEADP)</p>	<p>1998</p>
<p>National Water Act (36 of 1998)</p>	<p>The National Water Act, 1998 (Act No. 36 of 1998) (NWA) was developed ensures the protection and sustainable use of water resources in South Africa. In accordance with the provisions of the National Water Act (No. 36 of 1998) (NWA), all “water uses” must be licensed with the Competent Authority (i.e. the Regional Department of Water and Sanitation (DWS) or the relevant</p>	<p>Department of Water Affairs and Sanitation</p>	<p>1998</p>



	<p>Catchment Management Agency (CMA) where applicable). Prior to construction of this access road, a risk assessment is to be undertaken to determine the need for appropriate water use authorisation with the Department of Water and Sanitation, should a preferred alternative be authorised by the Northern Cape Department of Environment and Nature Conservation.</p> <p>A Freshwater delineation Impact Assessment was undertaken as part of the Basic Assessment process (refer to Appendix D).</p>		
<p>National Environmental Management: Biodiversity Act (Act No. 10 of 2004) and Alien Invasive Species Regulations 2014</p>	<p>In terms of S57, the Minister of Environmental Affairs has published a list of critically endangered, endangered, vulnerable, and protected species in GNR 151 in Government Gazette 29657 of 23 February 2007 and the regulations associated there with in GNR 152 in GG29657 of 23 February 2007, which came into effect on 1 June 2007.</p> <p>In terms of GNR 152 of 23 February 2007: Regulations relating to listed threatened and protected species, the relevant specialists must be employed during the EIA Phase of the project to incorporate the legal provisions as well as the regulations associated with listed threatened and protected species (GNR 152) into specialist reports in order to identify permitting requirements at an early stage of the EIA Phase.</p> <p>The Act provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national</p>	<p>Department of Environmental Affairs (DEA) and the Northern Cape Department of Environment and Nature Conservation (NC DENC)</p>	<p>2004</p>

	<p>list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (GG 34809, GN 1002), 9 December 2011).</p> <p>Invasive Species are categorised into four categories:</p> <ul style="list-style-type: none"> <li>» <b>Category 1a</b> Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be combatted or eradicated.</li> <li>» <b>Category 1b</b> Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled.</li> <li>» <b>Category 2</b> Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be</li> <li>» <b>Category 3</b> Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section</li> </ul>		
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	<p>71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.</p> <ul style="list-style-type: none"> <li>o Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3.</li> </ul> <p>Section 76 of the Act requires that all Protected Area Management Authorities and all other “Organs of State in all spheres of government”, including all municipalities, draw up an “Invasive Species Monitoring, Control and Eradication Plan for land under their control.” These plans have to cover all Listed Invasive Species in terms of Section 70(1) of this Act.</p> <p>A. Ecological Impact Assessment as well as Freshwater delineation Impact Assessment was undertaken as part of the Basic Assessment process (refer to <b>Appendix D</b>).</p>		
<p>National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)</p>	<p>The Minister may by notice in the <i>Gazette</i> publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.</p> <p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> <li>» Adding other waste management activities to the list.</li> <li>» Removing waste management activities from the list.</li> <li>» Making other changes to the</li> </ul>	<p>Department of Environmental Affairs (DEA) and the Northern Cape Department of Environment and Nature Conservation (NC DENC)</p>	<p>2008</p>

	<p>particulars on the list.</p> <p>In terms of the Regulations published in terms of this Act (GN 921), A Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities (Category A and B) while Category C Activities (such as storage of waste) must be undertaken in accordance with the necessary norms and standards.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> <li>» The containers in which any waste is stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste.</li> <li>» Adequate measures are taken to prevent accidental spillage or leaking.</li> <li>» The waste cannot be blown away.</li> <li>» Nuisances such as odor, visual impacts and breeding of vectors do not arise; and</li> <li>» Pollution of the environment and harm to health are prevented.</li> </ul> <p>As no waste disposal site is to be associated with the proposed project, no permit is required in this regard.</p>		
<p>National Environmental Management: Air Quality Act (Act No. 39 of 2004)</p>	<p>S18, S19, and S20 of the Act allow certain areas to be declared and managed as "priority areas."</p> <p>Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant</p>	<p>Department of Environmental Affairs (DEA)</p>	<p>2004</p>

	<p>emission standards.</p> <p>GN R 827 – National Dust Control Regulations prescribes general measures for the control of dust in all areas</p>		
<p>Environment Conservation Act (Act No. 73 of 1989)</p>	<p>National Noise Control Regulations (GN R154 dated 10 January 1992) are applicable since noise impacts are expected to be associated with the construction phase of the project and are not likely to present a significant intrusion to the local community. There is no requirement for a noise permit in terms of the legislation.</p> <p>Dust Control Regulations describe the measures for control and monitoring of dust, including penalties. These regulations might be applicable during the construction phase of the project.</p>	<p>Department of Environmental Affairs (DEA) and the Northern Cape Department of Environment and Nature Conservation (NC DENC)</p>	<p>1989</p>
<p>National Heritage Resources Act (Act No. 25 of 1999)</p>	<p>» S38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including</p> <ul style="list-style-type: none"> <li>» The construction of a road, power line, pipeline, canal or other similar linear development or barrier exceeding 300 m in length;</li> <li>» Any development or other activity which will change the character of a site exceeding 5 000 m<sup>2</sup> in extent</li> <li>» The relevant Heritage Authority must be notified of developments such as linear developments (i.e. roads and power lines), bridges exceeding 50 m, or any development or other activity which will change</li> </ul>	<p>South African Heritage Resources Agency and the Northern Cape Heritage Resources Authority</p>	<p>1999</p>

	<p>the character of a site exceeding 5 000 m<sup>2</sup>; or the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent. This notification must be provided in the early stages of initiating that development, and details regarding the location, nature and extent of the proposed development must be provided.</p> <p>» Standalone HIAs are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of S38. In such cases only those components not addressed by the EIA should be covered by the heritage component.</p> <p>A submission of a Notice of Intent NID or Phase 1 HIA will be submitted to SAHRA and a Heritage Impact Assessment was undertaken by a specialist as part of the Basic Assessment process (refer to Appendix D). A permit may be required should any identified cultural/ heritage sites on site be required to be disturbed or destroyed as a result of the proposed development.</p>		
<p>Conservation of Agricultural Resources Act (CARA) (Act No 43 of 1983)</p>	<p>» Prohibition of the spreading of weeds (S5).</p> <p>» Classification of categories of weeds &amp; invader plants (Regulation 15 of GN R1048) &amp; restrictions in terms of where these species may occur.</p> <p>» Requirement &amp; methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R1048)</p> <p>» <b>Category 1</b> - prohibited and must be controlled;</p>	<p>Department of Environmental Affairs (DEA) and the Department of Agriculture, Forestry and Fisheries</p>	<p>1983</p>

	<p>» <b>Category 2</b> – must be grown within a demarcated area under permit; and</p> <p>» <b>Category 3</b> - ornamental plants that may no longer be planted, but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the floodlines of watercourses and wetlands.</p> <p>Mitigation measures have been recommended to avoid the risk of increased alien invasion during construction and operation of the project.</p>		
Occupational Health and Safety Act (Act No 85 of 1993)	During the construction phase of the proposed access road, worker handling chemicals or hazardous materials must be trained in the use of these materials and the environmental, health and safety consequences of incidents.	Department of Labour	1993

## 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 <b>X</b>	
Currently unknown at this stage.	

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

Solid waste produced during the construction phase of the proposed access road development will mostly comprise of building rubble and litter (plastic, glass, etc.). Mainstream will provide waste skips/bins during the construction phase. The waste management hierarchy will be implemented as far as possible through waste management conditions included into the EMPr. The waste management hierarchy will ensure the prevention of waste, but, if it cannot be prevented it should be minimised. If waste can't be minimised it must be reused or recycled. If this is not an option it should be used for energy recovery, this may involve selling waste to third part recovery organisations. Lastly if energy recovery is not possible waste should be disposal of. Any waste that is disposed of will be collected by the Hantam local municipality's waste removal services and disposed of at a licenced dump/landfill. No waste will be generated during the operational phase of this access road.

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

Construction waste will be disposed of at the Hantam Municipality Registered Landfill.

Will the activity produce solid waste during its operational phase?

	NO <b>X</b>
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If YES, what estimated quantity will be produced per month?

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

Waste will be collected in skips on site until removed to Hantam Municipality Registered Landfill.

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

Solid Waste will be disposed of at the Hantam Municipality Registered Landfill.

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

Not applicable

*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?

	NO <b>X</b>
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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?

	NO <b>X</b>
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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?

	NO <b>X</b>
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If YES, what estimated quantity will be produced per month?

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Will the activity produce any effluent that will be treated and/or disposed

	NO
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Describe the noise in terms of type and level:

General construction noise related with construction activities i.e. vehicle noise. Noise will remain within SANS noise limits for day and night. Construction activities will be limited to day time activities.

### 13. WATER USE

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

<input type="checkbox"/>	<input checked="" type="checkbox"/> <b>Groundwater</b>	<input type="checkbox"/>
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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:

Quantities unknown at this stage.

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

YES

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

A submission for Water Use Authorisation (most likely a GA) will be obtained once the project is selected as preferred bidder in the REIPPP programme. The application will be obtained prior to the construction phase of the proposed development.

### 14. ENERGY EFFICIENCY

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

The road construction will form part of the larger Dwarsrug WEF construction, which will ensure energy efficient activities are employed throughout construction. Due to the nature of the proposed project (small scale dirt access road), the most energy effective means of vegetation clearing and road shaping will be utilised to save costs.

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

No alternative energy sources have been built into the design of the access road. The Dwarsrug WEF will however be generating up to 140MW of renewable energy.

## 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

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:**

<b>Province</b>	Northern Cape Province
<b>District Municipality</b>	Greater Namakwa District Municipality
<b>Local Municipality</b>	Hantam Local Municipality
<b>Ward Number(s)</b>	5
<b>Farm name and number</b>	<ul style="list-style-type: none"> <li>» Brak Pan 212 Remainder</li> <li>» Narosies 228</li> <li>» Sous 226 portion 1</li> <li>» Stink puts 229</li> <li>» Aan De Karree Doorn Pan 213, Portion 1</li> </ul>
<b>Portion number</b>	<ul style="list-style-type: none"> <li>» Portion 000 of farm 212</li> <li>» Portion 000 of farm 228</li> <li>» Portion 002 of farm 226</li> <li>» Portion 000 of farm 229</li> <li>» Portion 001 of farm 1/213</li> </ul>
<b>SG Code</b>	<ul style="list-style-type: none"> <li>» C01500000000021200000</li> <li>» C01500000000022800000</li> <li>» C01500000000022600001</li> <li>» C01500000000022900000</li> <li>» C01500000000021300001</li> </ul>

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

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

**1. GRADIENT OF THE SITE**

Indicate the general gradient of the site.

**Alternative S1:**

1:50 – 1:20

**Alternative S2 (if any):**

1:50 – 1:20

**Alternative S3 (if any):**

**2. LOCATION IN LANDSCAPE**

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

**Alternative 1:**

2.1 Ridgeline	<input checked="" type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input checked="" type="checkbox"/>	2.6 Plain	<input type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input type="checkbox"/>				

**Alternative 2:**

2.1 Ridgeline	<input checked="" type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
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### 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILIT 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)	NO	NO	NO
Dolomite, sinkhole or doline areas	X	X	
Seasonally wet soils (often close to water bodies)	YES	YES	
Unstable rocky slopes or steep slopes with loose soil	NO	NO	
Dispersive soils (soils that dissolve in water)	X	X	
Soils with high clay content (clay fraction more than 40%)	NO	NO	
Any other unstable soil or geological feature	X	X	
An area sensitive to erosion	YES	YES	

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).

Alternative 1:

Natural veld - go od condition <sup>E</sup>	X
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	<b>Cultivated land</b> X	
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Alternative 2:

<b>Natural veld - good condition<sup>E</sup></b> X		
	<b>Cultivated land</b> X	

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?

Alternative 1:

Perennial River		<b>NO X</b>	
Non-Perennial River	<b>YES X</b>		
Permanent Wetland	<b>YES X</b>		
Seasonal Wetland	<b>YES X</b>		
Artificial Wetland		<b>NO X</b>	
Estuarine / Lagoonal wetland		<b>NO X</b>	

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

<b>Perennial River</b> – No Perennial rivers were found within the study area.
<b>Seasonal Wetland</b> - An ephemeral wetland in the form of a depression in a broad valley-bottom occurs approximately 200m north of the preferred (alternative 1) access road. The wetland was assessed to be a Class C (moderately modified) ephemeral depression wetland system which is considered to be moderately ecologically important and sensitive on a provincial or local scale. This wetland was not regarded as a FEPA (Freshwater Ecosystem Priority Area) wetland.
<b>Non-Perennial River</b> – Alternative 1 requires 8 crossings through watercourses. These water courses are considered to be minor drainage lines and the Ecological Condition (EC) of the riparian habitat of the drainage lines were assessed to be 90% unmodified and therefore, a Class A unmodified system.

## 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:

**Alternative 1:**

Natural area <b>X</b>	
	Agriculture <b>X</b>
	River, stream or wetland <b>X</b>
	Mountain, Koppie or ridge <b>X</b>
	Archaeological site <b>X</b>

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:

NA – Not ticked
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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:

NA – Not ticked
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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:

NA – Not ticked
-----------------

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

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





## 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 X

The archaeological resources identified within the proposed development site comprise a small number of Stone Age surface artefact scatters. These are primarily from the Later Stone Age (LSA), although Middle Stone Age (MSA) material was also identified. All these artefact assemblages occur in heavily deflated and eroded areas thus indicating a total lack of context, so their scientific potential and heritage significance is particularly low. Even though heritage features were detected within the development area, serious mitigation measures will not be required. In terms of paleontological features, Study Area is mainly underlain by Permian aged rocks of the Eccca Group, Jurassic aged dolerite sills and Quaternary aged dolerite scree, pan sediments and alluvium. The very high and high fossiliferous potential of the Eccca Group strata warrants an allocation of a High palaeontological sensitivity to the areas underlain by the rocks of these formations. The pan sediments and alluvium are allocated a Moderate palaeontological sensitivity whereas areas underlain by dolerite scree and dolerite are allocated Low and Very Low Palaeontological sensitivities.

**No heritage sites were located along the preferred alternative (alternative 1).** In contrast, two heritage sites were located along the least preferred alternative (alternative 2), that of:

Site2 number	Lat	Lon	Description	Heritage Significance	Heritage Rating
DWA01	S30.51398°	E19.56662°	This find spot comprises a low-density surface scatter of two Stone Age flakes, with one made on chert and the other on hornfels. These artefacts are in secondary context. <b>Site extent:</b> 5mx5m.	Low	GP.C
DWA02	S30.51440°	E19.57504°	This find spot comprises a low-density surface scatter of one Stone Age core, with one made on quartzite and the other on hornfels. These artefacts are in secondary context. <b>Site extent:</b> 5mx5m.	Low	GP.C

Please refer to the Heritage Impact Assessment in the Appendices for a complete review of the location of heritage features on site.

<sup>2</sup> Site in this context refers to a place where a heritage resource is located and not a proclaimed heritage site as contemplated under s27 of the NHRA.

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:

Please refer to the Heritage Impact Assessment in the Appendices for a complete review of the location of heritage features on site.

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)?

[REDACTED]	NO X
	NO X

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 labour force within the Hantam Local Municipality comprises of 6 122 employed individuals and 882 unemployed individuals, reflecting a 12.6% unemployment rate.

Economic profile of local municipality:

The Hantam local municipality's economy contributed 11 % towards the Namakwa District's Gross Domestic Product per Region (GDP-R). The Hantam municipality is relatively small considering the Namakwa District comprises of 6 local municipalities. The Hantam municipality has a compounded annual growth rate of 3,8 percent which is quite high in relation to the Namakwa District's annual compounded growth rate of 1,1%.

Level of education:

13 % of residents within the Hantam Local Municipality do not have any educational background, and 50 % of the residents completed some secondary schooling or obtained a Matric certificate. 7,7% of the residents within the Hantam Local Municipality pursued tertiary education.

### b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	The Dwarsrug WEF will have a CAPEX value of R2,5bn, the access road will contribute to this by enabling access to the WEF.
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What is the expected yearly income that will be generated by or as a result of the activity?	None, the road is related to the Dwarsrug WEF, which will be producing an income, and as such this facility will be enabling that facility. The Dwarsrug WEF will generate an annual turnover of R351 500 000.	
Will the activity contribute to service infrastructure?	YESX	
Is the activity a public amenity?		NOX
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	The access road is related to the Dwarsrug Wind Farm, which will be creating employment opportunities. The Dwarsrug WEF is expected to create a total of 4 462 of FTE person-years over the 18-month construction period. It is estimated that 471 of these opportunities will be as a result of direct impacts, while the balance will be created to support the increased demand for production of goods and services due to the indirect and induced impacts. The Dwarsrug WEF will enable these employment opportunities by providing access to the WEF. 45% of these employment opportunities will be skilled and 55% will be unskilled.	
What is the expected value of the employment opportunities during the development and construction phase?	Not Applicable	
What percentage of this will accrue to previously disadvantaged individuals?	Not applicable	
How many permanent new employment opportunities will be created during the operational phase of the activity?	The access road is related to the Dwarsrug Wind Farm, which will be creating employment opportunities. During the operational phase of the Dwarsrug WEF 90 individuals will be permanently employed.	
What is the expected current value of the employment opportunities during the first 10 years?	Not Applicable, no specific figures are available at this stage.	
What percentage of this will accrue to previously disadvantaged individuals?	Not applicable	

## 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](mailto: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
Critical Biodiversity Area (CBA) <b>NO</b>	Ecological Support Area (ESA) <b>NO</b>	Other Natural Area (ONA) <b>YES</b>	No Natural Area Remaining (NNR) <b>NO</b>	The project site does not fall within a CBA or ESA areas.

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	95%	The entire site falls within the Bushmanland Basin Shrubland vegetation type. The area is characterised by slightly irregular plains dominated by a dwarf shrubland, with succulent shrubs or perennial grasses in places.
Near Natural (includes areas with low to moderate level of alien invasive plants)	5%	A small number of alien invasive species occur within the drainage lines in the study area.
Degraded (includes areas heavily invaded by alien plants)	0%	NA
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	0%	NA

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		Wetland (including rivers,	Estuary	Coastline

Terrestrial Ecosystems		Aquatic Ecosystems				
<b>status as per the                      National                      Environmental                      Management:                      Biodiversity Act (Act                      No. 10 of 2004)</b>		depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)				
	<b>Least                      Threatened                      X</b>	<b>YES X</b>		<b>NO                      X</b>		<b>NO X</b>

**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)**

**Ecological:** The majority of the Dwarsug Access Road routes traverse low open shrubland or grassland on flat plains and gently sloping hills that are low or medium sensitivity and where the impact of the road on fauna and flora would be low or very low and of a local nature only. The overall diversity of the vegetation is low and the abundance of listed plant species is also very low. The listed species that are present at the site occur at a very low density or in localised environments and would not be significantly affected by the road with the appropriate preconstruction avoidance. Apart from the low ridges, the only other significant feature of the site are the poorly developed drainage lines of the area. These are considered sensitive on account of their vulnerability to disturbance as well as the ecological function that they perform in terms of hydrological regulation and provision of habitat. As these are narrow, it is likely that the access road would be able to traverse these features with minimal impact.

**Hydrology**

Three wetlands including an ephemeral wetland occurs within the study area (two of these wetlands occur within 500m of the two proposed alternative access roads). The ephemeral wetland was assessed to be a Class C (moderately modified) which is considered to be moderately ecologically important and sensitive on a provincial or local scale. The wetlands were considered important from a migration route/breeding and feeding site for invertebrates, amphibians and waterfowl despite being ephemeral in nature. In addition, the ephemeral wetland was identified to serve an important role in performing sediment trapping, erosion control and flood attenuation function for the local catchment.

Sixteen drainage lines fall within the assessed study area. Thirteen of these watercourses are minor drainage lines and three were classified to be major drainage lines. The in-field investigation also confirmed the presence of one nearby ephemeral depression wetland. These freshwater resources were delineated using the indicators as stipulated in the national guidelines, and were assessed further accordingly.

**Heritage**

The archaeological resources identified within the proposed development site comprise a small number of Stone Age surface artefact scatters. These are primarily from the Later Stone Age (LSA), although Middle Stone Age (MSA) material was also identified. All these artefact assemblages occur in heavily deflated and eroded areas thus indicating a total lack of context, so their scientific potential and heritage significance is particularly low. Even though heritage features were detected within the development area, serious mitigation measures will not be required. In terms of paleontological features, Study Area is mainly underlain by Permian aged rocks of the Eccca Group, Jurassic aged dolerite sills and Quaternary aged dolerite scree, pan sediments and alluvium. The very high and high fossiliferous potential of the Eccca Group strata warrants an allocation of a High palaeontological sensitivity to the areas underlain by the rocks of these formations. The pan sediments and alluvium are allocated a Moderate palaeontological sensitivity whereas areas underlain by dolerite scree and dolerite are allocated Low and Very Low Palaeontological sensitivities.

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICE

Interested and Affected Parties (I&APs) play an important role in the BA process, as many of their concerns and issues can be included in the project proposal, to ensure a development which is as environmentally and socially acceptable as possible. There are four key steps in the PPP to ensure that I&APs are informed of the proposed development and afforded sufficient opportunity to raise comments and or concerns. These include:

- A. Identifying potential I&APs;
- B. Notifying I&APs through:
  - i. Advertisement and site notices;
  - ii. Written notices;
  - iii. Public or focus group meetings (as appropriate);
- C. Making provision for I&APs to review and comment on all draft reports before they are finalised and submitted to the competent authority; and
- D. Compiling a record of responses to any comments and concerns provided by the I&APs and including and addressing these concerns in final reports.

<b>Publication name</b>	Noordwester Newspaper (details below)	
	(Noordwester is a local newspaper in Afrikaans and English that's distributed free of charge in Kimberley, Galeshewe, Barkly-Wes, Bloemhof, Boshof, Christiana, Danielskuil, De Aar, Delportshoop, Douglas, Hartswater, Hopetown, Jacobsdal, Jan Kempdorp, Kai Gariep Rural, Lime Acres, Postmasburg, Prieska, Ritchie, Strydenburg and Warrenton every Wednesday. Website: www.noorswester .co.za)	
<b>Date published</b>	5 April 2019	
<b>Site notice position</b>	<b>Site Notice Location 1</b>	
	<b>Latitude</b>	<b>Longitude</b>
	30°30'21.78"S	19°33'24.05"E
	<b>Site Notice Location 2</b>	
<b>Date placed</b>	<b>Latitude</b>	<b>Longitude</b>
	30°30'48.90"S	19°33'21.43"E

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.

The aim of the public participation (PP) process is to allow everyone who is interested in, or likely to be affected by, the proposed activity to provide their input into the process. This includes land owners and

occupants of the land portions on which the development will be located, the adjacent/neighbouring land owners and occupants, the municipal councillor of the affected ward (Ward 5 – Councilor Giesela Opperman), the Hantam Local Municipality and any other relevant authorities and organisations that represent the community in the area.

Initially, the Interested and Affected Parties (I&APs) will be notified of the commencement of the Basic Assessment (BA) process by sending registered I&APs a written notification letter. This process will allow for any initial queries with regards to environmental authorisation to be addressed at the onset of the process and to address any questions for clarification. Following the initial notification process, the PP process is outlined below.

#### *Advertisements*

As part of the PP process, an advertisement will be placed in the Noordkaap, a local community newspaper in order to inform the public of the intension to undertake a Basic Assessment process and invite them to register as an I&AP. This advertisement will also include the notification of the availability of the Basic Assessment Report (BAR) for public review and comment. The venue where the BAR will be indicated as well as the public review and comment period.

#### *Site Notices*

As per the National Environmental Management Act (NEMA) regulations stipulated in Section 41(2) of GN R. 326, a site notice will be displayed on the development site. To comply with the EIA Regulations "fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of – (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site". This activity was undertaken on Wednesday, 24 October 2018 in order to inform the public of the project details and where they can and how to register as an I&AP.

Proofs of the site notices are included in Appendix I1.

#### *Focus Group Meetings*

Two Focus Group Meetings (FGMs) were held prior to the release of the BAR during which the initiation of the BA process was presented, project information shared, and the upcoming PP process presented. The first FGM was held with the Officials from the Hantam Local Municipality on Tuesday, 23 October 2018 at 15h00, held at the Boardroom of the Hantam Local Municipality, Calvinia.

The second FGM was held with affected and adjacent landowners and representative from the local farmers' association. All relevant landowners were invited to attend the FGM that was held at the Boardroom, Agri Mark, Loeriesfontein. The information as presented at the FGM held with the Officials of the Hantam Local Municipality was presented at the landowners' FGM.

Minutes of the Focus Group Meetings were circulated to all participants, and will be included into the draft and final Basic Assessment documentation.

#### *Notification of availability of Basic Assessment Report*

A notification letter will be sent to all registered I&APs on the project database, informing them of the availability of the BAR for public review and comment. Information will then also be provided as to how the BAR can be accessed i.e. Savannah Environmental's website, CD available on request or at the



Loeriesfontein Library. The I&APs will be provided with an opportunity to comment on the BAR which will be made available for public review of at least 30 days.

*Comments and Responses Report*

All comments received through the BA process will be captured in the Comments and Responses Report (CRR) to which detailed responses by the Environmental Assessment Practitioner (EAP) and/or the applicant responded to, are included.

The CRR will be included as Appendix I7 to the BAR.

All written communication to and from I&APs received during the announcement phase of the BA process and the BAR review period will be presented in the BAR submitted to the Northern Cape Department of Environment and Nature Conservation.

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

<b>Name</b>	<b>Surname</b>	<b>Affiliation/ key stakeholder status</b>
Alwyn	Muller	Louw & Muller Attorneys
Sunay	Mol	Narosies cc
Mercia	Grimbeek	Solar Capital
Samantha	Spammer	Telkom SA Limited
Hannes	van Zyl	Agri SA: Loeriesfontein Farmers' Union
Kobus	Von Wiellight	Agri Loeriesfontein
Mary	Testing	Biotherm Energy
James	Testing	Biotherm Energy
Grace	Testing	Biotherm Energy
Francois	van der Merwe	Agri Mark
John	Testing	Biotherm Energy
Jannie	Loots	Manager: Agri Mark
Candice	Spammer	Telkom SA SOC Ltd
Richard	Gordon	ACED
James	Cumming	ACED
Hentie	Van Jaarsveld	AgriSa Northern Cape
Henning	Myburg	AgriSa Northern Cape
Armandt	Joubert	BioTherm Energy (Pty) Ltd
Gert	van der Walt	Vodacom
Tania	Anderson	Wildlife and Environment Society of South Africa (WESSA)
Brian	Meyer	Landowner
Albert	Nel	Landowner
Magrietha	van der Westhuizen	Remainder of Farm Kleine Rooiberg 227
Callie	van Zyl	Loeriesfontein Farmers Association
NJ	Van Zyl	Agri SA:Loeriesfontein and bouvereniging
Botha Corne	Botha Corne	MTN Telecoms
Hercule	Le Roux	MTN Telecoms

Paul	Venter	MTN Telecoms
Elias Albertus	Nel	Landowner
Grant	Beringer	Digby Wells Environmental
Joshua	Engelbrecht	Cell C
Brian	Dreyer	Neotel
Jan	Du Plessis	Coetzee Melkboerdery
Giel	Waterbooyer	Community Development: Youngsters
Braam	Lintvelt	Aan de Karee Doorn pan
Deon	Van der Westhuizen	Klein Rooiberg
Nico	Louw	Agri SA: Loeriesfontein Farmers' Union
Hentie	van Jaarsveld	Agri SA: Loeriesfontein Farmers' Union
Mia	Ackerman	Digby Wells Environmental
Sibongile	Bambisa	Digby Wells Environmental
Marike	de Klerk	Digby Wells Environmental
Bradley	Gibbons	Endangered Wildlife Trust
Sakkie	Lintvelt	Adjacent Landowner
Willem	Strauss	Adjacent Landowner
Marianne	Husselmann	Adjacent Landowner
Gideon	van der Westhuizen	Adjacent Landowner
Andries	Landman	Adjacent Landowner
Alwyn	Muller	Adjacent Landowner
Johan	Koegelenberg	Sentech Ltd
Vuyo	Mahlali	African Farmers Association of South Africa

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 INTERESED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
None at present. To be included in the Final Basic Assessment Report if any received	None at present. To be included in the Final Basic Assessment Report if any received

#### 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:

<b>Contact Person</b>		
<b>Organisation</b>	<b>Name</b>	<b>Surname</b>
Hantam Local Municipality	Geraldine	Gous
Hantam Local Municipality	Adam	Claasen
Hantam Local Municipality	Frik	Sterkse
Hantam Local Municipality	Gizella	Opperman
Hantam Local Municipality	Riana	Lock
Hantam Local Municipality	Riaan	van Wyk
Hantam Local Municipality	Aubrey	Claasen
Hantam Local Municipality	Jeany	Steenkamp
Hantam Local Municipality	Jan	Swartz
Hantam Local Municipality	Patrick	Farmer
Hantam Local Municipality	Bentram	Leukes
Hantam Local Municipality	ST	Felix
Hantam Local Municipality	Belinda	Farmer
Hantam Local Municipality	Hermina	Steenkamp
Hantam Local Municipality	Koos	Alexander
Hantam Local Municipality	Henry	de Wee
Hantam Local Municipality	Roger	Swartz
Eskom	Ferdie	Botha
Department of Environment & Nature Conservation	Julius	Koen
South African Heritage Resources Agency (SAHRA)	Mariagrazia	Galimberti
Department of Environment & Nature Conservation	Denver	van Heerden
Air Traffic and Navigation Services (ATNS)	Kwanele	Ndlovu
South African Heritage Resources Agency (SAHRA)	Sibayi	Dumisani
Northern Cape Department of Roads and Public Works	Nico	Fourie

Air Traffic and Navigation Services (ATNS)	Sibusiso	Nkabinde
South African National Roads Agency Limited	Ren	de Kock
South African Weather Service	Michelle	Hartslief
Telkom SA SOC Ltd	CJ	Loubse
Northern Cape Provincial Department	Tsholo	Leburu
Eskom	John	Geeringh
Eskom	Rochelle	McPherson
Eskom	Ambrose	Hector
Transnet Ltd	Graema	Daly
Eskom	Shaun	Swanepoel
Department of Agriculture, Forestry & Fisheries	Paul	Avenant
Eskom	Eddie	Lennox
Air Traffic and Navigation Services (ATNS)	Francois	Coetzee
Air Traffic and Navigation Services (ATNS)	Carel	Gersbach
Air Traffic and Navigation Services (ATNS)	Howard	Hawke
Air Traffic and Navigation Services (ATNS)	Josia	Manyakoana
Air Traffic and Navigation Services (ATNS)	Johan	van Schalkwyk
Gear Simon	Simon	Gear
Department of Environmental Affairs	Milicent	Solomons
Department of Science and Technology	Mere	Kgampe
Department of Agriculture, Forestry & Fisheries	Thoko	Buthelezi
Department of Agriculture, Forestry & Fisheries	Jacoline	Mans
Department of Agriculture, Forestry & Fisheries	Mashudu	Marubini
Northern Cape Department of Environment and Nature Conservation	Raylene	Nel
Department of Water and Sanitation	Carlo	Schrader

Department of Water and Sanitation	Shaun	Cloete
Department of Water and Sanitation	Danita	Hohne
Department of Water and Sanitation	M	Cebekhulu
Eskom	Justine	Wyngaardt
Namakwa District Municipality	Jannie	Loubser
South African Department of Defence	Lt. Cnl. Francois	Strydom
South African Civil Aviation Authority	Lizell	Stroh
Ngwao-Boswa Ya Kapa Bokone (Northern Cape Provincial Heritage Resources Authority)	Andrew	Ratha
South African National Roads Agency Limited	René	de Kock
Siyathemba Local Municipality	Gert	Bessies
South African Radio Astronomy Observatory (SARAO)	Adrian	Tiplady
Telkom	Amanda	Bester
Telkom	Heleen	van den Heever
Telkom	Leonard	Shaw
Transnet	Cobus	Cloete
Transnet	Hennie	Schoeman
Transnet	Sam	Fiff

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.

Activity	Impact summary	Significance	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>			
<b>Construction Phase Impacts</b>			
<b>GENERAL</b>			
<b>Poor Stormwater management</b>  During the construction phase, unsuitable road design will have an impact on stormwater at the site.	<b>Direct impacts:</b> Unsuitable road design may cause traffic safety risks due to insufficient storm water drainage planning.	<b>LOW-</b>	» Stormwater Management Plans must be compiled by an engineer approved by DEA, DWS and the ECO for the project.  » All stormwater structures must comply with DWS and SANRAL requirements.  » The road engineer must ensure that suitable stormwater structures are included in the road design in order to minimise erosion and sedimentation of watercourses.
	<b>Indirect impacts:</b> Unsuitable road design may lead to increased levels of erosion, sedimentation and pollution of the water courses.	<b>LOW-</b>	
	<b>Cumulative impacts:</b> Unsuitable road design and erosion impacts may aggravate sedimentation into local drainage lines and rivers.	<b>LOW-</b>	
<b>Noise Impacts:</b>  Impacts from increased noise levels will occur during construction of the proposed	<b>Direct impacts:</b> Increased noise levels by machinery during the construction of the road.	<b>LOW-</b>	» Machinery and equipment are to be switched off when not used.  » Construction activities should take place during work hours, these are to be known and agreed upon with all contractors.  » Retro-fit some equipment
	<b>Indirect impacts:</b>	-	
	<b>Cumulative impacts:</b>	-	

Activity	Impact summary	Significance	Proposed mitigation
activity.			<p>with dampening measures.</p> <ul style="list-style-type: none"> <li>» All labourers to wear PPE.</li> </ul>
<p><b>Increased sedimentation, contamination of soils and soil erosion:</b></p> <p>Increase in sedimentation and erosion within the development area as a result of frequent movements of machinery and clearing of vegetation is expected to occur.</p>	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Frequent movement of heavy machinery may lead to the compaction of soils.</li> <li>» Compaction will lead to increased runoff and removal of vegetation</li> <li>» Disturbance and removal of soils may lead to erosion.</li> <li>» Soils may become contaminated by hydrocarbons leaking from construction equipment and machinery.</li> </ul>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» All soils compacted as a result of construction activities should be profiled and monitored to ensure establishment of natural vegetation.</li> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the construction phase.</li> <li>» Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.</li> <li>» A road/civil engineer must ensure that stormwater structures are included in the road design, in order to minimise erosion.</li> <li>» All stormwater structures must be designed to comply with DWS and SANRAL requirements.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>Compaction will lead to increased runoff and removal of vegetation</p>	<b>LOW-</b>	
	<p><b>Cumulative impacts:</b></p> <p>Valuable topsoil losses, sedimentation and soil erosion.</p>	<b>LOW-</b>	
<p><b>Dust generation</b></p> <p>Dust generated by clearing and of vegetation and earthworks will impact on air quality in the vicinity of the site as well as impede photosynthesis</p>	<p><b>Direct impacts:</b></p> <p>Dust generation will affect air quality in the vicinity of the site as well as respiration of plants.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Dust suppression methods should be undertaken during clearing, such as sprinkling and wind breaks.</li> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the construction phase.</li> <li>» Dust generation must comply with the National Dust Control Regulations (GN No.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	



Activity	Impact summary	Significance	Proposed mitigation
and respiration of plants on the project site.			R. 827) of 1 November 2013, promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). » Limit vegetation clearing as far as possible.
<b>Traffic impacts</b>  During construction, an increase in construction vehicles will increase traffic in the vicinity of the project site.	<b>Direct impacts:</b> More construction vehicles will be utilising the Granaatboskolk road.	LOW-	» Where possible, heavy vehicle traffic should be discouraged from using roads during peak traffic hours. » Road signs and speed limits should be adhered to at all times. » Transport of material and waste should comply with the necessary road regulations.
	<b>Indirect impacts:</b> None anticipated	-	
	<b>Cumulative impacts:</b> The construction vehicles that will be using the Granaatboskolk road will place additional pressure on the roads in the area.	LOW-	
<b>Safety and health Impacts:</b>  Safety and security impacts are expected to occur during the construction of an access road	<b>Direct impacts:</b> Negative health impacts on the health of construction workers.	LOW-	» All construction staff must have the appropriate Personal Protective Equipment (PPE) and safety equipment before being allowed to carry construction activities. » The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents. » Appoint Health, Safety and Environment (HSE) Officer to ensure monitoring of safety conditions during construction activities. » Classify all Hazardous waste and dispose of appropriately. » Adhere to the Occupational
	<b>Indirect impacts:</b> None anticipated	-	
	<b>Cumulative impacts:</b> None anticipated	-	

Activity	Impact summary	Significance	Proposed mitigation
			Health and Safety Act (OHSA) (Act 85 of 1993).
<b>Social</b>  During construction, temporary and medium-term employment will be created.	<b>Direct opportunities:</b>  Employment opportunities for local workers.	<b>MEDIUM+</b>	» Where possible local labour should be utilised. » Where possible training schemes should be used.
	<b>Indirect opportunities:</b>  The employment opportunities will enable transfer of skills to local people. The local economy will also be stimulated through new employment opportunities created for people.	<b>LOW+</b>	
	<b>Cumulative impacts:</b>  None anticipated	-	
<b>Waste storage</b>  Improper storage of waste will adversely affect the environment	<b>Direct impacts:</b> Improper storage of waste could lead to contamination and will adversely affect the environment	<b>LOW-</b>	» A Waste Management Plan will be required for the site. » Construction waste must be disposed of at a licenced dump/landfill (on a regular basis) » Initiate recycling programmes at the construction site. » The waste management hierarchy must be adopted at the construction site where waste is prevented, if it cannot be prevented it should be minimised. If waste can't be minimised it must be reused or recycled. If this is not an option it should be used for energy recovery. This may involve selling waste to third part recovery organisations. Lastly if energy recovery is not possible waste should be disposal of. » Should waste be stored on site, it cannot be temporarily stored for longer than 80 days.
	<b>Indirect impacts:</b>  None anticipated	-	
	<b>Cumulative impacts:</b>  None anticipated	-	

Activity	Impact summary	Significance	Proposed mitigation
<b>ECOLOGICAL</b>			
<p><b>Disturbance and vegetation clearing:</b></p> <p>Impacts on vegetation will occur due to disturbance and vegetation clearing associated with the construction of the access road. In addition, it is possible that some loss of individuals of plants of SCC will occur.</p>	<p><b>Direct impacts:</b></p> <p>Clearing of plants during construction will lead to loss of individuals of plants of SCC.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» The final route should be subject to a preconstruction walk-through before construction commences and adjusted where required to reduce impacts on SCC and habitats of concern.</li> <li>» Search and Rescue of SCCs should be conducted prior to clearing activities.</li> <li>» Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes topics such as no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within the demarcated construction areas etc.</li> <li>» All construction vehicles should adhere to clearly defined and demarcated roads.</li> <li>» No off-road driving is to be allowed once the site has been pegged for construction.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>The development will contribute to cumulative impacts on habitat loss and transformation in the area.</p>	<b>LOW-</b>	
<p><b>Loss of habitat and impacts on local fauna:</b></p> <p>Disturbance, transformation and loss of habitat will have a negative effect</p>	<p><b>Direct impacts:</b></p> <p>Disturbance, transformation and loss of habitat will have a negative effect on resident fauna during construction.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person.</li> <li>» The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden. Personnel</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	

Activity	Impact summary	Significance	Proposed mitigation
<p>on resident fauna during construction.</p>	<p><b>Cumulative impacts:</b></p> <p>During the construction phase the activity would contribute to cumulative fauna disturbance and disruption in the area, but as there are large tracts of intact habitat in the area, it is likely that displaced fauna will have space to move about the site to avoid areas of high activity.</p>	<p><b>LOW-</b></p>	<p>should not be allowed to wander off the demarcated construction site.</p> <ul style="list-style-type: none"> <li>» Fires should not be allowed on site.</li> <li>» All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.</li> <li>» All construction vehicles should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as snakes and tortoises.</li> </ul>
<p><b>Soil erosion:</b></p> <p>Disturbance created during construction will leave the site vulnerable to erosion.</p>	<p><b>Direct impacts:</b></p> <p>Disturbance could result in soil erosion.</p>	<p><b>LOW-</b></p>	<ul style="list-style-type: none"> <li>» Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan.</li> <li>» All roads should have runoff control features which redirects water flow and dissipate any energy in the water that may pose an erosion risk.</li> <li>» Regular monitoring for erosion during construction to ensure that no erosion problems are developing as a result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project.</li> <li>» All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	<p>-</p>	
	<p><b>Cumulative impacts:</b> Erosion would contribute to degradation in the area, but as this can be well-mitigated, the contribution can be minimised.</p>	<p><b>LOW-</b></p>	

Activity	Impact summary	Significance	Proposed mitigation
			<p>techniques.</p> <ul style="list-style-type: none"> <li>» All cleared areas should be revegetated with indigenous perennial species from the local area.</li> </ul>
<b>FRESHWATER IMPACTS</b>			
<p><b>Vegetation clearance in the watercourse:</b></p> <p>Vegetation clearance in the riparian habitat and in-stream habitat of the watercourses for the proposed access road. Potential for pioneer and alien invasive species to encroach on watercourses during and after disturbance caused during vegetation clearance.</p>	<p><b>Direct impacts:</b></p> <p>Loss of vegetation in the in-stream habitat of the watercourses.</p>	MEDIUM-	<ul style="list-style-type: none"> <li>» Vegetation clearance must be limited as far as possible and only within the servitude and course of the proposed access road. No unnecessary clearance is to be undertaken.</li> <li>» Cleared vegetation stockpiles are to be removed as soon as possible to limit disturbance.</li> <li>» No cleared vegetation stockpiles are to be placed in any of the watercourses.</li> <li>» Movement of workers within the watercourse must be limited to the servitude of the road. Workers are not allowed to wonder freely in the watercourse. This will cause unnecessary degradation of the watercourse.</li> <li>» Construction of the access road in the watercourse is to take place preferably in the summer and spring months (September to March) as these are the drier months in which rainfall is likely to be limited. Construction in the autumn and winter months (April to August) is to be avoided as far as possible, as this is when rainfall can be expected and the watercourses are likely to be in flow after rainfall events.</li> <li>» An alien invasive monitoring and control management</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>Pioneer and alien invasive species will possibly encroach on watercourses during and after disturbance caused during vegetation clearance.</p>	MEDIUM-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	

Activity	Impact summary	Significance	Proposed mitigation
			<p>programme must be compiled to manage encroachment of alien species within the watercourses and along the entire course of the road. Control along the entire route of the access road is required is to ensure that vegetation disturbance is managed and alien vegetation establishment does not take place high or lower along the road route which could result in encroachment on the watercourses at a later stage. Control along the entire access route is also important since catchment level drainage may also result in the dispersion of seeds from alien species into the watercourses should alien establish along the route of the access road outside of the watercourses. Importantly, the alien invasive monitoring and control management programme is also to be implemented post-construction for approximately two (2) years to ensure alien invasives do not encroach following construction.</p>
<p><b>Excavation impacts in the watercourse:</b></p> <p>Clearance of substrate and</p>	<p><b>Direct opportunities:</b></p> <p>Possible soil erosion and contamination of soils as well as compaction in the watercourses.</p> <p><b>Indirect opportunities:</b></p>	<p><b>MEDIUM-</b></p> <p>-</p>	<p>» Crossing points must be perpendicular to the watercourses, as far as possible, to prevent the onset of erosion along the length of the watercourse. Aligning the road in parallel will induce a</p>

Activity	Impact summary	Significance	Proposed mitigation
<p>infill of materials during road construction. Vehicle movement and compaction in the watercourses. Possible soil contamination from vehicle oils and fuels. General erosion impacts to the watercourses.</p>	None anticipated		<p>preferential flow path altering the hydrology, which can erode away the substrate along the length of the watercourse, thereby threatening the structural integrity of the geomorphology of the watercourse. Erosion will also cause additional sedimentation impacts.</p> <ul style="list-style-type: none"> <li>» Ideally, ford crossings are to be implemented through the watercourses for the width and length of the proposed road through the watercourse. The ford crossing should either be concrete based or comprise of geotextile topped with course aggregate. Care must be taken when pouring concrete into the watercourses during the construction of the fords, so that no cement is spilt outside of the designated construction area within the watercourse. The ford crossings will have a relatively minimal impact on the hydrology of the watercourses. However, if ford crossings cannot be implemented, any other suitable crossing can be implemented following approval from the Department of Water and Sanitation.</li> <li>» Vehicle movement must be limited as far as possible through watercourses to minimise compaction impacts.</li> <li>» All vehicles and machinery to</li> </ul>
	<p><b>Cumulative impacts:</b> None anticipated</p>	-	

Activity	Impact summary	Significance	Proposed mitigation
			<p>be used within the watercourses during construction must be checked for oil and fuel leaks before being allowed to cross or work in the watercourses. Should a leak be detected, the vehicle is to be prohibited from working within or crossing through the watercourses until repaired.</p> <ul style="list-style-type: none"> <li>» Soil stockpiles are to be removed as soon as possible to limit disturbance.</li> <li>» No soil stockpiles are to be placed within 50m of any watercourse. Soil stockpiles within 100m of a watercourse must be bunded with suitable materials (such as bricks or planks), to prevent sedimentation.</li> <li>» During construction, silt netting must be erected on the downstream side, along the length of the road crossing, through the watercourse and riparian habitat (as delineated) during the dry season to contain sediment as far as possible. However, the silt nets are to be removed during the autumn and winter months (April to August) should construction need to take place at this time, as the silt nets will act as physical barriers to the watercourses altering the hydrology somewhat, and are likely to be washed away during or after rainfall events.</li> <li>» An appointed environmental control officer (ECO) must monitor the structural</li> </ul>



Activity	Impact summary	Significance	Proposed mitigation
			<p>integrity of the watercourses when undertaking inspections. Should any erosion be detected, mitigation measures are to be implemented to repair erosion as advised. The environmental control officer must have some experience in erosion rehabilitation to proposed adequate measures, should this be required.</p>
<p><b>Decrease in water quality of the watercourses:</b></p> <p>Water contamination due to vehicle oil and fuel leakages temporary chemical toilets. General sedimentation impacts are anticipated following clearance of vegetation in the watercourses.</p>	<p><b>Direct impacts:</b> Possible water contamination in the watercourses.</p>	<p><b>LOW-</b></p>	<ul style="list-style-type: none"> <li>» No fuels, oils or any other hazardous materials are to be brought into the watercourse or stored within 100m from the edge of the watercourses.</li> <li>» During the construction phase, no vehicles are to cross through the watercourses when the watercourses are in flow. Additionally, no work is to take place in the watercourses when in flow.</li> <li>» Temporary chemical sanitation facilities must be not be placed in the watercourses. Rather these will need to be placed at least 100m away from the watercourses.</li> <li>» Temporary chemical sanitation facilities must also be checked regularly for maintenance purposes and cleaned often to prevent spills.</li> </ul>
<p><b>Indirect opportunities:</b> None anticipated</p>	<p>-</p>		
<p><b>Cumulative impacts:</b> None anticipated</p>	<p>-</p>		
<p><b>HERITAGE</b></p>			
<p><b>Damage of heritage sites:</b></p>	<p><b>Direct impacts:</b> Construction activities could result in damage to heritage</p>	<p><b>LOW-</b></p>	<ul style="list-style-type: none"> <li>» Develop a chance finds protocol for the mitigation of possible heritage finds, to be</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
<p>The Stone Age heritage sites could be impacted upon by construction activities.</p>	sites.		<p>implemented as part of the EMP for the construction phase of the project.</p> <p>» If any artefacts are identified during construction, the chance finds protocol must be implemented</p>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None anticipated</p>	-	
<p><b>Damage of seal-in fossils:</b></p> <p>Disturb, damage, destroy or permanently seal-in fossils at or below the ground surface that are then no longer available for scientific study.</p>	<p><b>Direct impacts:</b></p> <p>Disturb, damage, destroy or permanently seal-in fossils at or below the ground surface.</p>	<b>MEDIUM -</b>	<p>» The EAP as well as the ECO for this project must be made aware of the fact that the Eccca Group sediments contains significant fossil remains, albeit mostly trace fossil assemblages. Several types of fossils have been recorded from this Group in the Karoo Basin of South Africa, with special mention of the very important Whitehill Formation. The Whitehill Formation outcrops are however very restricted in this study area.</p> <p>» In areas that are allocated a Very High and High Palaeontological sensitivity and specifically where deep excavation into bedrock is envisaged (following the geotechnical investigation), or where fossils are recorded during the geotechnical investigations, a qualified palaeontologist must be appointed to assess and record fossils at specific footprints of infrastructure developments (Phase 1 Palaeontological Impact Assessment -PIA).</p> <p>» If significant fossil finds (e.g. vertebrate teeth, bones, burrows, petrified wood) are recorded during excavations for infrastructure such as road</p>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	

Activity	Impact summary	Significance	Proposed mitigation
			developments, the palaeontologist must apply for a collection permit to collect the fossils according to the SAHRA specifications.

**Operation Phase: Alternative 1**

GENERAL			
<p><b>Increased sedimentation, contamination of soils and soil erosion:</b></p> <p>Increase in sedimentation and erosion due to the access road and the frequent movement of vehicles.</p>	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Frequent movement of vehicles may lead to the compaction of soils.</li> <li>» Compaction will lead to increased runoff and removal of vegetation</li> <li>» Disturbance and removal of soils may lead to erosion.</li> <li>» Soils may become contaminated by hydrocarbons leaking from vehicles and trucks using the access road.</li> </ul>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the operation phase.</li> <li>» Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.</li> <li>» A road/civil engineer must ensure that stormwater structures are included in the road design, in order to minimise erosion.</li> <li>» All stormwater structures implemented must be designed to comply with DWS and SANRAL requirements.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<p><b>Dust generation</b></p> <p>Dust generated by vehicles will impact on air quality in the vicinity of the site as well as</p>	<p><b>Direct impacts:</b> Dust generation will affect air quality in the vicinity of the site as well as respiration of plants.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Dust suppression methods should be undertaken during clearing, such as sprinkling and wind breaks.</li> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None</p>	-	

<p>impede photosynthesis and respiration of plants on the project site.</p>	<p>anticipated</p>		<p>during the operation phase.</p> <ul style="list-style-type: none"> <li>» Dust generation must comply with the National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).</li> </ul>
<p><b>Traffic impacts</b></p> <p>During the operational phase, an increase in vehicles will increase traffic in the vicinity of the project site.</p>	<p><b>Direct impacts:</b> More construction vehicles will be utilising the Granaatboskolk road, this will also be associated with stop and go's where necessary.</p>	<p><b>LOW-</b></p>	<ul style="list-style-type: none"> <li>» Where possible, heavy vehicle traffic should be discouraged from using roads during peak traffic hours.</li> <li>» Road signs and speed limits should be adhered to at all times.</li> <li>» Transport of material and waste should comply with the necessary road regulations.</li> </ul>
<p><b>Indirect impacts:</b> None anticipated</p>	<p>-</p>		
<p><b>Cumulative impacts:</b> None anticipated</p>	<p>-</p>		
<p><b>Social</b></p> <p>During the operational phase, temporary and medium term employment will be created.</p>	<p><b>Direct opportunities:</b></p> <p>Employment opportunities for local workers.</p>	<p><b>MEDIUM+</b></p>	<ul style="list-style-type: none"> <li>» Where possible local labour should be utilised.</li> <li>» Where possible training schemes should be used.</li> </ul>
<p><b>Indirect opportunities:</b></p> <p>The employment opportunities will enable transfer of skills to local people. The local economy will also be stimulated through new employment opportunities created for people.</p>	<p><b>LOW+</b></p>		
<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	<p>-</p>		
<p><b>Waste storage</b></p> <p>Improper storage of waste during the operational phase will</p>	<p><b>Direct impacts:</b> Improper storage of waste could lead to contamination and will adversely affect the environment</p>	<p><b>LOW-</b></p>	<ul style="list-style-type: none"> <li>» A Waste Management Plan will be required for the site.</li> <li>» Waste generated during the operational phase must be disposed of at a licenced dump/landfill (on a regular basis)</li> </ul>
<p><b>Indirect impacts:</b></p>	<p>-</p>		

adversely affect the environment	None anticipated		<ul style="list-style-type: none"> <li>» Initiate recycling programmes at the construction site.</li> <li>» The waste management hierarchy must be adopted at the construction site where waste is prevented, if it cannot be prevented it should be minimised. If waste can't be minimised it must be reused or recycled. If this is not an option it should be used for energy recovery, this may involve selling waste to third part recovery organisations. Lastly if energy recovery is not possible waste should be disposal of.</li> <li>» Should waste be stored on site, it cannot be temporarily stored for longer than 80 days.</li> </ul>
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<b>ECOLOGICAL</b>			
<p><b>Impacts on fauna:</b></p> <p>The road will generate some long-term impact on fauna due to habitat fragmentation as a result of the presence of the road and disturbance and mortality due to collisions with vehicles.</p>	<p><b>Direct impacts:</b></p> <p>Impacts on fauna in and around the site.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» All vehicles using the road should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as snakes and tortoises.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>The development would contribute to the cumulative disturbance for fauna.</p>	<b>LOW-</b>	
<p><b>Soil erosion:</b></p> <p>Disturbance created during construction will</p>	<p><b>Direct impacts:</b></p> <p>The soil erosion created in the construction phase will remain several years into the operational phase.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan.</li> <li>» The road should have runoff</li> </ul>

leave the site vulnerable to erosion for several years into the operational phase.	<b>Indirect impacts:</b>	-	control features which redirects water flow and dissipate any energy in the water which may pose an erosion risk. » Regular monitoring for erosion during operation to ensure that no erosion problems have developed as result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project. » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques. » There should be follow-up rehabilitation and revegetated of any remaining bare areas with indigenous perennial shrubs and succulents from the local area.
	<b>Cumulative impacts:</b> Erosion would contribute to degradation in the area, but as this can be well-mitigated, the contribution can be minimised.	LOW-	
<p><b>The site will be vulnerable to the invasion of alien plant species:</b></p> <p>Disturbance created during construction will leave the site vulnerable to alien plant invasion for several years into the operational phase.</p>	<b>Direct impacts:</b> Disturbance created during construction will leave the site vulnerable to alien plant invasion for several years into the operational phase.	LOW-	<p>» Alien management at the site should take place according to the Alien Invasive Management Plan.</p> <p>» Regular monitoring for alien plant during operation to ensure that no erosion problems have developed as result of the disturbance, as per the Alien Management Plan for the project.</p> <p>» Woody aliens should be controlled on at least an annual basis using the appropriate alien control techniques as determined by the species present.</p>
	<b>Indirect impacts:</b> None anticipated	-	
	<b>Cumulative impacts:</b> Alien plant invasion would contribute to degradation in the area, but as this can be well-mitigated, the contribution can be minimised.	LOW-	
<b>FRESHWATER IMPACTS</b>			
<b>Water contamination</b>	<b>Direct impacts:</b> Water contamination due to	MEDIUM-	» No fuels, oils or any other hazardous materials are to

<p><b>due to oil, fuel and chemical leakages:</b></p> <p>Water contamination due to vehicle oil and fuel leakages. General sedimentation impacts are anticipated following clearance of vegetation in the watercourses, this will continue for several years into the operational phase.</p>	<p>vehicle oil and fuel leakages. Sedimentation due to activities in the construction phase will continue for several years into the operational phase.</p>		<p>be brought into the watercourse or stored within 100m from the edge of the watercourses.</p> <p>» During the operational phase, no vehicles are to cross through the watercourses when the watercourses are in flow.</p>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<p><b>Vegetation clearance in the watercourse:</b></p> <p>Vegetation clearance in the riparian habitat and in-stream habitat of the watercourses for the proposed access road. Potential for pioneer and alien invasive species to encroach on watercourses during and after disturbance caused during vegetation clearance in the construction</p>	<p><b>Direct opportunities:</b></p> <p>Potential for pioneer and alien invasive species to encroach on watercourses during the operational phase.</p>	<b>LOW-</b>	<p>» An alien invasive monitoring and control management programme must be compiled to manage encroachment of alien species within the watercourses and along the entire course of the road. Control along the entire route of the access road is required is to ensure that vegetation disturbance is managed and alien vegetation establishment does not take place high or lower along the road route which could result in encroachment on the watercourses at a later stage. Control along the entire access route is also important since catchment level drainage may also result in the dispersion of seeds from alien species into</p>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	

<p>phase will continue for several years into the operational phase.</p>			<p>the watercourses should alien establish along the route of the access road outside of the watercourses. Importantly, the alien invasive monitoring and control management programme is also to be implemented post-construction for approximately two (2) years to ensure alien invasives do not encroach following construction.</p>
<b>HERITAGE</b>			
<p><b>Damage of heritage sites:</b></p> <p>The Stone Age heritage sites could be impacted upon during the operational phase.</p>	<p><b>Direct impacts:</b></p> <p>Construction activities could result in damage to heritage sites.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Develop a chance finds protocol for the mitigation of possible heritage finds, to be implemented as part of the EMP for the operational phase of the project.</li> <li>» If any artefacts are identified during the operational, the chance finds protocol must be implemented</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<p><b>Damage of seal-in fossils:</b></p> <p>Disturb, damage, destroy or permanently seal-in fossils at or below the ground surface that are then no longer available for scientific study.</p>	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Disturb, damage, destroy or permanently seal-in fossils at or below the ground surface.</li> </ul>	<b>MEDIUM-</b>	<ul style="list-style-type: none"> <li>» The EAP as well as the ECO for this project must be made aware of the fact that the Ecca Group sediments contains significant fossil remains, albeit mostly trace fossil assemblages. Several types of fossils have been recorded from this Group in the Karoo Basin of South Africa, with special mention of the very important Whitehill Formation. The Whitehill Formation outcrops are however very restricted in this study area.</li> <li>» If significant fossil finds (e.g. vertebrate teeth, bones, burrows, petrified wood) are</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	



			recorded during excavations for infrastructure such as road developments, the palaeontologist must apply for a collection permit to collect the fossils according the SAHRA specifications.
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**Decommissioning Phase: Alternative 1**

<p><b>Increased sedimentation, contamination of soils and soil erosion:</b></p> <p>Increase in sedimentation and erosion due to the access road and the frequent movement of vehicles.</p>	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Frequent movement of vehicles may lead to the compaction of soils.</li> <li>» Compaction will lead to increased runoff and removal of vegetation</li> <li>» Disturbance and removal of soils may lead to erosion.</li> <li>» Soils may become contaminated by hydrocarbons leaking from vehicles and trucks using the access road.</li> </ul>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the operation phase.</li> <li>» Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.</li> <li>» A road/civil engineer must ensure that stormwater structures are included in the road design, in order to minimise erosion.</li> <li>» All stormwater structures implemented must be designed to comply with DWS and SANRAL requirements.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<p><b>Dust generation</b></p> <p>Dust generated by vehicles will impact on air quality in the vicinity of the site as well as impede</p>	<p><b>Direct impacts:</b> Dust generation will affect air quality in the vicinity of the site as well as respiration of plants.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Dust suppression methods should be undertaken during clearing, such as sprinkling and wind breaks.</li> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None</p>	-	

<p>photosynthesis and respiration of plants on the project site.</p>	<p>anticipated</p>		<p>during the operation phase.</p> <ul style="list-style-type: none"> <li>» Dust generation must comply with the National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).</li> </ul>
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**ECOLOGICAL**

<p><b>Disturbance of fauna:</b></p> <p>The decommissioning of the facility may lead to disturbance or persecution of fauna within or the areas adjacent to the facility.</p>	<p><b>Direct impacts:</b></p> <p>Impacts on fauna in and around the site.</p>	<p><b>LOW-</b></p>	<ul style="list-style-type: none"> <li>» Any potentially dangerous fauna such snakes or fauna threatened by the decommissioning activities should be removed to a safe location.</li> <li>» The collection, hunting or harvesting of any plants or animals at the site or in the surrounding areas should be strictly forbidden.</li> <li>» All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.</li> <li>» All vehicles accessing the site should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as snakes and tortoises.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	<p>-</p>	
	<p><b>Cumulative impacts:</b></p> <p>The development would contribute to the cumulative disturbance for fauna.</p>	<p><b>LOW-</b></p>	
<p><b>Soil erosion:</b></p> <p>Decommissioning of the site will leave the site</p>	<p><b>Direct impacts:</b></p> <p>The soil erosion from earthwork (levelling) may be accelerated for a short period until vegetation settles and embankment reshaping and</p>	<p><b>LOW-</b></p>	<ul style="list-style-type: none"> <li>» Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan.</li> <li>» Regular monitoring for</li> </ul>

<p>vulnerable to soil erosion from earthwork (levelling), which may be accelerated for a short period until vegetation settles.</p>	<p>levelling has been completed.</p>		<p>erosion after decommissioning for at least 5 years to ensure that no erosion problems have developed as a result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project.</p> <ul style="list-style-type: none"> <li>» All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.</li> <li>» All cleared areas resulting from decommissioning should be revegetated with indigenous perennial species from the local area.</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None anticipated</p>	-	
<p><b>The site will be vulnerable to the invasion of alien plant species:</b></p> <p>Disturbance created during decommissioning will leave the site vulnerable to alien plant invasion for several years after site clearing and decommissioning.</p>	<p><b>Direct impacts:</b> Disturbance created during construction will leave the site vulnerable to alien plant invasion for several years into the operational phase.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Alien management at the site should take place according to the Alien Invasive Management Plan.</li> <li>» Regular monitoring for alien plant invasion following decommissioning to ensure that no erosion problems have developed as result of the disturbance, as per the Alien Management Plan for the project.</li> <li>» Woody aliens should be controlled on at least an annual basis using the appropriate alien control techniques as determined by the species present. Follow-up monitoring should occur for at least 5 years after decommissioning.</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> Alien plant invasion would contribute to degradation in the area, but as this can be well-mitigated, the contribution can be minimised.</p>	<b>LOW-</b>	

**ALTERNATIVE 2:**

Activity	Impact summary	Significance	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>			
<b>Construction Phase Impacts</b>			
<b>GENERAL</b>			
<p><b>Poor Stormwater management</b></p> <p>During the construction phase, unsuitable road design will have an impact on stormwater at the site.</p>	<p><b>Direct impacts:</b> Unsuitable road design may cause traffic safety risks due to insufficient storm water drainage planning.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» must be compiled by an engineer approved by DEA, DWS and the ECO for the project.</li> <li>» All stormwater structures must comply with DWS and SANRAL requirements.</li> <li>» The road engineer must ensure that suitable stormwater structures are included in the road design in order to minimise erosion and sedimentation of watercourses.</li> </ul>
	<p><b>Indirect impacts:</b> Unsuitable road design may lead to increased levels of erosion, sedimentation and pollution of the water courses.</p>	<b>LOW-</b>	
	<p><b>Cumulative impacts:</b> Unsuitable road design and erosion impacts may aggravate sedimentation into local drainage lines and rivers.</p>	<b>LOW-</b>	
<p><b>Noise Impacts:</b></p> <p>Impacts from increased noise levels will occur during construction of the proposed activity.</p>	<p><b>Direct impacts:</b> Increased noise levels by machinery during the construction of the road.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Machinery and equipment are to be switched off when not used.</li> <li>» Construction activities should take place during work hours, these are to be known and agreed upon with all contractors.</li> <li>» Retro-fit some equipment with dampening measures</li> <li>» All labourers to wear PPE</li> </ul>
	<p><b>Indirect impacts:</b></p>	-	
	<p><b>Cumulative impacts:</b></p>	-	
<p><b>Increased sedimentation, contamination of soils and soil erosion:</b></p> <p>Increase in sedimentation and erosion within the</p>	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Frequent movement of heavy machinery may lead to the compaction of soils.</li> <li>» Compaction will lead to increased runoff and removal of vegetation</li> <li>» Disturbance and removal of soils may</li> </ul>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» All soils compacted as a result of construction activities should be profiled and monitored to ensure establishment of natural vegetation.</li> <li>» Driving must take place on existing roads and a speed</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation	
<p>development area as a result of frequent movements of machinery and clearing of vegetation is expected to occur.</p>	<p>lead to erosion.</p> <ul style="list-style-type: none"> <li>» Soils may become contaminated by hydrocarbons leaking from construction equipment and machinery.</li> </ul>		<p>limit of 30km/h must be implemented on all roads associated with the project during the construction phase.</p> <ul style="list-style-type: none"> <li>» Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.</li> <li>» A road/civil engineer must ensure that stormwater structures are included in the road design, in order to minimise erosion.</li> <li>» All stormwater structures must be designed to comply with DWS and SANRAL requirements.</li> </ul>	
	<p><b>Indirect impacts:</b></p> <p>Compaction will lead to increased runoff and removal of vegetation</p>			LOW-
	<p><b>Cumulative impacts:</b></p> <p>Valuable topsoil losses, sedimentation and soil erosion.</p>			LOW-
<p><b>Dust generation</b></p> <p>Dust generated by clearing and of vegetation and earthworks will impact on air quality in the vicinity of the site as well as impede photosynthesis and respiration of plants on the project site.</p>	<p><b>Direct impacts:</b></p> <p>Dust generation will affect air quality in the vicinity of the site as well as respiration of plants.</p>	LOW-	<ul style="list-style-type: none"> <li>» Dust suppression methods should be undertaken during clearing, such as sprinkling and wind breaks.</li> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the construction phase.</li> <li>» Dust generation must comply with the National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).</li> <li>» Limit vegetation clearing as far as possible.</li> </ul>	
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-		
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-		

Activity	Impact summary	Significance	Proposed mitigation
<p><b>Traffic impacts</b></p> <p>During construction, an increase in construction vehicles will increase traffic in the vicinity of the project site.</p>	<p><b>Direct impacts:</b></p> <p>More construction vehicles will be utilising the Granaatboskolk road.</p>	LOW-	<ul style="list-style-type: none"> <li>» Where possible, heavy vehicle traffic should be discouraged from using roads during peak traffic hours.</li> <li>» Road signs and speed limits should be adhered to at all times.</li> <li>» Transport of material and waste should comply with the necessary road regulations.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>The construction vehicles that will be using the Granaatboskolk road will place additional pressure on the roads in the area.</p>	LOW-	
<p><b>Safety and health Impacts:</b></p> <p>Safety and security impacts are expected to occur during the construction of an access road</p>	<p><b>Direct impacts:</b> Negative health impacts on the health of construction workers.</p>	LOW-	<ul style="list-style-type: none"> <li>» All construction staff must have the appropriate Personal Protective Equipment (PPE) and safety equipment before being allowed to carry construction activities.</li> <li>» The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents.</li> <li>» Appoint Health, Safety and Environment (HSE) Officer to ensure monitoring of safety conditions during construction activities.</li> <li>» Classify all Hazardous waste and dispose of appropriately.</li> <li>» Adhere to the Occupational Health and Safety Act (OHSA) (Act 85 of 1993).</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None anticipated</p>	-	
<p><b>Social</b></p> <p>During construction, temporary and</p>	<p><b>Direct opportunities:</b></p> <p>Employment opportunities for local workers.</p>	MEDIUM+	<ul style="list-style-type: none"> <li>» Where possible local labour should be utilised.</li> <li>» Where possible training schemes should be used.</li> </ul>
	<p><b>Indirect opportunities:</b></p> <p>The employment opportunities</p>	LOW+	

Activity	Impact summary	Significance	Proposed mitigation
medium-term employment will be created.	will enable transfer of skills to local people. The local economy will also be stimulated through new employment opportunities created for people.		
	<b>Cumulative impacts:</b> None anticipated	-	
<b>Waste storage</b>	<b>Direct impacts:</b> Improper storage of waste could lead to contamination and will adversely affect the environment	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» A Waste Management Plan will be required for the site.</li> <li>» Construction waste must be disposed of at a licenced dump/landfill (on a regular basis)</li> <li>» Initiate recycling programmes at the construction site.</li> <li>» The waste management hierarchy must be adopted at the construction site where waste is prevented, if it cannot be prevented it should be minimised. If waste can't be minimised it must be reused or recycled. If this is not an option it should be used for energy recovery. This may involve selling waste to third part recovery organisations. Lastly if energy recovery is not possible waste should be disposal of.</li> <li>» Should waste be stored on site, it cannot be temporarily stored for longer than 80 days.</li> </ul>
Improper storage of waste will adversely affect the environment	<b>Indirect impacts:</b> None anticipated	-	
	<b>Cumulative impacts:</b> None anticipated	-	
<b>ECOLOGICAL</b>			
<b>Disturbance and vegetation clearing:</b>	<b>Direct impacts:</b> Clearing of plants during construction will lead to loss of individuals of plants of SCC.	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» The final route should be subject to a preconstruction walk-through before construction commences and adjusted where required to reduce impacts on SCC</li> </ul>
Impacts on	<b>Indirect impacts:</b>	-	

Activity	Impact summary	Significance	Proposed mitigation
<p>vegetation will occur due to disturbance and vegetation clearing associated with the construction of the access road. In addition, it is possible that some loss of individuals of plants o Species of Conservation Concern (SCC) will occur.</p>	None anticipated		<p>and habitats of concern.</p> <ul style="list-style-type: none"> <li>» Search and Rescue of SCCs should be conducted prior to clearing activities.</li> <li>» Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes topics such as no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within the demarcated construction areas etc.</li> <li>» All construction vehicles should adhere to clearly defined and demarcated roads.</li> <li>» No off-road driving is to be allowed once the site has been pegged for construction.</li> </ul>
	<p><b>Cumulative impacts:</b></p> <p>The development will contribute to cumulative impacts on habitat loss and transformation in the area.</p>	<b>LOW-</b>	
<p><b>Loss of habitat and impacts on local fauna:</b></p> <p>Disturbance, transformation and loss of habitat will have a negative effect on resident fauna during construction.</p>	<p><b>Direct impacts:</b></p> <p>Disturbance, transformation and loss of habitat will have a negative effect on resident fauna during construction.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Any fauna directly threatened by the construction activities should be removed to a safe location by the Environmental Control Officer (ECO) or other suitably qualified person.</li> <li>» The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden. Personnel should not be allowed to wander off the demarcated construction site.</li> <li>» Fires should not be allowed on site.</li> <li>» All hazardous materials</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>During the construction phase the activity would contribute to cumulative fauna disturbance and disruption in the area, but as there are large tracts of intact habitat in</p>	<b>LOW-</b>	



Activity	Impact summary	Significance	Proposed mitigation
	the area, it is likely that displaced fauna will have space to move about the site to avoid areas of high activity.		<p>should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.</p> <ul style="list-style-type: none"> <li>» All construction vehicles should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as snakes and tortoises.</li> </ul>
<p><b>Soil erosion:</b></p> <p>Disturbance created during construction will leave the site vulnerable to erosion.</p>	<p><b>Direct impacts:</b></p> <p>Disturbance could result in soil erosion.</p>	<p><b>LOW-</b></p>	<ul style="list-style-type: none"> <li>» Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan.</li> <li>» All roads should have runoff control features which redirects water flow and dissipate any energy in the water that may pose an erosion risk.</li> <li>» Regular monitoring for erosion during construction to ensure that no erosion problems are developing as a result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project.</li> <li>» All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.</li> <li>» All cleared areas should be revegetated with indigenous perennial species from the local area.</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	<p>-</p>	
	<p><b>Cumulative impacts:</b> Erosion would contribute to degradation in the area, but as this can be well-mitigated, the contribution can be minimised.</p>	<p><b>LOW-</b></p>	
<b>FRESHWATER IMPACTS</b>			

Activity	Impact summary	Significance	Proposed mitigation
<p><b>Vegetation clearance in the watercourse:</b></p> <p>Vegetation clearance in the riparian habitat and in-stream habitat of the watercourses for the proposed access road. Potential for pioneer and alien invasive species to encroach on watercourses during and after disturbance caused during vegetation clearance.</p>	<p><b>Direct impacts:</b></p> <p>Loss of vegetation in the in-stream habitat of the watercourses.</p>	<p><b>MEDIUM-</b></p>	<ul style="list-style-type: none"> <li>» Vegetation clearance must be limited as far as possible and only within the servitude and course of the proposed access road. No unnecessary clearance is to be undertaken.</li> <li>» Cleared vegetation stockpiles are to be removed as soon as possible to limit disturbance.</li> <li>» No cleared vegetation stockpiles are to be placed in any of the watercourses.</li> <li>» Movement of workers within the watercourse must be limited to the servitude of the road. Workers are not allowed to wonder freely in the watercourse. This will cause unnecessary degradation of the watercourse.</li> <li>» Construction of the access road in the watercourse is to take place preferably in the summer and spring months (September to March) as these are the drier months in which rainfall is likely to be limited. Construction in the autumn and winter months (April to August) is to be avoided as far as possible, as this is when rainfall can be expected and the watercourses are likely to be in flow after rainfall events.</li> <li>» An alien invasive monitoring and control management programme must be compiled to manage encroachment of alien species within the watercourses and along the entire course of the road.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>Pioneer and alien invasive species will possibly encroach on watercourses during and after disturbance caused during vegetation clearance.</p>	<p><b>MEDIUM-</b></p>	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	<p>-</p>	

Activity	Impact summary	Significance	Proposed mitigation
			<p>Control along the entire route of the access road is required is to ensure that vegetation disturbance is managed and alien vegetation establishment does not take place along the road route, as this would result in encroachment on the watercourses at a later stage. Control along the entire access route is also important since catchment level drainage may also result in the dispersion of seeds from alien species into the watercourses should alien establish along the route of the access road outside of the watercourses. Importantly, the alien invasive monitoring and control management programme is also to be implemented post-construction for approximately two (2) years to ensure alien invasives do not encroach following construction.</p>
<p><b>Excavation impacts in the watercourse:</b></p> <p>Clearance of substrate and infill of materials during road construction. Vehicle movement and compaction in the watercourses. Possible soil</p>	<p><b>Direct opportunities:</b></p> <p>Possible soil erosion and contamination of soils as well as compaction in the watercourses.</p> <p><b>Indirect opportunities:</b></p> <p>None anticipated</p> <p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	<p><b>MEDIUM-</b></p> <p>-</p> <p>-</p>	<p>» Crossing points must be perpendicular to the watercourses, as far as possible, to prevent the onset of erosion along the length of the watercourse. Aligning the road in parallel will induce a preferential flow path altering the hydrology, which can erode away the substrate along the length of the watercourse, thereby threatening the structural integrity of the geomorphology of the</p>

Activity	Impact summary	Significance	Proposed mitigation
<p>contamination from vehicle oils and fuels. General erosion impacts to the watercourses.</p>			<p>watercourse. Erosion will also cause additional sedimentation impacts.</p> <ul style="list-style-type: none"> <li>» Ideally, ford crossings are to be implemented through the watercourses for the width and length of the proposed road through the watercourse. The ford crossing should either be concrete based or comprise of geotextile topped with coarse aggregate. Care must be taken when pouring concrete into the watercourses during the construction of the fords, so that no cement is spilt outside of the designated construction area within the watercourse. The ford crossings will have a relatively minimal impact on the hydrology of the watercourses. However, if ford crossings cannot be implemented, any other suitable crossing can be implemented following approval from the Department of Water and Sanitation.</li> <li>» Vehicle movement must be limited as far as possible through watercourses to minimise compaction impacts.</li> <li>» All vehicles and machinery to be used within the watercourses during construction must be checked for oil and fuel leaks before being allowed to cross or work in the watercourses. Should a leak be detected, the vehicle is to</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
			<p>be prohibited from working within or crossing through the watercourses until repaired.</p> <ul style="list-style-type: none"> <li>» Soil stockpiles are to be removed as soon as possible to limit disturbance.</li> <li>» No soil stockpiles are to be placed within 50m of any watercourse. Soil stockpiles within 100m of a watercourse must be bunded with suitable materials (such as bricks or planks), to prevent sedimentation.</li> <li>» During construction, silt netting must be erected on the downstream side, along the length of the road crossing, through the watercourse and riparian habitat (as delineated) during the dry season to contain sediment as far as possible. However, the silt nets are to be removed during the autumn and winter months (April to August) should construction need to take place at this time, as the silt nets will act as physical barriers to the watercourses altering the hydrology somewhat, and are likely to be washed away during or after rainfall events.</li> <li>» An appointed environmental control officer (ECO) must monitor the structural integrity of the watercourses when undertaking inspections. Should any erosion be detected, mitigation measures are to be implemented to repair erosion as advised. The environmental control officer</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
			must have some experience in erosion rehabilitation to proposed adequate measures, should this be required.
<p><b>Decrease in water quality of the watercourses:</b></p> <p>Water contamination due to vehicle oil and fuel leakages temporary chemical toilets. General sedimentation impacts are anticipated following clearance of vegetation in the watercourses.</p>	<p><b>Direct impacts:</b></p> <p>Possible water contamination in the watercourses.</p>	LOW-	<ul style="list-style-type: none"> <li>» No fuels, oils or any other hazardous materials are to be brought into the watercourse or stored within 100m from the edge of the watercourses.</li> <li>» During the construction phase, no vehicles are to cross through the watercourses when the watercourses are in flow. Additionally, no work is to take place in the watercourses when in flow.</li> <li>» Temporary chemical sanitation facilities must be not be placed in the watercourses. Rather these will need to be placed at least 100m away from the watercourses.</li> <li>» Temporary chemical sanitation facilities must also be checked regularly for maintenance purposes and cleaned often to prevent spills.</li> </ul>
	<p><b>Indirect opportunities:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<b>HERITAGE</b>			
<p><b>Damage of heritage sites:</b></p> <p>The Stone Age heritage sites could be impacted upon by construction activities.</p>	<p><b>Direct impacts:</b></p> <p>Construction activities could result in damage to heritage sites.</p>	MEDIUM-	<ul style="list-style-type: none"> <li>» Develop a chance finds protocol for the mitigation of possible heritage finds, to be implemented as part of the EMP for the construction phase of the project.</li> <li>» If any artefacts are identified during construction, the chance finds protocol must be implemented</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None anticipated</p>	-	

Activity	Impact summary	Significance	Proposed mitigation
<p><b>Damage of seal-in fossils:</b></p> <p>Disturb, damage, destroy or permanently seal-in fossils at or below the ground surface that are then no longer available for scientific study.</p>	<p><b>Direct impacts:</b></p> <p>Disturb, damage, destroy or permanently seal-in fossils at or below the ground surface.</p>	<p><b>MEDIUM -</b></p>	<ul style="list-style-type: none"> <li>» The EAP as well as the ECO for this project must be made aware of the fact that the Eccca Group sediments contains significant fossil remains, albeit mostly trace fossil assemblages. Several types of fossils have been recorded from this Group in the Karoo Basin of South Africa, with special mention of the very important Whitehill Formation. The Whitehill Formation outcrops are however very restricted in this study area.</li> <li>» In areas that are allocated a Very High and High Palaeontological sensitivity and specifically where deep excavation into bedrock is envisaged (following the geotechnical investigation), or where fossils are recorded during the geotechnical investigations, a qualified palaeontologist must be appointed to assess and record fossils at specific footprints of infrastructure developments (Phase 1 PIA).</li> <li>» If significant fossil finds (e.g. vertebrate teeth, bones, burrows, petrified wood) are recorded during excavations for infrastructure such as road developments, the palaeontologist must apply for a collection permit to collect the fossils according the SAHRA specifications.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	<p>-</p>	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	<p>-</p>	

**Operational phase: Alternative 2**

GENERAL			
<p><b>Increased sedimentation, contamination of soils and soil erosion:</b></p> <p>Increase in sedimentation and erosion due to the access road and the frequent movement of vehicles.</p>	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Frequent movement of vehicles may lead to the compaction of soils.</li> <li>» Compaction will lead to increased runoff and removal of vegetation</li> <li>» Disturbance and removal of soils may lead to erosion.</li> <li>» Soils may become contaminated by hydrocarbons leaking from vehicles and trucks using the access road.</li> </ul>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the operation phase.</li> <li>» Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.</li> <li>» A road/civil engineer must ensure that stormwater structures are included in the road design, in order to minimise erosion.</li> <li>» All stormwater structures implemented must be designed to comply with DWS and SANRAL requirements.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<p><b>Dust generation</b></p> <p>Dust generated by vehicles will impact on air quality in the vicinity of the site as well as impede photosynthesis and respiration of plants on the project site.</p>	<p><b>Direct impacts:</b> Dust generation will affect air quality in the vicinity of the site as well as respiration of plants.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Dust suppression methods should be undertaken during clearing, such as sprinkling and wind breaks.</li> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the operation phase.</li> <li>» Dust generation must comply with the National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None anticipated</p>	-	



			2004).
<p><b>Traffic impacts</b></p> <p>During the operational phase, an increase in vehicles will increase traffic in the vicinity of the project site.</p>	<p><b>Direct impacts:</b> More construction vehicles will be utilising the Granaatboskolk road, this will also be associated with stop and go's where necessary.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Where possible, heavy vehicle traffic should be discouraged from using roads during peak traffic hours.</li> <li>» Road signs and speed limits should be adhered to at all times.</li> <li>» Transport of material and waste should comply with the necessary road regulations.</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None anticipated</p>	-	
<p><b>Social</b></p> <p>During the operational phase, temporary and medium term employment will be created.</p>	<p><b>Direct opportunities:</b></p> <p>Employment opportunities for local workers.</p>	<b>MEDIUM+</b>	<ul style="list-style-type: none"> <li>» Where possible local labour should be utilised.</li> <li>» Where possible training schemes should be used.</li> </ul>
	<p><b>Indirect opportunities:</b></p> <p>The employment opportunities will enable transfer of skills to local people. The local economy will also be stimulated through new employment opportunities created for people.</p>	<b>LOW+</b>	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<p><b>Waste storage</b></p> <p>Improper storage of waste during the operational phase will adversely affect the environment</p>	<p><b>Direct impacts:</b> Improper storage of waste could lead to contamination and will adversely affect the environment</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» A Waste Management Plan will be required for the site.</li> <li>» Waste generated during the operational phase must be disposed of at a licenced dump/landfill (on a regular basis)</li> <li>» Initiate recycling programmes at the construction site.</li> <li>» The waste management hierarchy must be adopted at the construction site where waste is prevented, if it cannot be prevented it should be minimised. If waste</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	

			<p>can't be minimised it must be reused or recycled. If this is not an option it should be used for energy recovery, this may involve selling waste to third part recovery organisations. Lastly if energy recovery is not possible waste should be disposal of.</p> <p>» Should waste be stored on site, it cannot be temporarily stored for longer than 80 days.</p>
ECOLOGICAL			
<p><b>Impacts on fauna:</b></p> <p>The road will generate some long-term impact on fauna due to habitat fragmentation as a result of the presence of the road and disturbance and mortality due to collisions with vehicles.</p>	<p><b>Direct impacts:</b></p> <p>Impacts on fauna in and around the site.</p>	<b>LOW-</b>	<p>» All vehicles using the road should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as snakes and tortoises.</p>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>The development would contribute to the cumulative disturbance for fauna.</p>	<b>LOW-</b>	
<p><b>Soil erosion:</b></p> <p>Disturbance created during construction will leave the site vulnerable to erosion for several years into the operational phase.</p>	<p><b>Direct impacts:</b></p> <p>The soil erosion created in the construction phase will remain several years into the operational phase.</p>	<b>LOW-</b>	<p>» Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan.</p> <p>» The road should have runoff control features which redirects water flow and dissipate any energy in the water which may pose an erosion risk.</p> <p>» Regular monitoring for erosion during operation to ensure that no erosion problems have developed as</p>
	<p><b>Indirect impacts:</b></p>	-	
	<p><b>Cumulative impacts:</b></p> <p>Erosion would contribute to degradation in the area, but as this can be well-mitigated, the contribution can be</p>	<b>LOW-</b>	

	minimised.		<p>result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project.</p> <ul style="list-style-type: none"> <li>» All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.</li> <li>» There should be follow-up rehabilitation and revegetated of any remaining bare areas with indigenous perennial shrubs and succulents from the local area.</li> </ul>
<p><b>The site will be vulnerable to the invasion of alien plant species:</b></p> <p>Disturbance created during construction will leave the site vulnerable to alien plant invasion for several years into the operational phase.</p>	<p><b>Direct impacts:</b> Disturbance created during construction will leave the site vulnerable to alien plant invasion for several years into the operational phase.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Alien management at the site should take place according to the Alien Invasive Management Plan.</li> <li>» Regular monitoring for alien plant during operation to ensure that no erosion problems have developed as result of the disturbance, as per the Alien Management Plan for the project.</li> <li>» Woody aliens should be controlled on at least an annual basis using the appropriate alien control techniques as determined by the species present.</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> Alien plant invasion would contribute to degradation in the area, but as this can be well-mitigated, the contribution can be minimised.</p>	<b>LOW-</b>	
<b>FRESHWATER IMPACTS</b>			
<p><b>Water contamination due to oil, fuel and chemical leakages:</b></p> <p>Water contamination due to vehicle oil</p>	<p><b>Direct impacts:</b></p> <p>Water contamination due to vehicle oil and fuel leakages. Sedimentation due to activities in the construction phase will continue for several years into the operational phase.</p>	<b>MEDIUM-</b>	<ul style="list-style-type: none"> <li>» No fuels, oils or any other hazardous materials are to be brought into the watercourse or stored within 100m from the edge of the watercourses.</li> <li>» During the operational phase, no vehicles are to cross through the watercourses when the</li> </ul>
	<p><b>Indirect impacts:</b></p>	-	

<p>and fuel leakages. General sedimentation impacts are anticipated following clearance of vegetation in the watercourses, this will continue for several years into the operational phase.</p>	<p>None anticipated</p>		<p>watercourses are in flow.</p>
<p><b>Vegetation clearance in the watercourse:</b></p> <p>Vegetation clearance in the riparian habitat and in-stream habitat of the watercourses for the proposed access road. Potential for pioneer and alien invasive species to encroach on watercourses during and after disturbance caused during vegetation clearance in the construction phase will continue for several years into the operational phase.</p>	<p><b>Direct opportunities:</b></p> <p>Potential for pioneer and alien invasive species to encroach on watercourses during the operational phase.</p>	<p><b>LOW-</b></p>	<p>» An alien invasive monitoring and control management programme must be compiled to manage encroachment of alien species within the watercourses and along the entire course of the road. Control along the entire route of the access road is required is to ensure that vegetation disturbance is managed and alien vegetation establishment does not take place high or lower along the road route which could result in encroachment on the watercourses at a later stage. Control along the entire access route is also important since catchment level drainage may also result in the dispersion of seeds from alien species into the watercourses should alien establish along the route of the access road outside of the watercourses. Importantly, the alien invasive monitoring and control management programme is also to be</p>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	<p>-</p>	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	<p>-</p>	

			implemented post-construction for approximately two (2) years to ensure alien invasives do not encroach following construction.
HERITAGE			
<p><b>Damage of heritage sites:</b></p> <p>The Stone Age heritage sites could be impacted upon during the operational phase.</p>	<p><b>Direct impacts:</b></p> <p>Construction activities could result in damage to heritage sites.</p>	<p><b>MEDIUM-</b></p>	<ul style="list-style-type: none"> <li>» Develop a chance finds protocol for the mitigation of possible heritage finds, to be implemented as part of the EMP for the operational phase of the project.</li> <li>» If any artefacts are identified during the operational, the chance finds protocol must be implemented</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<p><b>Damage of seal-in fossils:</b></p> <p>Disturb, damage, destroy or permanently seal-in fossils at or below the ground surface that are then no longer available for scientific study.</p>	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Disturb, damage, destroy or permanently seal-in fossils at or below the ground surface.</li> </ul>	<p><b>MEDIUM-</b></p>	<ul style="list-style-type: none"> <li>» The EAP as well as the ECO for this project must be made aware of the fact that the Ecca Group sediments contains significant fossil remains, albeit mostly trace fossil assemblages. Several types of fossils have been recorded from this Group in the Karoo Basin of South Africa, with special mention of the very important Whitehill Formation. The Whitehill Formation outcrops are however very restricted in this study area.</li> <li>» If significant fossil finds (e.g. vertebrate teeth, bones, burrows, petrified wood) are recorded during excavations for infrastructure such as road developments, the palaeontologist must apply for a collection permit to collect the fossils according the SAHRA specifications.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	

**Decommissioning Phase: Alternative 2**

<p><b>Increased sedimentation, contamination of soils and soil erosion:</b></p> <p>Increase in sedimentation and erosion due to the access road and the frequent movement of vehicles.</p>	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Frequent movement of vehicles may lead to the compaction of soils.</li> <li>» Compaction will lead to increased runoff and removal of vegetation</li> <li>» Disturbance and removal of soils may lead to erosion.</li> <li>» Soils may become contaminated by hydrocarbons leaking from vehicles and trucks using the access road.</li> </ul>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the operation phase.</li> <li>» Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.</li> <li>» A road/civil engineer must ensure that stormwater structures are included in the road design, in order to minimise erosion.</li> <li>» All stormwater structures implemented must be designed to comply with DWS and SANRAL requirements.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	
<p><b>Dust generation</b></p> <p>Dust generated by vehicles will impact on air quality in the vicinity of the site as well as impede photosynthesis and respiration of plants on the project site.</p>	<p><b>Direct impacts:</b> Dust generation will affect air quality in the vicinity of the site as well as respiration of plants.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Dust suppression methods should be undertaken during clearing, such as sprinkling and wind breaks.</li> <li>» Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the operation phase.</li> <li>» Dust generation must comply with the National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> None anticipated</p>	-	

			of 2004).
ECOLOGICAL			
<p><b>Disturbance of fauna:</b></p> <p>The decommissioning of the facility may lead to disturbance or persecution of fauna within or the areas adjacent to the facility.</p>	<p><b>Direct impacts:</b></p> <p>Impacts on fauna in and around the site.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Any potentially dangerous fauna such snakes or fauna threatened by the decommissioning activities should be removed to a safe location.</li> <li>» The collection, hunting or harvesting of any plants or animals at the site or in the surrounding areas should be strictly forbidden.</li> <li>» All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.</li> <li>» All vehicles accessing the site should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as snakes and tortoises.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>The development would contribute to the cumulative disturbance for fauna.</p>	<b>LOW-</b>	
<p><b>Soil erosion:</b></p> <p>Decommissioning of the site will leave the site vulnerable to soil erosion from earthwork (levelling), which may be accelerated for a short period until vegetation settles.</p>	<p><b>Direct impacts:</b></p> <p>The soil erosion from earthwork (levelling) may be accelerated for a short period until vegetation settles and embankment reshaping and levelling has been completed.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan.</li> <li>» Regular monitoring for erosion after decommissioning for at least 5 years to ensure that no erosion problems have developed as a result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project.</li> <li>» All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>None anticipated</p>	-	
	<p><b>Cumulative impacts:</b></p> <p>None anticipated</p>	-	

			<ul style="list-style-type: none"> <li>» All cleared areas resulting from decommissioning should be revegetated with indigenous perennial species from the local area.</li> </ul>
<p><b>The site will be vulnerable to the invasion of alien plant species:</b></p> <p>Disturbance created during decommissioning will leave the site vulnerable to alien plant invasion for several years after site clearing and decommissioning.</p>	<p><b>Direct impacts:</b> Disturbance created during construction will leave the site vulnerable to alien plant invasion for several years into the operational phase.</p>	<b>LOW-</b>	<ul style="list-style-type: none"> <li>» Alien management at the site should take place according to the Alien Invasive Management Plan.</li> <li>» Regular monitoring for alien plant invasion following decommissioning to ensure that no erosion problems have developed as result of the disturbance, as per the Alien Management Plan for the project.</li> <li>» Woody aliens should be controlled on at least an annual basis using the appropriate alien control techniques as determined by the species present. Follow-up monitoring should occur for at least 5 years after decommissioning.</li> </ul>
	<p><b>Indirect impacts:</b> None anticipated</p>	-	
	<p><b>Cumulative impacts:</b> Alien plant invasion would contribute to degradation in the area, but as this can be well-mitigated, the contribution can be minimised.</p>	<b>LOW-</b>	

**No-Go option:**

Activity	Impact Summary	Significance
<b>Alternative 1 and 2</b>		
<b>General</b>		
<b>Access road for the Dwarsrug WEF</b>	<p><b>Direct impacts:</b> The Dwarsrug WEF will have no access road and this will affect the operation aspect of the WEF.</p>	<b>MEDIUM -</b>
	<p><b>Indirect impacts:</b> None anticipated</p>	-
	<p><b>Cumulative impacts:</b> None anticipated</p>	-
<b>Continuation of current land use</b>	<p><b>Direct impacts:</b></p> <p>The farm portion is currently zoned for agricultural use, should this development not be authorised the site will remain unchanged and will continue to be used for agricultural purposes.</p>	<b>LOW+</b>



	<p><b>Indirect impacts:</b> None anticipated</p>	
	<p><b>Cumulative impacts:</b> None anticipated.</p>	
<b>Employment opportunities</b>	<p><b>Direct impacts:</b> If the proposed development does not materialize, no employment opportunities will be created in the construction of this access road.</p>	<b>MEDIUM -</b>
	<p><b>Indirect impacts:</b> None anticipated</p>	
	<p><b>Cumulative impacts:</b> None anticipated</p>	

**Distribution of impacts**

The following impact distribution was found during the impact assessment:

**Alternative 1:**

Pre-mitigation

*Construction impacts*

Low: 12  
Moderate: 13  
High: 0

*Operational impacts:*

Low: 5  
Moderate: 10  
High: 0

*Decommissioning impacts:*

Low: 5  
Moderate: 5  
High: 0

Post-mitigation

*Construction impacts*

Low: 21

Moderate: 5

High: 0

*Operational impacts:*

Low:13

Moderate:3

High: 0

*Decommissioning impacts:*

Low:7

Moderate:0

High:0

**Alternative 2:**

Pre-mitigation

*Construction impacts*

Low:11

Moderate:14

High:0

*Operational impacts:*

Low:5

Moderate:11

High:0

*Decommissioning impacts:*

Low:5

Moderate:2

High:0

Post-mitigation

*Construction impacts*

Low:19

Moderate:5

High:0

*Operational impacts:*

Low:12

Moderate:4

High: 0

*Decommissioning impacts:*

Low:7

Moderate:0

High:0

**No-Go option:**

Low:1

Moderate: 2

High:0

As can be seen, no Very High impacts were recorded. Medium impacts (pre-mitigation) were for the most part able to be lowered to Low levels with the implementation of appropriate mitigation measures.

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

**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)**

**General comparison**

Alternative 1 (preferred alternative) is considered the preferred alternative and even though it is longer, as it traverses the least extent of sensitive features, including ecological, wetland and heritage features. In addition, large sections of this route run adjacent to existing Eskom power lines (existing disturbance).

In addition, the distribution of impacts provided for in Section D above indicate that Alternative 1 is preferred due to following (post-mitigation):

- Low-rated impacts: there are two more low-rated impacts for Alternative 1 as compared to alternative 2.
- Medium-rated impacts: There are two less medium-rated impacts for Alternative 1 as compared to alternative 2.
- High-rated impacts: There are high-rated impacts for Alternative 1 or for alternative 2.

**Hydrology comparison**

The construction of the proposed access road will require eight (8) crossings through watercourses. There is already an existing impact for a section of the proposed access road which traverses the north western boundary of the farm Narosies 228, where an existing farm road is present. In addition, only minor drainage lines are affected by alternative 1. The present ecological state of the ephemeral depression wetland north of the access road assessed to be a Class C (moderately modified) ephemeral depression wetland system. The impacts combined will be less than the other alternative (Alternative 2), and is therefore preferred.

**Ecological comparison**

In terms of ecological features, the majority of the Dwarsug Access Road routes traverse low open shrubland or grassland on flat plains and gently sloping hills that are low or medium sensitivity and where the impact of the road on fauna and flora would be low or very low and of a local nature only. The overall diversity of the vegetation is low and the abundance of listed plant species is also very low. Apart from the low ridges, the only other significant feature of the site are the poorly developed drainage lines of the area. This route traverses the smallest extent of sensitive habitat as the overall diversity of the vegetation is low and the abundance of listed plant species is also very low. With the application of relatively simple mitigation and avoidance measures, the impact of the Dwarsug Access Road can be reduced to a low overall level. There are no specific long-term impacts likely to be associated with the road that cannot be reduced to a low or very low level through mitigation and avoidance.

### **Heritage comparison**

In terms of heritage resources Alternative 1 will have no impacts on heritage resources. Taking into consideration the extremely localised nature of the proposed access road development, the study has identified that the activities will have a low impact on heritage resources. It is recommended that the proposed access road Alternative 1 be chosen as that road will have no impacts on heritage resources.

Please refer to the full Heritage Impact Assessment for a complete review of the heritage features found on site (please note: none were found for Alternative 1).

## **Alternative B**

### **General comparison**

Alternative 2 is slightly shorter but traverses more sensitive features, discussed below.

In addition, the distribution of impacts provided for in Section D above indicate that Alternative 1 is preferred due to following (post-mitigation):

- Low-rated impacts: there are two more low-rated impacts for Alternative 1 as compared to alternative 2.
- Medium-rated impacts: There are two less medium-rated impacts for Alternative 1 as compared to alternative 2.
- High-rated impacts: There are high-rated impacts for Alternative 1 or for alternative 2.

### **Hydrology comparison**

This alternative requires nine (9) crossings through watercourses. There are no existing roads along this proposed route so the impact will be greater to the environment. The watercourse crossings required will also affect major drainage lines, thereby increasing the footprint of the crossings required for the access road in comparison to Alternative Access Road 1. The impact will therefore be greater for this alternative and is therefore less preferred. The proposed access road was assessed to have a moderate to low negative potential impact significance on the watercourses to be affected.

### **Ecological comparison**

The overall diversity of the vegetation is low and the abundance of listed plant species is also low but Alternative 2 traverses more sensitive habitat. This alternative also contained low ridges, and were considered to be vulnerability because of the ecological function that they perform.

**Heritage comparison**

This alternative does impact on two heritage sites and would generate higher impact in terms of heritage resources compared to compared to Alternative 1. If Alternative 2 were to be chosen, then a monitoring procedure will have to be implemented if construction will take place with regards to the two heritage sites.

**Alternative C**

**No-go alternative (compulsory)**

A summary of the impact categories for the No-Go Option is presented in the impacts tables in the section above. Please note that no mitigation has been provided for the No-Go Option.

ISSUE & IMPACT	IMPACT SUMMARY	SIGNIFICANCE NO-GO OPTION
Access road for the Dwarsrug WEF	The Dwarsrug WEF will have no access road and this will affect the operation aspect of the WEF.	MEDIUM -
Continuation of current land use	The farm portion is currently zoned for agricultural use, should this development not be authorised the the site will remain unchanged and will continue to be used for agricultural purposes.	LOW+
Employment opportunities	If the proposed development does not materialize, no employment opportunities will be created in the construction of this access road.	MEDIUM -

The No-Go Option is represented by the development not proceeding, and current land use to persist into the indefinite future. While many of the project-related impacts will thus be absent, the notable societal benefits will also be removed. Additionally, the option of continued agriculture is not without its own impacts, stemming mainly from plant and animal Species of Conservation Concern loss through disturbance, mortality and habitat loss, as well as creation of an environment for the proliferation of invasive alien plant species.

While this option still has less impact than the overall project related impacts (regardless of which alternative is selected), the loss of societal benefit makes this the less attractive option, especially in the light of the fact that this project proceeding will not reduce the agricultural potential and capacity already present within the project area. It is the opinion of the EAP that this option is not entered into, and rather the preferred option be implemented.

## 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  
X

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.

### OPINION OF THE EAP:

The EAP hereby provides the following opinion concerning the proposed Dwarsug Access Road project:

**It is the opinion of Savannah Environmental that NO FATAL FLAWS are associated with the proposed Dwarsug Access Road Project, and that all impacts can be adequately mitigated to reduce the risk or significance of impacts to an acceptable level, provided all recommendations contained in the specialist reports and Environmental Management Programme are strictly adhered to.**

It is also further the opinion of Savannah Environmental that the Basic Assessment Report contains sufficient information to allow the competent authority to make an informed decision.

It is the recommendation of the EAP that the Dwarsug Access Road project can be considered acceptable from an environmental perspective, provided that all mitigations as proposed in this report are implemented correctly. Based on the nature and extent of the proposed project, the potential impacts associated with the proposed project can be mitigated to an acceptable level. As such, it can be authorised for the **PREFERRED ALTERNATIVE (alternative 1)**, provided that all mitigation measures as stated below are strictly adhered to.

The following mitigation measures are requested to form part of the Environmental Authorisation (should the project be granted):

- » Storm water management plans must be compiled by an engineer approved by a registered engineer.
- » All stormwater structures must comply with DWS and SANRAL requirements.
- » The road engineer must ensure that suitable stormwater structures are included in the road design in order to minimise erosion and sedimentation of watercourses.
- » Machinery and equipment are to be switched off when not used.
- » Construction activities should take place during work hours, these are to be known and agreed upon with all contractors.
- » Retro-fit some equipment with dampening measures
- » All labourers to wear PPE
- » All soils compacted as a result of construction activities should be profiled and monitored to

ensure establishment of natural vegetation.

- » Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the construction phase.
- » Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.
- » A road/civil engineer must ensure that stormwater structures are included in the road design, in order to minimise erosion.
- » Dust suppression methods should be undertaken during clearing, such as sprinkling and wind breaks.
- » Dust generation must comply with the National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).
- » Limit vegetation clearing as far as possible.
- » Where possible, heavy vehicle traffic should be discouraged from using roads during peak traffic hours.
- » Road signs and speed limits should be adhered to at all times.
- » Transport of material and waste should comply with the necessary road regulations.
- » All construction staff must have the appropriate Personal Protective Equipment (PPE) and safety equipment before being allowed to carry construction activities.
- » The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents.
- » Appoint Health, Safety and Environment (HSE) Officer to ensure monitoring of safety conditions during construction activities.
- » Classify all Hazardous waste and dispose of appropriately.
- » Adhere to the Occupational Health and Safety Act (OHSA) (Act 85 of 1993).
- » Where possible local labour should be utilised.
- » Where possible training schemes should be used.
- » A Waste Management Plan will be required for the site.
- » Construction waste must be disposed of at a licenced dump/landfill (on a regular basis)
- » Initiate recycling programmes at the construction site.
- » The waste management hierarchy must be adopted at the construction site where waste is prevented, if it cannot be prevented it should be minimised. If waste can't be minimised it must be reused or recycled. If this is not an option it should be used for energy recovery. This may involve selling waste to third part recovery organisations. Lastly if energy recovery is not possible waste should be disposal of.
- » Should waste be stored on site, it cannot be temporarily stored for longer than 80 days.
- » An ecological preconstruction walk-through of the road footprint is recommended and affected individuals of protected species which cannot be avoided should be translocated to a safe area on the site prior to construction. This does not include trees which cannot be translocated and where these are protected by DAFF and permit for their destruction would be required.
- » The relevant permits must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Northern Cape Department of Environment and Nature Conservation (DENC) prior to any construction activities at the site.
- » Erosion control measures should be implemented in areas where slopes have been disturbed.
- » Cleared areas should be revegetated or monitoring to ensure that recovery is taking place.
- » Alien plant species should be cleared where applicable and annual monitoring for alien plant

species is prescribed - with follow up clearing as needed – or as per the frequency stated in the alien invasive management plan to be developed for the site.

- » Vegetation control should be by manual clearing and herbicides should not be used except to control alien plants in the prescribed manner.
- » ECO to monitor and enforce ban on hunting, collecting etc. of all plants and animals or their products and any fauna encountered during construction should be removed to safety by the ECO or other suitably qualified person, or allowed to passively vacate the area.
- » Annual site inspection for erosion or water flow regulation problems – with follow up remedial action where problems are identified.
- » Construction stormwater management plan must be compiled by a suitable engineer to address general drainage and run-off issues;
- » Prior to construction, a risk assessment is to be undertaken on the proposed access road. This is to be undertaken to determine the need for appropriate water use authorisation with the Department of Water and Sanitation, should a preferred alternative be authorised by the Northern Cape Department of Environment and Nature Conservation.
- » Develop a chance finds protocol for the mitigation of possible heritage finds, to be implemented as part of the EMP for the construction phase of the project.
- » If any artefacts are identified during construction the chance finds protocol must be implemented
- » The ECO for this project must be made aware of the fact that the Ecca Group sediments contains significant fossil remains, albeit mostly trace fossil assemblages. Several types of fossils have been recorded from this Group in the Karoo Basin of South Africa, with special mention of the very important Whitehill Formation. The Whitehill Formation outcrops are however very restricted in this study area.
- » In areas that are allocated a Very High and High Palaeontological sensitivity and specifically where deep excavation into bedrock is envisaged (following the geotechnical investigation), or where fossils are recorded during the geotechnical investigations, a qualified palaeontologist must be appointed to assess and record fossils at specific footprints of infrastructure developments (Phase 1 PIA).
- » If significant fossil finds (e.g. vertebrate teeth, bones, burrows, petrified wood) are recorded during excavations for infrastructure such as road developments, the palaeontologist must apply for a collection permit to collect the fossils according the SAHRA specifications.

### **Management plans to be developed and implemented**

The following plans need to be developed as part of the final EMP and Project monitoring, incorporating all the issues, conclusions and recommendations of this report:

- Stormwater Management and Erosion Plan;
- Waste Management Plan;
- Alien Management Plan;
- Rehabilitation Plan

### **EAP recommendations**

- » The EMP should form part of the contract with the Contractor appointed to construct the proposed access road, and must be used to ensure compliance with environmental



specifications and management measures.

- » An independent Environmental Control Officer (ECO) should be appointed to monitor compliance with the specifications of the EMPr and EA for the duration of the construction period.
- » An alien species monitoring and management plan should be developed for the construction phase and the first three years of operation, to ensure as little as possible establishment and maximum control of invasive species on site. This is important mainly due to the agricultural damage that spreading invasive species may have, in a predominantly agricultural setting.
- » Disturbed areas should be rehabilitated as soon as possible once construction is complete in an area.
- » The developer should obtain all necessary permits prior to the commencement of construction.
- » All feasible mitigation measures recommended by the specialist's studies should be strictly adhered to.
- » All feasible mitigation measures contained in the EMPr should be strictly adhered to.

Is an EMPr attached?

YES

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.

Mr Gideon Raath

NAME OF EAP

\_\_\_\_\_  
SIGNATURE OF EAP

\_\_\_\_\_  
DATE

## SECTION F: APPENDIXES

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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 E1: Adverts and Notices*
- » *Appendix E2: Stakeholder Correspondence*
- » *Appendix E3: Comments and Response Report*
- » *Appendix E4: Authority Consultation*
- » *Appendix E5: Registered I&APs*
- » *Appendix E6: Minutes of Meetings*
- » *Appendix E7: Comments Received*

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