

Final Basic Assessment Report for the Proposed construction of a 15 km pipeline from farm 391 Sand Draai Portion 0 and 5 to farm 390 Bokpoort portion 0 near Upington, Northern Cape Province



**A Project for: Bold Moves 384 (Pty)
Ltd**



ENGINEERS AND ENVIRONMENTAL CONSULTANTS

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DOCUMENT DESCRIPTION

Client:

Bold Moves 384 (Pty) Ltd

Proposal Name:

Final Basic Assessment Report for the Proposed construction of a 15 km pipeline from farm 391 Sand Draai Portion 0 and 5 to farm 390 Bokpoort portion 0 near Upington, Northern Cape Province

SSI Environmental Reference Number:

E02.JNB.000953

Authority Reference:

14/12/16/3/3/1/591

Compiled by:

Melissa Naidoo

Date:

June 2012

Location:

Northern Cape

Reviewer:

Signature

Approval:

Signature

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BASIC ASSESSMENT REPORT



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

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, 2010 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. 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.
3. Where applicable **tick** the boxes that are applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. 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.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. 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.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
11. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

SECTION A: ACTIVITY INFORMATION

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

YES

NO



If YES, please complete the form entitled "Details of specialist and declaration of interest" for appointment of a specialist for each specialist thus appointed:
Any specialist reports must be contained in **Appendix D**.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail¹:

1.1 Description

On 14 June 2011, Solafrica Thermal Energy (Pty) Ltd received Environmental Authorisation for the *Construction of a 75MW Concentrated Solar Thermal Power (CSP) Plant and associated infrastructure in the Siyanda District Municipality, Northern Cape (DEA Ref 12/12/20/1920)*. The authorisation included the construction of a pipeline (approximate length of 15 km) and water storage tanks (See Appendix H for DEA Authorisation). Since the authorisation, a refinement of the design has taken place that has resulted in the re-alignment of the previously authorised pipeline as well as the substitution of storage tanks with storage/regulation ponds in line with the industry standard design for bulk raw water storage in CSP plants worldwide.

Bold Moves 384 (Pty) Ltd was announced as Preferred Bidder in the 2nd Phase of the Department of Energy's Renewable Energy Independent Power Producer Procurement Programme. Bold Moves 384 (Pty) Ltd is a special purpose company that has been registered by Solafrica to build, own, and operate the CSP plant facility and is therefore the Applicant of this Basic Assessment.

SSI Engineers and Environmental Consultants (Pty) Ltd have therefore been appointed by Bold Moves 384 (Pty) Ltd ("the Applicant") to apply for the authorisation for:

- the water pipeline (extending from the Orange River through the farm Sand Draai 391 and terminating at the farm Bokpoort 390),
- a pump station on the farm Sand Draai 391 (portions 0 and 5); and
- storage ponds as well as associated infrastructure on the approved CSP site on portion 0 of the farm Bokpoort 390 (See Figure 1: Locality Map).

The proposed water pipeline will extend from the abstraction point located at the Orange River to the storage ponds located on the southern side of the approved CSP plant site. The pipeline has a total length of 15 000 m, from river level at 836 m to pond level at 952 m. Two alternative pump station locations with a 50 m x 50 m footprint have been considered in this Basic Assessment (BA) study (see Figure 3: Pump station alternatives).

A separate Water Use License Application (WULA) has been lodged with the Department of Water Affairs for the abstraction of 875 000 m³ of raw water per annum by the Applicant. In addition the WULA application would provide an EMP_r specifically for the abstraction point.

The proposed project is situated within the !Kheis Local Municipality in the Lower Orange Water Management Area (LOWMA) of South Africa. The main water resource of the LOWMA is the Orange

¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

River, which is South Africa's biggest and most controlled watercourse. The farm Sand Draai 391, portions 0 and 5 and farm Bokpoort 390, portion 0 are situated in the Upper Vaal Water Management Area and in the D73D Quaternary Drainage Region and borders the Orange River to the south. The water availability of the catchment is based on the inflow of water from Lesotho and the Vaal River Catchments. The flow of the Orange River fluctuates due to seasonal changes but the river is largely controlled by the releases from the upstream Van Der Kloof Dam, Bloemhof Dam and Gariep Dam all upstream of the Lower Orange Water Management Area.

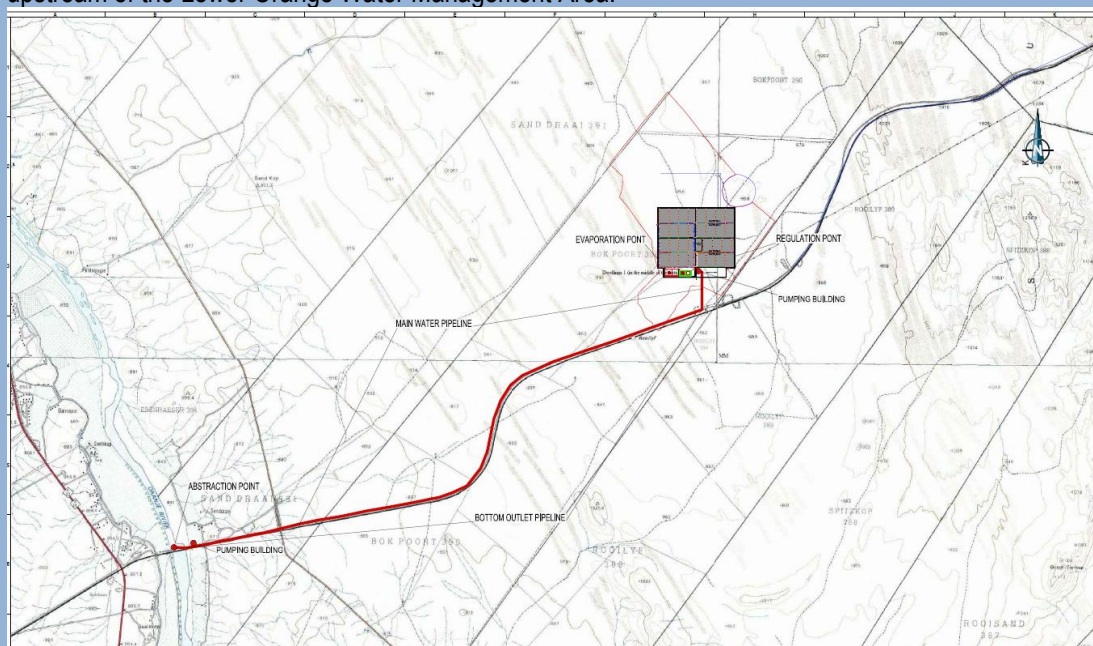


Figure 1 Locality Map

In terms of the 2010 EIA Regulations the proposed project requires the undertaking of a Basic Assessment in terms of Government Notice (GN) R.543 for listed activities requiring environmental authorisation from the relevant competent authority, The Department of Environmental Affairs (DEA). The following activities listed in GN. R544 (Listing Notice 1) and GN. R546 (Listing Notice 3) respectively are applicable to the project:

Government Notice	Activity number	Description
No R 544 (Listing Notice 1)	9	<p>The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water -</p> <ul style="list-style-type: none"> (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more, excluding where: <ul style="list-style-type: none"> a. such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve; or b. where such construction will occur within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse <p><i>A bulk water pipeline will be constructed from the Orange River to the pump storage facility at the CSP plant. The pipeline is approximately 15 km in length.</i></p>

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No R 544 (Listing Notice 1)	11	<p>The construction of:</p> <ul style="list-style-type: none"> (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more <p>where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p> <p><i>A water abstraction pump station will be constructed.</i></p>
No R 544 (Listing Notice 1)	12	<p>The construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010.</p> <p><i>An abstraction system will include two regulation ponds for storing water. The ponds will have a combined useful capacity of 95 000 m³.</i></p>
No R 544 (Listing Notice 1)	18	<p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from:</p> <ul style="list-style-type: none"> (i) a watercourse; (ii) the sea; (iii) the seashore; (iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving;</p> <ul style="list-style-type: none"> <u>(a)</u> is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or <u>(b)</u> occurs behind the development setback line. <p><i>Infilling and soil removal will take place during the construction phase.</i></p>
No R 544 (Listing Notice 1)	22	<p>The construction of a road, outside urban areas,</p> <ul style="list-style-type: none"> (i) with a reserve wider than 13,5 meters or, (ii) where no reserve exists where the road is wider than 8 metres, or (iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.

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		<i>A new access road will be required for portion of the pipeline. In most cases existing roads will be utilised.</i>
No R 546 (Listing Notice 3)	2	<p>The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres</p> <p>(a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and Northern Cape provinces:</p> <ul style="list-style-type: none"> i. In an estuary; ii. In a protected area identified in terms of NEMPAA, excluding conservancies; iii. Outside urban areas, in: <ul style="list-style-type: none"> (aa) National Protected Area Expansion Strategy Focus areas; (bb) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (cc) Sites or areas identified in terms of an International Convention; (dd) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ee) Core areas in biosphere reserves; (ff) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (gg) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined. iv. In urban areas: <ul style="list-style-type: none"> (aa) Areas zoned for use as public open space; (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose; <p>Areas seawards of the development setback line or within urban protected areas.</p> <p><i>Two storage ponds will be constructed on site.</i></p>
No R 546 (Listing Notice 3)	4	<p>The construction of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>(a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and Northern Cape provinces:</p> <ul style="list-style-type: none"> v. In an estuary; vi. Outside urban areas, in: <ul style="list-style-type: none"> (hh) A protected area identified in terms of NEMPAA, excluding conservancies; (ii) National Protected Area Expansion Strategy Focus areas; (jj) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (kk) Sites or areas identified in terms of an International Convention; (ll) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

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		<p>(mm) Core areas in biosphere reserves;</p> <p>(nn) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve;</p> <p>(oo) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.</p> <p><i>A new access road will be required for portion of the pipeline. In most cases existing roads will be utilised.</i></p>
No R 544 (Listing Notice 1)	16	<p>The construction of:</p> <p>(i) jetties exceeding 10 square metres in size;</p> <p>(ii) slipways exceeding 10 square metres in size;</p> <p>(iii) buildings with a footprint exceeding 10 square metres in size; or</p> <p>(iv) infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p> <p>(a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and Northern Cape:</p> <p>i. In an estuary;</p> <p>ii. Outside urban areas, in:</p> <p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(cc) World Heritage Sites;</p> <p>(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(ee) Sites or areas identified in terms of an International Convention;</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(gg) Core areas in biosphere reserves;</p> <p>(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;</p> <p>(ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.</p> <p><i>An abstraction pump facility will be constructed within 32 meters of a watercourse.</i></p>

1.2 Pipeline

Raw water will be pumped from the Orange River into the storage ponds located on the southern side of the CSP plant. The first pump station will be located close to the river abstraction point. Raw water will

be transferred to a sand trap tank, to remove debris and oversized particulates. From here, the water is transferred to a suction deposit before being pumped up to the CSP plant (see Figure 2: Detailed layout plan).

The main water pipe (HDPE 0.40m diameter) will be sited in pipe trenches under or along roads, in accordance with the The South African National Roads Agency Limited and National Roads Act, No. 7 of 1998 ("the National Roads Act") and SANS 3001-BT11:2012.

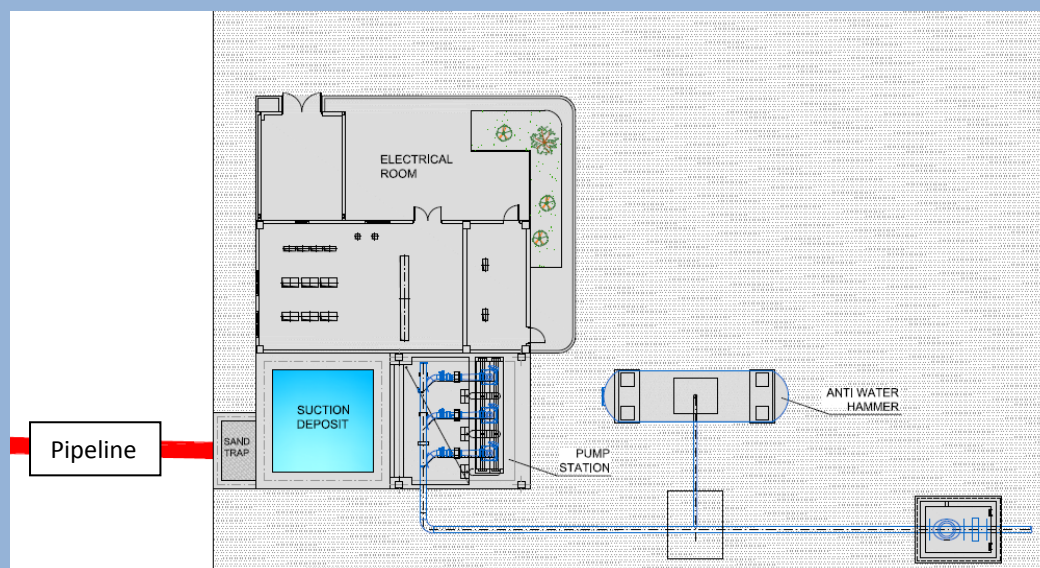


Figure 2: Detailed layout plan of the pump station

1.3 Length

The pipeline has a total length of approximately 15 000 m, from river level at 836 m to pond level at 952 m. Estimated flow will be 170 m³/h.

1.4 Storage Ponds

Two regulation ponds will be constructed with the same dimensions (50% capacity each) and arranged in parallel. Each pond will have a unit volume 47 500 m³ with a useful capacity of 37 000 m³. Preliminary designs provide for a total depth of 6 m with the above-ground portion of the wall being less than 4.5m (as measured from the outside toe of the wall to the highest part of the wall). The total area occupied by the two basins will be 20 000 m² or 2 hectares. The ponds will be situated on the already approved CSP site authorised under DEA Ref 12/12/20/1920.

Impermeability of the ponds will be achieved through the use of a high density polyethylene geo-membrane sheet with a thickness of 1.5mm. The sheet will have appropriate overlaps at the joints to guarantee correct laying thereof and special attention will be paid to the finishes where the sheet joins concrete item, where control will be stressed even more. This sheet will be laid over a geo-drain made from a 300 g/m² non-woven geo-textile sheet on the upper part in contact with the geo-membrane, and with a draining layer below. Underneath the geo-drain, a layer of clay to protect the sub-pressure that will act as an impermeable (or quasi-impermeable) layer will be laid. This material must be permeable to a degree no less than 10⁻⁶ cm/s.

Table 1: Regulation Pond Specifications (for each pond)

Dimensions:	100 metre length and 100 metre width
Depth:	1.5m below ground
Height	4.5 m above ground
Total capacity:	47 500 m ³

Useful capacity:	37 000 m ³
Level coronation pond:	952.85m
Guard:	+1 m
Coronation width:	5 m
Outer slope:	3 h/1v
Inner slope:	2 h/1v
Waterproofing layer:	HDPE foil, 1.5 mm thick
Separating layer:	300 gr/m ² geo-textile

1.5 Alternatives

Two pump station alternatives are suggested for the proposed project. Both alternatives are situated on the southern portion of farm Sand Draai (see Figure 3 below). Alternative 1 is situated at 28° 47.108'S, 21° 53.240'E and Alternative 2 is situated on old agricultural lands at 28° 47.134' S, 21° 53.162' E (see Figure 3: Pumpstation alternatives).

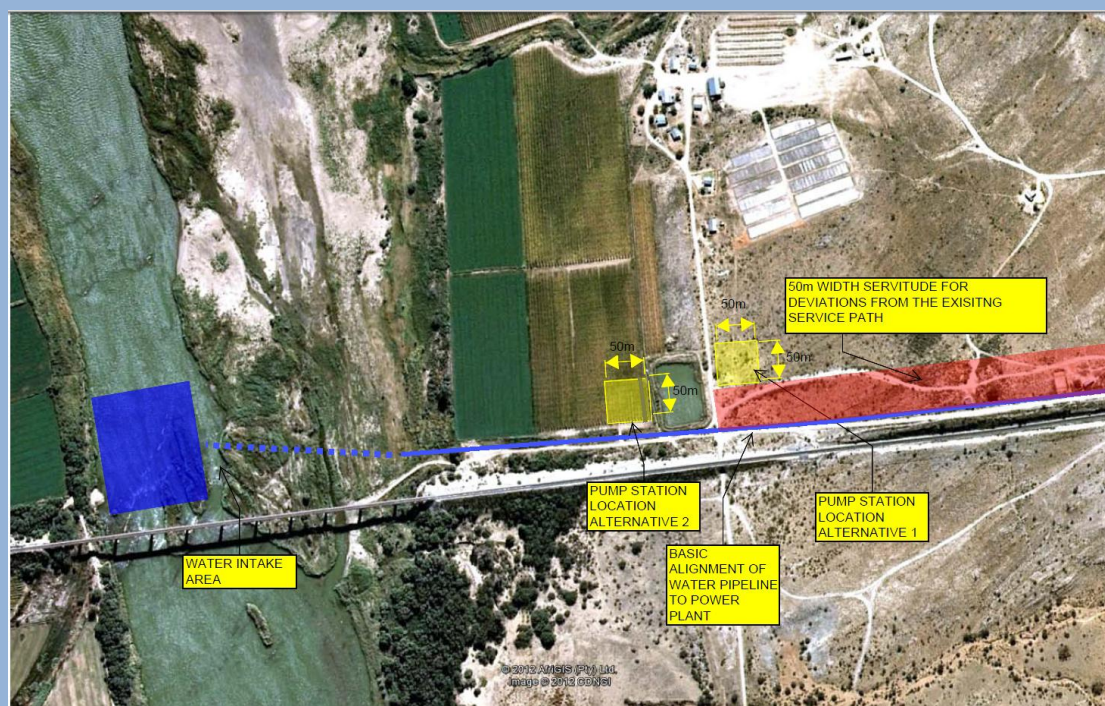


Figure 3: Pump station alternatives on the farm Sand Draai 391

1.6 Pump float platform

A floating pump platform will be used to abstract water. This type of installation can abstract water from different river heights. The main components of the floating pump station are:

- Base swivel anchor;
- Articulated arm with built-lateral bracing pipe;
- Floating deck (maintains reference level to the surface of water); and
- Pumping unit.

Raw water will be abstracted using in-stream, centrifugal (1+1) pumps sited at an extraction point located along the banks of the Orange River. To cover the water level variation, an articulated arm will be required (up to 60 m length), depending on the natural slope of the river bank.

1.7 Abstraction

An elevated railway bridge owned by Transnet is located close to the proposed abstraction site. The bridge pillars/ supporting structures are mainly placed on islands within the river channel as the macro-channel incorporates a series of islands within the area of the proposed site, therefore increasing the habitat diversity at the site. The new caption system will be designed taking into consideration the location of bridge structures, not affecting the water flow distribution under the bridge. The surrounding area is dominated by agriculture, which relies on the river for irrigation water. This bridge therefore has a minimal impact on the river system at present (see Figure 4 below).



Figure 4: Railway bridge belonging to Transnet close to the abstraction site

1.8 Access

Approximately 60% of the proposed alignment is situated along existing access routes, and therefore access to the sites are readily available (see Figure 5: Access road). A vehicle access road is usually required to be established to allow access along the entire length of the servitude. Access is required during both the construction and operation/maintenance phases of the pipeline life cycle. Areas without access points and roads will be negotiated with landowners, and are to be established during the construction phase.

Land that may be required for a new access road to be constructed for the pipeline, is under negotiation with the individual landowner/s concerned.



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. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity 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.

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

3. ACTIVITY POSITION

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.

List alternative sites, if applicable.

Alternative: **(Pumpstation)**

Alternative S1² (preferred or only site alternative)

Alternative S2 (if any)

Alternative S3 (if any)

Latitude (S):		Longitude (E):	
28°	47.108'	21°	53.240'
28°	47.130'	21°	53.159'
0	'	0	'

Alternative: **(Two Storage Ponds)**

Alternative S1³ (preferred or only site alternative)

Alternative S2 (if any)

Alternative S3 (if any)

Latitude (S):		Longitude (E):	
21°	59.736'	-28°	44.194'
0	'	0	'

In the case of linear activities:

Alternative: **Pipeline**

Alternative S1 (preferred or only route alternative)

- Starting point of the activity (East to west)
- Middle/Additional point of the activity
- End point of activity

Alternative S2 (if any)

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

Alternative S3 (if any)

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

Latitude (S):		Longitude (E):	
21°	59.736'	-28°	44.194'
21°	56.687'	28°	46.465'
21°	52.853'	-28°	47.242'
0	'	0	'
0	'	0	'
0	'	0	'
0	'	0	'
0	'	0	'
0	'	0	'

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. Refer to Appendix G

² "Alternative S.." refer to site alternatives.

³ "Alternative S.." refer to site alternatives.

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative: (Pumpstation)

Alternative A1⁴(preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

50 m²

50 m²

m²

or, for linear activities:

Alternative: (Two Storage Ponds)

Alternative A1 (preferred activity alternative) X 2 storage ponds

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:

20 000 m²

m²

m²

Length of the activity:

15 000 m

m

m

Alternative: Pipeline

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

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

Alternative: Pipeline

Alternative A1 (preferred activity alternative) 15 000 m x 50 m

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:

750 000 m²

m²

m²

5. SITE ACCESS

Does ready access to the site exist?

YES

NO

✓

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

m

Describe the type of access road planned:

Ready access to the site exists for maintenance of the pump stations. Additional access may be required during construction at the river bed. This access will be negotiated with the relevant landowner.

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.

6. SITE OR 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.

⁴ "Alternative A.." refer to activity, process, technology or other alternatives.

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 metres;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - rivers;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 the positions from where photographs of the site were taken.

7. 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 form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 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.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

R31,5 million for the water abstraction infrastructure.

What is the expected yearly income that will be generated by or as a result of the activity? The pipeline in isolation will not generate an income however the CSP plant will generate R 650 million.

R 0

Will the activity contribute to service infrastructure?

YES

✓

NO

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Is the activity a public amenity?	YES	NO ✓
How many new employment opportunities will be created in the development phase of the activity?	900 at peak over a 30 month period - This includes the construction of the CSP plant.	
What is the expected value of the employment opportunities during the development phase?	R 400 million for the entire CSP project	
What percentage of this will accrue to previously disadvantaged individuals?	43 %	
How many permanent new employment opportunities will be created during the operational phase of the activity?	62 This includes the operation of the CSP project.	
What is the expected current value of the employment opportunities during the first 10 years?	R 300 million	
What percentage of this will accrue to previously disadvantaged individuals?	40 %	

9(b) Need and desirability of the activity

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

NEED: Increasing economic growth and social development within South Africa is placing a growing demand on energy supply. Coupled with the rapid advancement in economic and social development, is the growing awareness of environmental impact, climate change and the need for sustainable development.

Whilst South Africa relies heavily on coal to meet its energy needs, the country is well endowed with renewable energy resources that offer sustainable alternatives to fossil fuels. Renewable energy harnesses naturally occurring non-depletable sources of energy, such as solar, wind, biomass, hydro, tidal, wave, ocean current and geothermal, to produce electricity, gaseous and liquid fuels, heat or a combination of these energy types. The successful use of renewable energy technology in South Africa still requires extensive investigation, however, Concentrating Solar Power (CSP) technologies have been identified as being potentially viable and capable of being employed on a large scale. The proposed pipeline will transport water to the relevant storage pond required for the cooling towers needed at the CSP plant.

1.	Was the relevant provincial planning department involved in the application?	YES	NO ✓
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES ✓	NO
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		
	The !Kheis Local Municipality and has been listed as an Interested and Affected Party (I&AP) for the project. It is assumed that the Municipality does engage on a regular basis with the relevant provincial planning department with regards to provisions/requirements of the relevant Spatial Development Framework (SDFs) and / or Integrated Development Plan (IDPs) for the study area.		

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DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES ✓	NO
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES ✓	NO
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES ✓	NO
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation: The surrounding area of the proposed site consists of grazing land. The pipeline will be sited in pipe trenches under or along roads in accordance with the South African National Roads Agency Limited and National Roads Act, No. 7 of 1998 ("the National Roads Act") and SANS 3001-BT11:2012.		
5.	Will the proposed land use / development impact on the sense of place?	YES	NO ✓
6.	Will the proposed land use / development set a precedent?	YES	NO ✓
7.	Will any person's rights be affected by the proposed land use / development?	YES	NO ✓
8.	Will the proposed land use / development compromise the "urban edge"?	YES	NO ✓
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES ✓	NO
2.	Explain: The pipeline in isolation will not benefit the community in any way. However the CSP plant would benefit the community, and aid in the current electricity shortages and contribute to meeting the South African Government's target of 10 000 GWh renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES	NO ✓
4.	Explain: The pipeline will only be utilised by the CSP plant. A local Community Trust will own 5% of the larger CSP power plant project and will further benefit socio-economic and enterprise development contributions and programmes that the Project will create and support..		

10. 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:	Administering authority:	Date:
National Environmental Management Act EIA Regulations (2010) – Listed Activity (GN 544)	National and Provincial	18 June 2010
The Constitution (Act No 108 of 1996)	National and Provincial	18 December 1996
The Conservation of Agricultural Resources Act (No 43 of 1983)	National and Provincial	21 April 1983
National Heritage Resources Act (No 25 of 1999)	National and Provincial	14 April 1999
National Water Act (No 36 of 1998)	National and Regional	20 August 1998
Occupational Health and Safety Act (No 85 of 1993)	National and Provincial	23 June 1993
National Air Quality Act: (Act 39 of 2004)	National and Provincial	01 October 2004
National Environmental Management Waste Act (Act 50 of 2008)	National and Provincial	10 March 2009
South African National Standard SANS 10210:2004, <i>Calculating and Predicting Road Traffic Noise</i> .	National and Provincial	2004
National Environmental Management: Biodiversity Act (No 10 of 2004)	National and Provincial	07 June 2004
Environment Conservation Act (No 73 of 1989) as amended in Act 52 of 1994	National and Provincial	07 December 1994
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947)	National and Provincial	01 June 1948
Hazardous Substance Act (No 15 of 1973)	National and Provincial	25 March 1997
National Veld and Forest Fire Act (Act 101 of 1998)	National and Provincial	1998
Northern Cape Nature Conservation Act, Act 9 of 2009	Provincial and Local	24 February 2010
All relevant Municipal bylaws and ordinances	Provincial and Local	Current

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

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

YES	NO
✓	
5m ³ per 90 days	

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

Soil will be extracted using a back actor, and transported to a registered landfill site if so required. However were possible soil would be re-used.

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

Waste will be transported to a registered landfill site.

Will the activity produce solid waste during its operational phase?

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

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

YES	NO
	✓
m ³	

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

N/A

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 relevant legislation?

YES	NO
	✓

If yes, inform the competent authority and request a change to an application for scoping and EIA.

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

YES	NO
	✓

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

11(b) Liquid effluent

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

YES	NO
	✓

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

m³

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

Yes	NO
	✓

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

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

YES	NO
	✓

If yes, provide the particulars of the facility:

Facility name:

Contact

person:

Postal

address:

Postal code:

Telephone:

E-mail:

Cell:

Fax:

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

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO
✓	

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

YES	NO
✓	

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

BASIC ASSESSMENT REPORT

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

The major potential source of fugitive dust emissions during the Operation and Maintenance Phase include vehicle entrained dust from access/service roads, although these are usually not significant. Construction vehicles are also expected to release emissions in the atmosphere during the Construction Phase of the activity.

The Applicant shall ensure the implementation of effective and regular control techniques for fugitive dust sources. As with the construction phase, it should be taken into consideration that watering certain areas in order to suppress fugitive dust may result in erosion. It may be appropriate not to implement dust suppression mitigation in such areas.

Small quantities of noxious and/or offensive gaseous air pollutants and smoke could be generated during operation as a result of combustion products from vehicle engines, although these emissions are generally negligible. In order to avoid the emission of gaseous air pollutants, the Applicant shall ensure that all vehicles are kept in a serviceable condition to avoid excessive exhaust fumes.

The above impacts are negligible and therefore not considered significant.

11(d) Generation of noise

Will the activity generate noise?

YES ✓	NO
YES ✓	NO

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

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

If no, describe the noise in terms of type and level:

All noisy construction must be limited to day time hours. In order to limit noise generation during maintenance activities, the Applicant will provide all equipment with standard silencers and maintain silencer units on vehicles and equipment in good working order, for those vehicles where it is necessary.

12. WATER USE

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

municipal	water board	groundwater	river, stream, dam or lake	other	the activity will not use water
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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:

73	million litres
YES ✓	NO

Does the activity require a water use permit from the Department of Water Affairs?

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted. A Water Use License Application has been submitted to the Department of Water Affairs for Authorisation.

13. ENERGY EFFICIENCY

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

The installation has been designed to be energy efficient by means of minimum electrical consumption. For that purpose the following measures are being considered:

- Electrical consumers associated to this installation will be fed from a nearby transformer from Eskom in order to substantially minimize the electrical losses.
- Optimum number of pumps in order to maximize pump efficiency for the design flow rate during operation, while ensuring the availability of the system.
- Minimizing the pressure drop associated to the installation by means of an optimum pipeline design, material specification and related accessories (filters, valves, etc.), which means a better efficiency of the whole intake system.

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

The proposed pipeline will provide water to the CSP plant on Farm Bokpoort 390 to produce 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 C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. **Pipeline**
(e.g. A):

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

- Has a specialist been consulted to assist with the completion of this section? **YES ✓** **NO**

If YES, please complete the form entitled "Details of specialist and declaration of interest"

for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Property description/physical address:

Farm 391 Sand Draai Portion 0 and 5 and Farm Bokpoort 390 Portion 0

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

The current land zoning on Farm Sandraai and portion of farm Bokpoort is zoned Agriculture. However portion of farm bokpoort would be re-zoned to accommodate the authorised CSP plant.

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

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

YES	NO ✓ This excludes the CSP plant
YES	NO ✓

Must a building plan be submitted to the local authority?

BASIC ASSESSMENT REPORT

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

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

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

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does 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:

- 5.1 Natural area
- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential^A
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial^{AN}
- 5.9 Heavy industrial^{AN}
- 5.10 Power station - the Garona Sub-station is located on the farm Bokpoort 390. However the proposed activity will not impact on the sub-station. The CSP plant will be located on the farm Bokpoort 390 and proposed activity is required for this generation activity.
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit
- 5.15 Dam or reservoir- the proposed pump station will not impact on the farmers' dam or reservoir used for agricultural purposes.
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard^N
- 5.23 Railway line^N - The Transnet overhead railway bridge is situated south of the proposed pipeline route however the proposed activity will not impact on the railway bridge.
- 5.24 Major road (4 lanes or more)^N
- 5.25 Airport^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture- the proposed site is situated on agricultural fields
- 5.34 River, stream or wetland – The Orange River is situated on the southern side of the proposed activity. Water will be abstracted from the river.
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

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

The Transnet overhead railway bridge will not be impacted by the proposed activity. See Figure 6 below. The activity will not take place within the Transnet servitude.



Figure 6: Transnet overhead railway bridge

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

If YES, specify and explain: N/A

If YES, specify: N/A

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

If YES, specify and explain: N/A

If YES, specify: N/A

6. 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 palaeontological sites, on or close (within 20m) to the site?

YES	NO ✓
Uncertain	

If YES, explain: N/A

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

BASIC ASSESSMENT REPORT

Briefly explain the findings of the specialist:

The area falls predominantly within the Nama-Karoo Biome and it therefore has a relatively arid climate. Four vegetation types are intersected, namely Kalahari Karroid Shrubland, Gordonia Duneveld, Bushmanland Arid Grassland and Lower Gariep Alluvial Vegetation. These vegetation units were found to have suffered varying degrees of transformation and degradation through historical infrastructure development (Transnet servitude and railway), a water pipeline and impacts emanating from livestock grazing and trampling. A collection of stone flakes came from the study area. Some of the flakes showed convergent flaking characteristic of the Middle Stone Age industry. Some lydianite cores were also found.

The lithic assemblages found during the whole investigation seem to be in the form of a general distribution of flakes and flaked cores. The impact on the cultural heritage remains of the proposed development sites at Sandraai and Bokpoort and will be of minor significance. The stone flakes are sparsely distributed on the surface with the intensity of the distribution the same at all the sites.

No other cultural, historical or palaeontological components were found during the investigation, nor were there any buildings, graves or burial grounds in the area.

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

YES

NO ✓

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

YES

NO ✓

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

4. 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 C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. **Storage Ponds**
(e.g. A):

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

6. Has a specialist been consulted to assist with the completion of this section? **YES ✓** **NO**

If YES, please complete the form entitled "Details of specialist and declaration of interest"

for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Property description/physical address:

Farm Bokpoort 390 Portion 0 (Portion approved by DEA for a 75MW CSP plant: DEA Ref: 12/12/20/1920)

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

Agriculture (cattle grazing) and Special Zone (Solar Power Plant) limited to 580 Ha

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

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

YES	NO ✓
YES	NO ✓

Must a building plan be submitted to the local authority?

BASIC ASSESSMENT REPORT

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

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

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

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

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

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

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does 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:

- 5.1 Natural area
- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential^A
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial^{AN}
- 5.9 Heavy industrial^{AN}
- 5.10 Power station - the Garona Sub-station is located on the farm Bokpoort 390. However the proposed activity will not impact on the sub-station.
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit
- 5.15 Dam or reservoir- Proposed activity will not impact on current reservoirs on the farm
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard^N
- 5.23 Railway line^N - Proposed activity will not impact on the railway line
- 5.24 Major road (4 lanes or more)^N
- 5.25 Airport^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture- portion of the proposed site is situated on grazing land
- 5.34 River, stream or wetland
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

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

BASIC ASSESSMENT REPORT

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

If YES, specify and explain: N/A

If YES, specify: N/A

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

If YES, specify and explain: N/A

If YES, specify: N/A

6. 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 palaeontological sites, on or close (within 20m) to the site?

YES	NO ✓
Uncertain	

If YES, explain:

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

Briefly explain the findings of the specialist:

The area falls predominantly within the Nama-Karoo Biome and it therefore has a relatively arid climate. Four vegetation types are intersected, namely Kalahari Karroid Shrubland, Gordonia Duneveld, Bushmanland Arid Grassland and Lower Gariep Alluvial Vegetation. These vegetation units were found to have suffered varying degrees of transformation and degradation through historical infrastructure development (Transnet servitude and railway), a water pipeline and impacts emanating from livestock grazing and trampling. A collection of stone flakes came from the study area. Some of the flakes showed convergent flaking characteristic of the Middle Stone Age industry. Some lydianite cores were also found.

The lithic assemblages found during the whole investigation seem to be in the form of a general distribution of flakes and flaked cores. The impact on the cultural heritage remains of the proposed development sites at Sandraai and Bokpoort and will be of minor significance. The stone flakes are sparsely distributed on the surface with the intensity of the distribution the same at all the sites.

No other cultural, historical or palaeontological components were found during the investigation, nor were there any buildings, graves or burial grounds in the area.

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

YES	NO ✓
-----	------

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

YES	NO ✓
-----	------

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

7. 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 C and indicate the area, which is covered by each copy No. on the Site Plan.

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

Alternative 1:
Pump station 1
(Preferred)

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

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

YES ✓	NO
-------	----

If YES, please complete the form entitled "Details of specialist and declaration of interest"

for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Property
description/physical
address:

Farm 391 Sand Draai Portion 0 and 5

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

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	NO ✓
YES	NO ✓

Must a building plan be submitted to the local authority?

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50	–	1:20	–	1:15 – 1:10	1:10	–	1:7,5 – 1:5	Steeper than
	1:20		1:15			1:7,5			1:5

Alternative S2 (if any):

Flat	1:50	–	1:20	–	1:15 – 1:10	1:10	–	1:7,5 – 1:5	Steeper than
	1:20		1:15			1:7,5			1:5

Alternative S3 (if any):

Flat	1:50	–	1:20	–	1:15 – 1:10	1:10	–	1:7,5 – 1:5	Steeper than
	1:20		1:15			1:7,5			1:5

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

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

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

7. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does 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:

- 5.1 Natural area - The pump station site is situated within an untransformed area.
- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential^A
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial^{AN}
- 5.9 Heavy industrial^{AN}
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit
- 5.15 Dam or reservoir- A dam is situated next to the proposed activity. However, the activity will not impact on the farmers' dam used for agricultural purposes.
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard^N
- 5.23 Railway line^N - The Transnet overhead railway bridge is situated south of the pump station. However, the proposed activity will not impact on the railway bridge or the Transnet servitude.
- 5.24 Major road (4 lanes or more)^N
- 5.25 Airport^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture
- 5.34 River, stream or wetland - The Orange River is situated on the southern side of the pump station.
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

BASIC ASSESSMENT REPORT

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

The Transnet overhead railway bridge will not be impacted by the proposed activity. See Figure 7 below. The activity will not take place within the Transnet servitude.



Figure 7: Transnet overhead railway bridge

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

If YES, specify and explain: N/A

If YES, specify: N?A

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

If YES, specify and explain: N/A

If YES, specify: N/A

6. 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 palaeontological sites, on or close (within 20m) to the site?

If YES, explain:

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

YES

NO

Uncertain

Briefly explain the findings of the specialist:

The area falls predominantly within the Nama-Karoo Biome and it therefore has a relatively arid climate. Four vegetation types are intersected, namely Kalahari Karroid Shrubland, Gordonia Duneveld, Bushmanland Arid Grassland and Lower Gariep Alluvial Vegetation. These vegetation units were found to have suffered varying degrees of transformation and degradation through historical infrastructure development (Transnet servitude and railway), a water pipeline and impacts emanating from livestock grazing and trampling. Some of the flakes showed convergent flaking characteristic of the Middle Stone Age industry. Some lyidianite cores were also found.

The lithic assemblages found during the whole investigation seem to be in the form of a general distribution of flakes and flaked cores. The impact on the cultural heritage remains of the proposed development sites at Sandraai and Bokpoort and will be of minor significance. The stone flakes are sparsely distributed on the surface with the intensity of the distribution the same at all the sites.

No other cultural, historical or palaeontological components were found during the investigation, nor were there any buildings, graves or burial grounds in the area.

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

YES	NO ✓
-----	------

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

YES	NO ✓
-----	------

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

10. 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 C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. **Alternative 2:**
(e.g. A): **Pump station 2**

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

12. Has a specialist been consulted to assist with the completion of this section? YES ✓ NO

If YES, please complete the form entitled "Details of specialist and declaration of interest"

for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Property
description/physical
address:

Farm 391 Sand Draai Portion 0 and 5

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

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

NO ✓

Must a building plan be submitted to the local authority?

YES

NO ✓

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50	–	1:20	–	1:15 – 1:10	1:10	–	1:7,5 – 1:5	Steeper than
	1:20		1:15			1:7,5			1:5

Alternative S2 (if any):

Flat	1:50	–	1:20	–	1:15 – 1:10	1:10	–	1:7,5 – 1:5	Steeper than
	1:20		1:15			1:7,5			1:5

Alternative S3 (if any):

Flat	1:50	–	1:20	–	1:15 – 1:10	1:10	–	1:7,5 – 1:5	Steeper than
	1:20		1:15			1:7,5			1:5

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

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

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

8. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does 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:

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- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential^A
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial ^{AN}
- 5.9 Heavy industrial ^{AN}
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit
- 5.15 Dam or reservoir - the proposed pump station will not impact on the farmers' dam used for agricultural purposes.
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard ^N
- 5.23 Railway line ^N - The Transnet overhead railway bridge is situated South of the pump station how the proposed activity will not impact on the bridge
- 5.24 Major road (4 lanes or more) ^N
- 5.25 Airport ^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station ^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture - the proposed site is situated on old agricultural fields.
- 5.34 River, stream or wetland – The Orange River is situated on the southern side of the proposed activity. Water will be abstracted from the river.
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

If any of the boxes marked with an “N” are ticked, how will this impact / be impacted upon by the proposed activity?

The Transnet overhead railway bridge will not be impacted by the proposed activity. See Figure 8 below. The activity will not take place within the Transnet servitude.



Figure 8: Transnet overhead railway bridge

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

If YES, specify and explain: N/A

If YES, specify: N/A

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

If YES, specify and explain: N/A

If YES, specify: N/A

6. 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 palaeontological sites, on or close (within 20m) to the site?

YES	NO ✓
Uncertain	

If YES, explain: N/A

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

Briefly explain the findings of the specialist:

The area falls predominantly within the Nama-Karoo Biome and it therefore has a relatively arid climate. Four vegetation types are intersected, namely Kalahari Karroid Shrubland, Gordonia Duneveld, Bushmanland Arid Grassland and Lower Gariep Alluvial Vegetation. These vegetation units were found to have suffered varying degrees of transformation and degradation through historical infrastructure development (Transnet servitude and railway), a water pipeline and impacts emanating from livestock grazing and trampling. Some of the flakes showed convergent flaking characteristic of the Middle Stone Age industry. Some lydianite cores were also found.

The lithic assemblages found during the whole investigation seem to be in the form of a general distribution of flakes and flaked cores. The impact on the cultural heritage remains of the proposed development sites at Sandraai and Bokpoort and will be of minor significance. The stone flakes are sparsely distributed on the surface with the intensity of the distribution the same at all the sites.

No other cultural, historical or palaeontological components were found during the investigation, nor were there any buildings, graves or burial grounds in the area.

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

YES	NO ✓
-----	------

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

YES	NO ✓
-----	------

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION C: PUBLIC PARTICIPATION (APPENDIX E)

1. ADVERTISEMENT (APPENDIX E1)

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES (APPENDIX E1 AND E2 —ON SITE NOTICES AND BID)

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;

- (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
- (iii) the nature and location of the activity to which the application relates;
- (iv) where further information on the application or activity can be obtained; and
- (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES (APPENDIX E1 AND E8)

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT (APPENDIX E7)

The practitioner must record all comments and respond to each comment of the public before the application 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 this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

List of authorities informed:

- Department of Cooperative Governance, Human Settlement and Traditional Affairs
- Department of Roads and Public Works
- Department Transport, Safety and Liaison
- Department of Agriculture, Land Reform and Rural Development
- Department of Environmental Affairs and Nature Conservation
- Department of Cooperative Governance, Human Settlement and Traditional Affairs
- Department of Education
- Department of Finance, Economic Affairs and Tourism
- Department of Economic Affairs
- Department of Social Services and Population Development
- Department of Social Development
- !Kheis Local Municipality
- WESSA Northern Cape

List of authorities from whom comments have been received:

Siyanda District Municipality- Focus group meeting
Kheis Local Municipality- Focus group meeting
WESSA Northern Cape
Department of Forestry and Fisheries: Northern Cape

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation 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.

YES NO

Has any comment been received from stakeholders?

✓

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Refer to Issues and Responses report attached as **Appendix E7. And Focus group meeting with land owners.**

All issues or concerns raised have been addressed. No fatal flaws were raised.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, 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. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

The DAFF expressed concerns with regards to protected trees and mitigation thereof.
The Siyanda District Municipality requested an explanation as to how the site was selected.

Refer to Annexure E of Issues and Responses report Appendix E 7,

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):

Refer to Annexure E of Issues and Responses Report Appendix E7.

2. 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

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) 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.

The following parameters are used to describe the impact/issues in this assessment:

- (i) The risk or likelihood of the impact/issue occurring; and
- (ii) The degree of confidence placed in the assessment of the impact/issue

Please note that the rating number is provided in brackets next to the scale interval. Negative impacts are minus (-) values and positive impacts are plus (+) values. Higher negative valued impacts are more detrimental than lower negative valued impacts.

1. Temporal Scale

The temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.

- **Short-term (1)** – less than 5 years.
- **Medium-term (2)** – between 5 and 15 years.
- **Long-term (3)** – between 15 and 30 years.
- **Permanent (4)** – over 30 years and resulting in a permanent and lasting change that will always be there.

2. Spatial Scale

The spatial scale defines physical extent of the impact.

- **Individual (0)** – this scale applies to person/s in the area.
- **Site (1)** – this scale applies to the site.
- **Localised (2)** – small scale impacts from a few hectares in extent e.g. local district area.
- **Regional (3)** – the scale applies to impacts on a provincial level.

- **National (4)** – the scale applies to impacts that will affect the whole South Africa.
- **International (5)** – the scale of the impact will extend beyond the borders of South Africa.

3. Extent Scale

- **Very High (4)**

The impacts would be considered by society as constituting a major and usually permanent change to the environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.

- **High (3)**

These impacts will usually result in long term effects on social and/or natural environment. Impacts rated as *High* will need to be considered by society as constituting an important and usually long term change to the environment, Society would probably view these impacts in a serious light.

- **Moderate (2)**

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as *Moderate* will need to be considered by society as constituting a fairly important and usually medium term change to the environment. These impacts are real but not substantial.

- **Low (1)**

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as *Low* will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the environment. These impacts are not substantial and are likely to have little real effect.

- **Non Significant (0)**

There are no primary or secondary effects at all that are important to scientists or the public.

4. Risk or likelihood

The risk or likelihood of all impacts taking place as a result of project actions differs. Although these impacts may be severe, the likelihood of them occurring may affect their overall significance and will be taken into account.

- **Very unlikely to occur (1)** – the chance of these impacts occurring is extremely slim.
- **Unlikely to occur (2)** – the risk of these impacts occurring is slight.
- **May occur (3)** – the risk of these impacts is more likely, although not definite.
- **Will definitely occur (4)** – this impact will occur.

5. Degree of confidence or certainty

It is also necessary to state the degree of certainty or confidence with which one has predicted the significance of an impact. For this reason, a 'degree of certainty' scale has been provided to enable the reader to ascertain how certain we are of our assessment of significance:

- **Definite** – More than 90% sure of a particular fact. The use this one will need to have substantial supportive data.
- **Probable** – Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
- **Possible** – Only over 40% sure of a particular fact or of the likelihood of an impact occurring.
- **Unsure** – Less than 40% sure of a particular fact or the likelihood of an impact occurring.

6. Cumulative

In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

7. Significance

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

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Low impact (4 - 6 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (7 - 9 points)	Mitigation is possible with additional design and construction inputs.
High impact (10 - 12 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very High impact (13 - 16 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.

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Planning and Design Phase Impacts: Pipeline

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
1. Access Roads New access roads and haulage routes could impact on areas of sensitivity (natural vegetation, protected tree species, riparian areas etc.).	Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Very High (-4) Risk/ Likelihood: May occur (-3) Degree of Confidence: Probable Significance: Very High (-13)	<ul style="list-style-type: none"> Temporary access and haulage routes must be designed prior to construction commencing to ensure that the most preferable access and haulage routes has been identified. Use should be made of existing roads as far as possible. 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Low (-1) Risk/ Likelihood: May occur (-3) Degree of Confidence: Possible Significance: Medium (-9)
Indirect Impacts			
None			
Cumulative Impacts			
None			

Planning and Design Phase Impacts: Alternative 1: Pump station 1 (Preferred Alternative)

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
None			
Indirect Impacts			
None			
Cumulative Impacts			
None			

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Planning and Design Phase Impacts: Alternative 2: Pump station 2

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
None			
Indirect Impacts			
None			
Cumulative Impacts			
None			

Summary of Impacts and Average Points allocated to each Pump station alternative during the Planning and Design Phase

IMPACTS	Alternative 1: (Preferred) Without Mitigation	Alternative 1: (Preferred): With Mitigation	Alternative 2: Without Mitigation	Alternative 2: With Mitigation
DIRECT				
None	N/A	N/A	N/A -	N/A
INDIRECT				
None	N/A	N/A	N/A	N/A
CUMULATIVE				
None	N/A	N/A	N/A	N/A

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Construction Phase: Pipeline and Storage Ponds

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
1. Topography and Soils: The direct impact on landforms with the establishment of the pipeline is mainly one of disruption of surface soils. Potential erosion impacts are anticipated to be limited to the construction phase during site clearing activities.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-7)	<ul style="list-style-type: none"> Disturbed areas of natural vegetation must be rehabilitated immediately to prevent soil erosion. If possible, limit construction-, maintenance- and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion. No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area. Excavated soils should be reinstated and adequately landscaped; The source of the pollution must immediately be identified and rectified. Polluted soils should be immediately cleaned and transferred to an appropriate registered landfill site; Sub-sequentially removed soils should be replaced with unpolluted soils of similar geological, chemical and pedological characteristics. Soil should be shallow-ripped and scoured prior to replanting and placing of a geotextile layer (on steep topographies) to avoid soil erosion. Heavy machinery should be limited to designated roadways. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Unsure Significance Rating: Low (-6)

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<p>2. Drainage lines and Orange River:</p> <ul style="list-style-type: none"> • Compaction of drainage line soils. • Pollution damage a result of construction vehicle refuelling and spills in drainage lines. • Loss of drainage line vegetation and habitat as a result of construction. 	<p>Temporal: Short term (-1) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-9)</p>	<ul style="list-style-type: none"> • If possible, the undertaking of construction activities near the Orange River should take place during the dry season. • No refuelling of construction vehicles should occur within 30 m of drainage lines or the Orange River. Hydrocarbons should not be stored within 30 m of drainage lines or watercourse. • The rehabilitation and re-vegetation of disturbed areas must take place concurrently. Only appropriate indigenous riparian vegetation may be used for rehabilitation and re-vegetation within the study area. • If clearing of vegetation needs to be undertaken on site, it should be carried-out without significantly altering the condition and health of the associated water feature. 	<p>Temporal: Short -term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-7)</p>
<p>2. Aquatic: Impact on riparian habitat and water quality at the abstraction point in the Orange River.</p>	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: Will definitely occur (-4) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: High (-12)</p>	<ul style="list-style-type: none"> • Water monitoring must be undertaken prior to construction. • Thereafter weekly bio-monitoring must be undertaken. • Vegetation clearing must be undertaken with as little disturbance as possible, so as to not alter the condition or health of the water course. • All Water Use License (WUL) conditions must be adhered to in conjunction with the EMP (Appendix F). 	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-9)</p>
<p>3. Water Resources: Pollution of groundwater and surface water resources.</p>	<p>Temporal: Short-term (-1) Spatial: Regional (-3) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty:</p>	<ul style="list-style-type: none"> • Impermeability of the ponds will be achieved through the use of a high density polyethylene geomembrane sheet 1.5mm thick. The sheet will have appropriate overlaps at the joins to guarantee correct laying thereof and special attention will be paid to the finishes where the sheet joins concrete 	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty:</p>

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	<p>Possible</p> <p>Significance Rating: Medium (-9)</p>	<p>item, where control will be stressed even more. This sheet will be laid over a geo-drain made from a 300 g/m² non-woven geo-textile sheet on the upper part in contact with the geo membrane, and with a draining layer below. Underneath the geo-drain, a layer of clay to protect the sub-pressure that will act as an impermeable (<i>or quasi-impermeable</i>) layer will be laid. This material must be permeable to a degree no less than 10⁻⁶ cm/s..</p> <ul style="list-style-type: none"> • Wastewater should be directed into the proper systems. • Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface. • Adequate sanitary facilities and ablutions must be provided for construction workers. • Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled. • Further detailed mitigation measures are included in the EMPr (Appendix F). 	<p>Unsure</p> <p>Significance Rating: Low (-6)</p>
<p>4. Habitat destruction:</p> <ul style="list-style-type: none"> • Vegetation removal through soil stripping. • Smothering of vegetation during soil stockpiling. • Disturbances through construction activities that will destroy various floral species. • Vegetation removal and site disturbances leading to shifts in floral community and habitat unit structures. 	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: High (-12)</p>	<ul style="list-style-type: none"> • Movement of personnel and machinery to be limited to the areas designated for the established access roadways and construction footprint area. • Dumping or storage of topsoil must not be done on established vegetation, but should remain within designated areas. • Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to plants; • Indiscriminate damage of vegetation to be avoided. 	<p>Temporal: Medium-term (-2) Spatial: Site (-1) Extent: Moderate (-2) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-9)</p>

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<p>5. Red Data Listed (RDL) and sensitive floral species</p> <ul style="list-style-type: none"> • Destruction of RDL and sensitive species. • Damage to habitat that could potentially support RDL or sensitive floral species. 	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of Confidence/ Certainty: Definite</p> <p>Significance Rating: High (-10)</p>	<ul style="list-style-type: none"> • Movement of personnel and machinery to be limited to the areas designated for the established access roadways and construction footprint area. • Any recruitment of exotic vegetation to be managed on an ongoing basis until indigenous pioneering vegetation has dominated the disturbed areas. These species should be limited to naturally-occurring species representative of the vegetation type for the locality. Ongoing monitoring of exotic vegetation recruitment should be undertaken and any recruitment controlled. • Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to plants; • Indiscriminate damage of vegetation to be avoided. • Tree species, namely <i>Acacia erioloba</i> (SA Tree no 168) and <i>Acacia haematoxylon</i> (SA Tree no 169) that were relatively common within the survey area, must be avoided at all times. If these trees need to be removed the appropriate permit must be obtained. 	<p>Temporal: Short-term (-1) Spatial: Site (-1) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of Confidence/ Certainty: Definite</p> <p>Significance Rating: Low (-5)</p>
<p>6. Fauna</p> <ul style="list-style-type: none"> • Habitat destruction. • Destruction of RDL and displacement of sensitive species. • Impacts on faunal biodiversity. 	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: Definite (-4) Degree of Confidence/ Certainty: Probable</p> <p>Significance Rating: High (-12)</p>	<ul style="list-style-type: none"> • Movement of personnel and machinery to be limited to the areas designated for the established servitude area. • Riparian zones of the Orange River are designated as ecologically sensitive areas. No unnecessary movement of heavy machinery should be allowed within this habitat unit to retain its features. • Dumping or storage of topsoil must not be done on established vegetation, but should remain within the construction footprint. • Workers and machinery to remain inside construction footprint. All labourers to be informed 	<p>Temporal: Medium-term (-2) Spatial: Site (-1) Extent: Moderate (-2) Risk/Likelihood: Definite (-4) Degree of Confidence/ Certainty: Possible</p> <p>Significance Rating: Medium (-9)</p>

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		<p>of disciplinary actions for the wilful damage to habitat.</p> <ul style="list-style-type: none"> Indiscriminate damage of the environment to be avoided. 	
<p>7. Heritage: Possible sighting of late Stone Age artefacts</p>	<p>Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Unsure</p> <p>Significance Rating: High (-10)</p>	<ul style="list-style-type: none"> If anything is noticed, work in that area should be stopped and the occurrence should be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain. 	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Unsure</p> <p>Significance Rating: Medium (-7)</p>
<p>8. Waste: Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.).</p>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-8)</p>	<ul style="list-style-type: none"> Where possible, construction waste on site must be reused or recycled. Disposal of waste must be in accordance with relevant legislative requirements. The Contractor/s must familiarise themselves with the definitions of waste and the handling, storage and transport of it as prescribed in the applicable environmental legislation. Burning of waste material will not be permitted. Further detailed mitigation measures are included in the EMP (Appendix F). 	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-6)</p>
<p>9. Dust: Dust emissions will vary from day to day</p>	<p>Temporal: Short-term (-1) Spatial: Localised (-2)</p>	<ul style="list-style-type: none"> Frequent and effective dust-suppression is advised, particularly along dirt roads. Dust must be 	<p>Temporal: Short-term (-1) Spatial: Localised (-2)</p>

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<p>depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust have been identified as activities which could potentially generate dust during construction operations at the site: vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be required prior to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment.</p>	<p>Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-8)</p>	<p>suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.</p> <ul style="list-style-type: none"> It should also be noted that watering in certain areas in order to suppress fugitive dust may result in erosion. It may be appropriate not to implement dust suppression mitigation in such areas but an alternative method of suppression will be determined in consultation with the Contractor. 	<p>Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-6)</p>
<p>10. Noise: During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities (excavating and site clearing); construction vehicles; and construction staff.</p>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-8)</p>	<ul style="list-style-type: none"> Surrounding communities and adjacent landowners are to be notified upfront of noisy construction activities. Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order. Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment. 	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-6)</p>
<p>11. Social: Loss of grazing land and impact on landowners sense of place.</p>	<p>Temporal: Short term (-1) Spatial: Localised (-2) Extent : Low (-1)</p>	<ul style="list-style-type: none"> The landowner will be compensated for the loss of productive land. Furthermore, the landowner is currently being compensated for the impact of 	<p>Temporal: Short Term (-1) Spatial: Site (-1) Extent : Low (-1)</p>

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	Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-7)	planning and development activities on his sense of place. <ul style="list-style-type: none"> The area should be rehabilitated upon completion of the construction activities to ensure that the land is returned in the same condition as prior to the construction activities. Mitigation measures should be implemented to avoid any negative impact on animals (e.g. fencing off the construction area). 	Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Low (-6)
Indirect Impacts			
1. Flora: <ul style="list-style-type: none"> Damage to plant life outside the footprint area. Impacts on surrounding habitat/species. 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: High (-11)	<ul style="list-style-type: none"> Movement of personnel and machinery to be limited to the areas designated for the established access roadways and construction footprint area. Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to plants. Indiscriminate damage of vegetation to be avoided. Monitoring the potential spread of declared weeds and invasive alien vegetation to neighbouring land and protecting the agricultural resources and soil conservation works are regulated by the Conservation of Agricultural Resources Act, No. 43 of 1983 and should be addressed on a continual basis. 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible Significance Rating: Medium (-8)
2. Social: Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed contractor would be required to make use of local workers (e.g. for bush clearing and the digging of foundations).	Temporal: Short-term (+1) Spatial: Localised (+2) Extent : Low (+1) Risk/Likelihood: May occur (+3) Degree of confidence/Certainty: Possible Significance Rating: Medium (+7)	<ul style="list-style-type: none"> In order to minimise the potential for influx of workers, however, it is recommended that local labour be utilised as far as possible. 	Temporal: Short-term (+1) Spatial: Localised (+2) Extent: Low (+1) Risk/Likelihood: May occur (+3) Degree of confidence/Certainty: Possible Significance Rating: Medium (+7)

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3. Ground water contamination: Possible ground water contamination	Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Very High (-4) Risk/ Likelihood: May occur (-3) Degree of Confidence: Probable Significance: Very High (-13)	<ul style="list-style-type: none"> The storage dam must be lined using a a high density polyethylene geo-membrane sheet 1.5mm thick. The sheet should have appropriate overlaps at the joins to guarantee correct laying thereof and special attention should be paid to the finishes where the sheet joins concrete item, where control will be stressed even more. The sheet must be laid over a geo-drain made from a 300 g/m² non-woven geo-textile sheet on the upper part in contact with the geo membrane, and with a draining layer below. Underneath the geo-drain, a layer of clay to protect the sub-pressure that will act as an impermeable (or <i>quasi-impermeable</i>) layer should be laid. This material must be permeable to a degree no less than 10⁻⁶ cm/s. 	Temporal: Short term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/ Likelihood: May occur (-3) Degree of Confidence: Possible Significance: Medium (-7)
Cumulative Impacts			
None.			

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Construction Phase: Alternative 1: Pump station 1 (Preferred site)

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
1. Topography and Soils: The direct impact on landforms with the establishment of the pump station is mainly one of disruption of surface soils. Potential erosion impacts are anticipated to be limited to the construction phase during site clearing activities.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-8)	<ul style="list-style-type: none"> Disturbed areas of natural vegetation must be rehabilitated immediately to prevent soil erosion. Limit construction-, maintenance- and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion. No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area. Excavated soils should be reinstated and adequately landscaped; The source of the pollution must immediately be identified and rectified. Polluted soils should be immediately cleaned and transferred to an appropriate registered landfill site; Sub-sequentially removed soils should be replaced with unpolluted soils of similar geological, chemical and pedological characteristics. Soil should be shallow-ripped and scoured prior to replanting and placing of a geotextile layer (on steep topographies) to avoid soil erosion. Heavy machinery should be limited to designated roadways. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-2) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Unsure Significance Rating: Medium (-7)

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<p>2. Water Resources: Pollution of groundwater and surface water resources.</p>	<p>Temporal: Short-term (-1) Spatial: Regional (-3) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-9)</p>	<ul style="list-style-type: none"> Wastewater should be directed into the proper systems. Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface. Adequate sanitary facilities and ablutions must be provided for construction workers. Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled. Further detailed mitigation measures are included in the EMPr (Appendix F). 	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Unsure Significance Rating: Low (-6)</p>
<p>3. Habitat destruction:</p> <ul style="list-style-type: none"> Vegetation removal through soil stripping. Smothering of vegetation during soil stockpiling. Disturbances through construction activities that will destroy various floral species. Vegetation removal and site disturbances leading to shifts in floral community and habitat unit structures. 	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible Significance Rating: High (-11)</p>	<ul style="list-style-type: none"> Movement of personnel and machinery to be limited to the areas designated for the established access roadways and construction footprint area. Dumping or storage of topsoil must not be done on established vegetation, but should remain within designated areas. Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to plants; Indiscriminate damage of vegetation to be avoided. 	<p>Temporal: Medium-term (-2) Spatial: Site (-1) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-7)</p>
<p>4. Fauna</p> <ul style="list-style-type: none"> Habitat destruction. Destruction of RDL and displacement of sensitive species. Impacts on faunal biodiversity. 	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of Confidence/Certainty: Probable Significance Rating: High (-10)</p>	<ul style="list-style-type: none"> Movement of personnel and machinery to be limited to the areas designated for the established servitude area. Riparian zones of the Orange River are designated as ecologically sensitive areas. No unnecessary movement of heavy machinery should be allowed within this habitat unit to retain its features. Dumping or storage of topsoil must not be done on established vegetation, but should remain within the 	<p>Temporal: Medium-term (-2) Spatial: Site (-1) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of Confidence/ Certainty: Possible Significance Rating: Medium (-7)</p>

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		<p>construction footprint.</p> <ul style="list-style-type: none"> Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to habitat. Indiscriminate damage of the environment to be avoided. 	
5. Heritage: Possible sighting of late Stone Age artefacts.	Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Unsure Significance Rating: High (-11)	<ul style="list-style-type: none"> If anything is noticed, work in that area should be stopped and the occurrence should be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Unsure Significance Rating: Medium (-7)
6. Waste: Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.).	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-8)	<ul style="list-style-type: none"> Where possible, construction waste on site must be reused or recycled. Disposal of waste must be in accordance with relevant legislative requirements. The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of it as prescribed in the applicable environmental legislation. Burning of waste material will not be permitted. Further detailed mitigation measures are included in the EMPr (Appendix F). 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible Significance Rating: Low(-6)
7. Dust: Dust emissions will	Temporal: Short-term (-1)	<ul style="list-style-type: none"> Frequent and effective dust-suppression is advised, 	Temporal: Short-term (-1)

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<p>vary from day to day depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust have been identified as activities which could potentially generate dust during construction operations at the site: vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be required prior to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment.</p>	<p>Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-8)</p>	<p>particularly along dirt roads. Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.</p>	<p>Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-6)</p>
<p>8. Noise: During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities (excavating and site clearing); construction vehicles; and construction staff.</p>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-8)</p>	<ul style="list-style-type: none"> Surrounding communities and adjacent landowners are to be notified upfront of noisy construction activities. Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order. Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment. 	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-6)</p>
<p>9. Land-use: The construction of the pump station, and</p>	<p>Temporal: Long-term (-3) Spatial: Localised (-2)</p>	<ul style="list-style-type: none"> No mitigation proposed – this alternative is not located on an agricultural lands. Agricultural activities 	<p>Temporal: Long-term (-3) Spatial: Localised (-2)</p>

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associated infrastructure could potentially impact on agricultural activities in the area.	Extent : Low (-1) Risk/Likelihood: Very unlikely to occur (-1) Degree of confidence/Certainty: Probable Significance Rating: Medium (-7)	can still continue as usual the impact on the use of land for agricultural purposes is anticipated to be low.	Extent : Not significant (0) Risk/Likelihood: Very unlikely to occur (-1) Degree of confidence/Certainty: Probable Significance Rating: Low (-6)
10. Social: Loss of grazing land and impact on landowners sense of place.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent : Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-7)	<ul style="list-style-type: none"> The landowner will be compensated for the loss of productive land. Furthermore, the landowner is currently being compensated for the impact of planning and development activities on his sense of place. The area should be rehabilitated upon completion of the construction activities to ensure that the land is returned in the same condition as prior to the construction activities. Mitigation measures should be implemented to avoid any negative impact on animals (e.g. fencing off the construction area). 	Temporal: Short-term (-1) Spatial: Site (-1) Extent : Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Low (-6)
Indirect Impacts			
1. Flora: <ul style="list-style-type: none"> Damage to plant life outside the footprint area. Impacts on surrounding habitat/species. Increased habitat fragmentation in the wider context 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-9)	<ul style="list-style-type: none"> Movement of personnel and machinery to be limited to the areas designated for the established access roadways and construction footprint area. Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to plants. Indiscriminate damage of vegetation to be avoided. Monitoring the potential spread of declared weeds and invasive alien vegetation to neighbouring land and protecting the agricultural resources and soil conservation works are regulated by the Conservation of Agricultural Resources Act, No. 43 of 1983 and should be addressed on a continual 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible Significance Rating: Low (-6)

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		basis.	
2. Social: Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed contractor would be required to make use of local workers (e.g. for bush clearing and the digging of foundations).	Temporal: Short-term (+1) Spatial: Localised (+2) Extent : Low (+1) Risk/Likelihood: May occur (+3) Degree of confidence/Certainty: Possible Significance Rating: Medium (+7)	<ul style="list-style-type: none"> In order to minimise the potential for influx of workers, however, it is recommended that local labour be utilised as far as possible. 	Temporal: Short-term (+1) Spatial: Localised (+2) Extent: Low (+1) Risk/Likelihood: May occur (+3) Degree of confidence/Certainty: Possible Significance Rating: Medium (+7)
Cumulative Impacts			
None.			

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Construction Phase: Alternative 2: Pump station 2

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
1. Topography and Soils: The direct impact on landforms with the establishment of the pump station, is mainly one of disruption of surface soils. Potential erosion impacts are anticipated to be limited to the construction phase during site clearing activities.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-7)	<ul style="list-style-type: none"> Disturbed areas of natural vegetation must be rehabilitated immediately to prevent soil erosion. Limit construction-, maintenance- and inspection activities to dry periods in order to curb occurrence/augmentation of erosion in areas of existing erosion. No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area. Excavated soils should be reinstated and adequately landscaped; The source of the pollution must immediately be identified and rectified. Polluted soils should be immediately cleaned and transferred to an appropriate registered landfill site; Sub-sequentially removed soils should be replaced with unpolluted soils of similar geological, chemical and pedological characteristics. Soil should be shallow-ripped and scoured prior to replanting and placing of a geotextile layer (on steep topographies) to avoid soil erosion. Heavy machinery should be limited to designated roadways. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Unsure Significance Rating: Low (-6)
2. Water Resources: Pollution	Temporal: Long term (-33)	<ul style="list-style-type: none"> Waste water should be directed into the proper 	Temporal: long term (-33)

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of groundwater and surface water resources. Working within a flood line	Spatial: Regional (-3) Extent: Moderate (-2) Risk/Likelihood: Will definitely occur (-55) Degree of confidence/Certainty: Possible Significance Rating: Medium (-13)	systems. <ul style="list-style-type: none"> Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface. Adequate sanitary facilities and ablutions must be provided for construction workers. Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled. Further detailed mitigation measures are included in the EMPr (Appendix F). Do not construct within a floodline 	Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Unsure Significance Rating: Low (-9)
3. Habitat destruction: <ul style="list-style-type: none"> Vegetation removal through soil stripping. Smothering of vegetation during soil stockpiling. Disturbances through construction activities that will destroy various floral species. Vegetation removal and site disturbances leading to shifts in floral community and habitat unit structures. 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible Significance Rating: High (-11)	<ul style="list-style-type: none"> Movement of personnel and machinery to be limited to the areas designated for the established access roadways and construction footprint area. Dumping or storage of topsoil must not be done on established vegetation, but should remain within designated areas. Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to plants; Indiscriminate damage of vegetation to be avoided. 	Temporal: Medium-term (-2) Spatial: Site (-1) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-7)
4. Fauna <ul style="list-style-type: none"> Habitat destruction. Destruction of RDL and displacement of sensitive species. Impacts on faunal biodiversity. 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of Confidence/Certainty: Probable Significance Rating: High (-10)	<ul style="list-style-type: none"> Movement of personnel and machinery to be limited to the areas designated for the established servitude area. Riparian zones of the Orange River are designated as ecologically sensitive areas. No unnecessary movement of heavy machinery should be allowed within this habitat unit to retain its features. Dumping or storage of topsoil must not be done on established vegetation, but should remain within the 	Temporal: Medium-term (-2) Spatial: Site (-1) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of Confidence/ Certainty: Possible Significance Rating: Medium (-7)

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		<p>construction footprint.</p> <ul style="list-style-type: none"> Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to habitat. Indiscriminate damage of the environment to be avoided. 	
11. Heritage: Possible sighting of late Stone Age artefacts.	Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Unsure Significance Rating: High (-11)	<ul style="list-style-type: none"> If anything is noticed, work in that area should be stopped and the occurrence should be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Unsure Significance Rating: Medium (-7)
5. Waste: Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.).	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-8)	<ul style="list-style-type: none"> Where possible, construction waste on site must be reused or recycled. Disposal of waste must be in accordance with relevant legislative requirements. The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of it as prescribed in the applicable environmental legislation. Burning of waste material will not be permitted. Further detailed mitigation measures are included in the EMPr (Appendix F). 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible Significance Rating: Low (-6)
6. Dust: Dust emissions will vary from day to day	Temporal: Short-term (-1) Spatial: Localised (-2)	<ul style="list-style-type: none"> Frequent and effective dust-suppression is advised, particularly along dirt roads. Dust must be 	Temporal: Short-term (-1) Spatial: Localised (-2)

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<p>depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust have been identified as activities which could potentially generate dust during construction operations at the site: vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be required prior to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment.</p>	<p>Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-8)</p>	<p>suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.</p>	<p>Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-6)</p>
<p>7. Noise: During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities (excavating and site clearing); construction vehicles; and construction staff.</p>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-8)</p>	<ul style="list-style-type: none"> Surrounding communities and adjacent landowners are to be notified upfront of noisy construction activities. Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order. Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment 	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-6)</p>
<p>8. Land-use: The construction of the pump station could potentially impact on</p>	<p>Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Moderate (-2)</p>	<ul style="list-style-type: none"> The footprint of the proposed pump station to be used is small (i.e. approximately 50 m x 50 m) and would thus have a localised impact. Agricultural 	<p>Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Low (-1)</p>

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agricultural activities in the area.	Risk/Likelihood: Will definitely occur (-4) Degree of confidence/Certainty: Probable Significance Rating: High (-12)	activities on this site will be lost, as the activity occurs on agricultural lands.	Risk/Likelihood: Will definitely occur (-4) Degree of confidence/Certainty: Probable Significance Rating: High (-11)
9. Social: Loss of agricultural land	Temporal: Long-term (-3) Spatial: Localised (-2) Extent : High (-3) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible Significance Rating: Medium (-12)	<ul style="list-style-type: none"> The Applicant should purchase the portion of property affected by the proposed development. The surrounding area should be rehabilitated upon completion of the construction activities to ensure that the land is returned in the same condition as prior to the construction activities. Mitigation measures should be implemented to avoid any negative impact on animals (e.g. fencing off the construction area). Grazing areas should be rehabilitated to their original grazing conditions to ensure that cattle can continue to graze in the area once they are returned to that area. 	Temporal: Long-term (-3) Spatial: localised (-2) Extent : Low(-1) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible Significance Rating: Medium (-10)
Indirect Impacts			
1. Flora: <ul style="list-style-type: none"> Damage to plant life outside the footprint area. Impacts on surrounding habitat/species. Increased habitat fragmentation in the wider context 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: Medium (-9)	<ul style="list-style-type: none"> Movement of personnel and machinery to be limited to the areas designated for the established access roadways and construction footprint area. Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to plants. Indiscriminate damage of vegetation to be avoided. Monitoring the potential spread of declared weeds and invasive alien vegetation to neighbouring land and protecting the agricultural resources and soil conservation works are regulated by the Conservation of Agricultural Resources Act, No. 43 of 1983 and should be addressed on a continual basis. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible Significance Rating: Low (-6)

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2. Social: Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed contractor would be required to make use of local workers (e.g. for bush clearing and the digging of foundations).	Temporal: Short-term (+1) Spatial: Localised (+2) Extent : Low (+1) Risk/Likelihood: May occur (+3) Degree of confidence/Certainty: Possible Significance Rating: Medium (+7)	<ul style="list-style-type: none"> In order to minimise the potential for influx of workers, however, it is recommended that local labour be utilised as far as possible. 	Temporal: Short-term (+1) Spatial: Localised (+2) Extent: Low (+1) Risk/Likelihood: May occur (+3) Degree of confidence/Certainty: Possible Significance Rating: Medium (+7)
Cumulative Impacts			
None.			

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Summary of Impacts and Average Points allocated to each Pump station alternative during the Construction Phase

IMPACTS	Alternative 1: (Preferred) Without Mitigation	Alternative 1: (Preferred) With Mitigation	Alternative 2: Without Mitigation	Alternative 2: With Mitigation
DIRECT				
Topography and Soils	-8	-7	-7	-6
Water Resources	-9	-6	-13	-9
Habitat Destruction	-11	-7	-11	-7
Fauna	-10	-7	-10	-7
Heritage	-11	-7	-11	-7
Waste	-8	-6	-8	-6
Dust	-8	-6	-8	-6
Noise	-8	-6	-8	-6
Land-use	-7	-6	-12	-11
Social	-7	-6	-12	-10
Average Total	-8.70	-6.40	-10.00	-7.50
INDIRECT				
Flora	-9	-6	-9	-6
Social	+7*	+7*	+7*	+7*
Average Total	-9.00	-6.00	-9.00	-6.00
CUMULATIVE				
None				

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Operation Phase: Pipeline and Storage Ponds

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
1. Soil disturbance: <ul style="list-style-type: none"> Excavations of soils to gain access to the pipeline during planned and unplanned maintenance procedures will disturb settled soils, potentially leading to formation of erosion. 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible Significance Rating: High (-12)	<ul style="list-style-type: none"> The relevant mitigation measures proposed for the construction phase should be carried forward to operations, where potential environmental impacts may still occur. Special conditions relating to operations, as stipulated in the Environmental Authorisation (when issued) need to be adhered to. The Contractor must perform appropriate maintenance functions, as required. Responsible parties must be competent in the necessary maintenance tasks. Feedback must be provided to the ECO and project Applicant on a frequent basis. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible Significance Rating: Medium (-9)
2. Access Roads: Access roads used for maintenance might impact on the riparian habitat and grazing lands.	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible Significance Rating: High (-11)	<ul style="list-style-type: none"> Use should be made of existing roads as far as possible, ensuring proper maintenance/upgrade. Alternative methods of construction / access to sensitive areas are recommended. No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible Significance Rating: Medium (-8)
3. Vegetation disturbances: to gain access to areas in need of maintenance.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible	<ul style="list-style-type: none"> The relevant mitigation measures proposed for the construction phase should be carried forward to operations, where potential environmental impacts may still occur. Special conditions relating to operations, as stipulated in the Environmental Authorisation (when issued) need to be adhered to. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: Definite (-4) Degree of confidence/Certainty: Possible

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	Significance Rating: High (-10)	<p>issued) need to be adhered to.</p> <ul style="list-style-type: none"> The Contractor must perform appropriate maintenance functions, as required. Responsible parties must be competent in the necessary maintenance tasks. Feedback must be provided to the ECO and project proponent on a frequent basis. 	Significance Rating: Medium (-9)
4. Exotic vegetation: encroachment following soil disturbances.	<p>Temporal: Medium-term (-2) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Medium (-9)</p>	<ul style="list-style-type: none"> The relevant mitigation measures proposed for the construction phase should be carried forward to operations, where potential environmental impacts may still occur. Encroachment of alien vegetation to be monitored for regularly and controlled. 	<p>Temporal: Short-term (-1) Spatial: Site (-1) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-5)</p>
5. Waste Waste generation during the operation phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste (used oil etc.).	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/likelihood: May occur (-3) Degree of confidence/certainty: Possible</p> <p>Significance: Medium (-8)</p>	<ul style="list-style-type: none"> Where possible, operational waste on site must be reused or recycled. Disposal of waste must be in accordance with relevant legislative requirements. The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. Burning of waste material will not be permitted. Further detailed mitigation measures are included in the EMPr (Appendix F). 	<p>Temporal: Short-term (-1) Spatial: Site (-1) Extent: Low (-1) Risk/likelihood: Unlikely to occur (-2) Degree of confidence/ certainty: Possible</p> <p>Significance: Low (-5)</p>

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6. Visual: the pipeline will be placed above-ground.	Temporal: Permanent (-4) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: Definitely occur (-4) Degree of confidence/Certainty: Definite Significance Rating: Very High (-13)	<ul style="list-style-type: none"> Indigenous vegetation should be planted to achieve landscape patterns that emulate in part existing mixes of tree and grass cover in the surrounding landscape. Exposure of work areas should be as minimal as possible. 	Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: Definitely occur (-4) Degree of confidence/Certainty: Definite Significance Rating: High (-12)
Indirect Impacts			
1. Socio-economic: The proposed pipeline will transport water to the relevant storage pond required for the cooling towers needed at the CSP plant. The proposed project aims at contributing to meeting the South African Government's target of 10 000 GWh renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro.	Temporal: Long-term (+3) Spatial: National (+4) Extent: High (+3) Risk/Likelihood: May occur (+3) Degree of confidence/Certainty: Probable Significance Rating: +13	<ul style="list-style-type: none"> No mitigation proposed. 	
Cumulative Impacts			
None.			

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Operation Phase: Alternative 1 Pump station 1

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
1. Waste Waste generation during the operation phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste (used oil etc.).	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/likelihood: May occur (-3) Degree of confidence/ certainty: Possible Significance: Medium (-8)	<ul style="list-style-type: none"> Where possible, operational waste on site must be reused or recycled. Disposal of waste must be in accordance with relevant legislative requirements. The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. Burning of waste material will not be permitted. Further detailed mitigation measures are included in the EMPr (Appendix F). 	Temporal: Short-term (-1) Spatial: Site (-1) Extent: Low (-1) Risk/likelihood: Unlikely to occur (-2) Degree of confidence/ certainty: Possible Significance: Low (-5)
2. Visual: The visual impact of the proposed pump station will depend on the structures used and visual qualities of the structures, and on the nature of the receiving environment.	Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Definitely occur (-4) Degree of confidence/Certainty: Definite Significance Rating: High (-11)	<ul style="list-style-type: none"> No mitigation proposed. 	
Indirect Impacts			
1. Flora: <ul style="list-style-type: none"> Damage to plant life outside of the footprint area. Encroachment of alien 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood:	<ul style="list-style-type: none"> Ecologically sensitive areas should be retained as prohibited areas to workers. Workers and machinery to remain inside construction footprint. All labourers to be informed 	Temporal: Short-term (-1) Spatial: Site (-1) Extent: Low (-1) Risk/Likelihood:

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<p>vegetation following site disturbances.</p> <ul style="list-style-type: none"> Increased habitat fragmentation in the wider context 	<p>May occur (-3)</p> <p>Degree of confidence/Certainty: Possible</p> <p>Significance Rating: High (-11)</p>	<p>of disciplinary actions for the wilful damage to plants.</p> <ul style="list-style-type: none"> Encroachment of alien vegetation to be monitored for regularly and controlled. 	<p>May occur (-3)</p> <p>Degree of confidence/Certainty: Possible</p> <p>Significance Rating: Low (-6)</p>
Cumulative Impacts			
None.			

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Operation Phase: Pump station 2 Alternative 2

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct Impacts			
1. Waste Waste generation during the operation phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste (used oil etc.).	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/likelihood: May occur (-3) Degree of confidence/ certainty: Possible Significance: Medium (-8)	<ul style="list-style-type: none"> Where possible, operational waste on site must be reused or recycled. Disposal of waste must be in accordance with relevant legislative requirements. The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. Burning of waste material will not be permitted. Further detailed mitigation measures are included in the EMPr (Appendix F). 	Temporal: Short-term (-1) Spatial: Site (-1) Extent: Low (-1) Risk/likelihood: Unlikely to occur (-2) Degree of confidence/ certainty: Possible Significance: Low (-5)
2. Visual: The visual impact of the proposed pump station will depend on the structures used and visual qualities of the structures, and on the nature of the receiving environment.	Temporal: Permanent (-4) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Definitely occur (-4) Degree of confidence/Certainty: Definite Significance Rating: High (-11)	<ul style="list-style-type: none"> No mitigation proposed. 	
Indirect Impacts			
1. Flora: <ul style="list-style-type: none"> Damage to plant life outside of the footprint area. Encroachment of alien vegetation following site 	Temporal: Long-term (-3) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: May occur (-3)	<ul style="list-style-type: none"> Ecologically sensitive areas should be retained as prohibited areas to workers; Workers and machinery to remain inside construction footprint. All labourers to be informed of disciplinary actions for the wilful damage to plants; 	Temporal: Short-term (-1) Spatial: Site (-1) Extent: Low (-1) Risk/Likelihood: May occur (-3)

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disturbances. • Increased habitat fragmentation in the wider context.	Degree of confidence/Certainty: Possible Significance Rating: High (-11)	• Encroachment of alien vegetation to be monitored for regularly and controlled.	Degree of confidence/Certainty: Possible Significance Rating: Low (-6)
Cumulative Impacts			
None.			

Summary of Impacts and Average Points allocated to each Pump station Alternative during the Operational Phase

IMPACTS	Alternative 1 Preferred: Without Mitigation	Alternative 1 Preferred: With Mitigation	Alternative 2: :Without Mitigation	Alternative 2: With Mitigation
DIRECT				
Waste	-8	-5	-8	-5
Visual	-11	-	-11	-
Average Total	-9.50	-5.00	-9.50	-5.00
INDIRECT				
Flora	-11	-6	-11	-6
Average Total	-11.00	-6.00	-11.00	-6.00
CUMULATIVE				
None.				

*Not included as part of the calculation.

BASIC ASSESSMENT REPORT

Decommissioning phase: Pipeline and Storage Ponds

Potential impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
Direct Impacts			
1. Waste Waste generation during the decommissioning phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk /likelihood : May occur (-3) Degree of confidence/ certainty Possible Significance: Medium (-8)	<ul style="list-style-type: none"> Disposal of waste must be in accordance with relevant legislative requirements. Waste must be disposed off in the appropriate manner at a licensed disposal site. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Rick/likenhood: Unlikely to occur (-2) Degree of confidence/ Certainty: Improbable Significance: Low (-6)
2. Erosion All areas disturbed during construction and operation are to be re-vegetated to avoid erosion.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: May occur (-3) Degree of confidence/ certainty: Possible Significance: Medium (-9)	<ul style="list-style-type: none"> Rehabilitation of areas affected by construction and operation activities should ideally commence at the start of the rainy season. Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction. All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation. All areas where topsoil was removed should be landscaped in order to reflect surrounding conditions. Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Improbable Significance: Medium (-7)

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Potential impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil.	
3. Removal of equipment Equipment not adequately removed from the site after decommissioning will have a negative impact on the environment if not mitigated.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence and certainty: Possible Significance: Medium (-8)	<ul style="list-style-type: none"> All structures comprising the pipeline and storage ponds are to be removed from site. All hardened surfaces should be ripped, all imported materials removed, and the area shall be top soiled and landscaped. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence and certainty: Unsure Significance: Low (-6)
Indirect Impacts			
None.			
Cumulative Impacts			
None.			

BASIC ASSESSMENT REPORT

Decommissioning and Closure: Alternative 1: Pump station 1

Potential impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
Direct Impacts			
1. Waste Waste generation during the decommissioning phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk /likelihood : May occur (-3) Degree of confidence/ certainty Possible Significance: Medium (-8)	<ul style="list-style-type: none"> Disposal of waste must be in accordance with relevant legislative requirements. Waste must be disposed off in the appropriate manner at a licensed disposal site. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Rick/likelihood: Unlikely to occur (-2) Degree of confidence/ Certainty: Improbable Significance: Low (-6)
2. Erosion All areas disturbed during construction and operation are to be re-vegetated to avoid erosion.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: May occur (-3) Degree of confidence/ certainty: Possible Significance: Medium (-9)	<ul style="list-style-type: none"> Rehabilitation of areas affected by construction and operation activities should ideally commence at the start of the rainy season. Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction. All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation. All areas where topsoil was removed should be landscaped in order to reflect surrounding conditions. Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Improbable Significance: Medium (-7)

BASIC ASSESSMENT REPORT

Potential impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil.	
3. Removal of equipment Equipment not adequately removed from the site after decommissioning will have a negative impact on the environment if not mitigated.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence and certainty: Possible Significance: Medium (-8)	<ul style="list-style-type: none"> All structures comprising the pump station are to be removed from site. All hardened surfaces should be ripped, all imported materials removed, and the area shall be top soiled and landscaped 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence and certainty: Unsure Significance: Low (-6)
Indirect Impacts			
None.			
Cumulative Impacts			
None.			

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Decommissioning and closure: Alternative 2: Pump station 2

Potential impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
Direct Impacts			
1. Waste Waste generation during the decommissioning phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk /likelihood : May occur (-3) Degree of confidence/ certainty Possible Significance: Medium (-8)	<ul style="list-style-type: none"> Disposal of waste must be in accordance with relevant legislative requirements. Waste must be disposed off in the appropriate manner at a licensed disposal site. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Rick/likelihood: Unlikely to occur (-2) Degree of confidence/ Certainty: Improbable Significance: Low (-6)
2. Erosion All areas disturbed during construction and operation are to be re-vegetated to avoid erosion.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: High (-3) Risk/Likelihood: May occur (-3) Degree of confidence/ certainty: Possible Significance: Medium (-9)	<ul style="list-style-type: none"> Rehabilitation of areas affected by construction and operation activities should ideally commence at the start of the rainy season. Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction. All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation. All areas where topsoil was removed should be landscaped in order to reflect surrounding conditions. Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Improbable Significance: Medium (-7)

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Potential impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil.	
4. Removal of equipment Equipment not adequately removed from the site after decommissioning will have a negative impact on the environment if not mitigated.	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence and certainty: Possible Significance: Medium (-8)	<ul style="list-style-type: none"> All structures comprising the pump station are to be removed from site. All hardened surfaces should be ripped, all imported materials removed, and the area shall be top soiled and landscaped. 	Temporal: Short-term (-1) Spatial: Localised (-2) Extent: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence and certainty: Unsure Significance: Low (-6)
Indirect Impacts			
None.			
Cumulative Impacts			
None.			

BASIC ASSESSMENT REPORT

Summary of Impacts and Average Points allocated to each Pump station Alternative during the Decommissioning Phase

IMPACTS	Alternative 1 Preferred: Without Mitigation	Alternative 1 Preferred: With Mitigation	Alternative 2: Without Mitigation	Alternative 2: With Mitigation
DIRECT				
Waste	-8	-6	-8	-6
Erosion	-9	-7	-9	-7
Removal of Equipment	-8	-6	-8	-6
Average Total	-8.33	-6.33	-8.33	-6.33
INDIRECT				
None.				
CUMULATIVE				
None.				

3. 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.

After taking into account the assessment of potential impacts associated with the Pump station alternatives and the proposed storage dams and Pipeline, the summary of average planning and design, construction, operation and decommissioning and closure impacts is presented below with preference indicated according to the key hereunder.

1 st Preference
2 nd Preference
No Preference

Without Mitigation (WoM)

With Mitigation (WM)

Please note: The greater the negative rating, the higher the impact.

	Pump Station 1 Alternative 1 WoM	Pump Station Alternative 1 WM	Pump Station 2: Alternative 2 WoM	Pump Station 2: Alternative 2: WM
Planning - Direct	0.00	0.00	0.00	0.00
Planning - Indirect	0.00	0.00	0.00	0.00
Planning - Cumulative	0.00	0.00	0.00	0.00
Construction - Direct	-8.70	-6.40	-9.60	-7.10
Construction - Indirect	-9.00	-6.00	-9.00	-6.00
Construction - Cumulative	0.00	0.00	0.00	0.00
Operation - Direct	-9.50	-5.00	-11.00	-6.00
Operation - Indirect	-9.50	-5.00	-11.00	-6.00
Operation - Cumulative	0.00	0.00	0.00	0.00
Decommissioning - Direct	-8.33	-6.33	-8.33	-6.33
Decommissioning - Indirect	0.00	0.00	0.00	0.00
Decommissioning - Cumulative	0.00	0.00	0.00	0.00

Alternative 1: Pipeline (preferred alternative)

Based on the findings of the specialist studies undertaken within the Basic Assessment the following observations were made.

According to the Biodiversity Assessment the proposed alignment route runs through four different vegetation types. The survey sites were chosen to be representative of typical areas within these vegetation units, excepting for the northern extreme, where the pipeline route has too limited an association with the vegetation

unit (Kalahari Karroid Shrubland) to be relevant.

The pipeline servitude does not incorporate any areas of particular ecological sensitivity through the association with existing infrastructure (Transnet servitude, railway, existing pipeline) and the transformation of the land and vegetation structures through farming activities (livestock and agriculture). The riparian zones of the Orange River, regardless of present ecological state, is considered an inherently sensitive habitat unit and therefore the impact footprint within this area should be limited as far as possible.

No Red Data Listed faunal or floral species were noted during the field survey and the habitat quality and present land use is presumed to largely exclude the possibility of these species occurring where they would be impacted by the development activities.

According to the Wetland Assessment no wetlands occur along the pipeline route. Similarly according to the Heritage Assessment, no areas of historical importance were sited.

Alternative 1: Storage Ponds

The storage tanks were substituted with storage/ regulation ponds in line with the industry standard design for bulk raw water storage in CSP plants worldwide.

Alternative 1: Pump station 1 (preferred alternative)

The findings of the specialist studies undertaken within this Basic Assessment process provide an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed project. The findings conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding, provided that the recommended mitigation and management measures are implemented.

According to the Biodiversity assessment the proposed study area does not consist of areas of particular ecological sensitivity through the association with existing infrastructure (Transnet servitude, railway, existing pipeline) and the transformation of the land and vegetation structures through farming activities (livestock and agriculture). Based on the biodiversity assessment, Alternative 2 is slightly more preferred however the pump station consists of a small footprint and if mitigation measures are adhered to this site could be used.

In term of wetlands, no wetlands exist within the study area. In addition, the drainage lines are dry with no wetland vegetation or soils supporting vegetation.

No Red Data Listed faunal or floral species were noted during the field survey and the habitat quality and present land use is presumed to largely exclude the possibility of these species occurring where they would be impacted by the development activities. Tree species, namely *Acacia erioloba* (SA Tree no 168) and *Acacia haematoxylon* (SA Tree no 169) are relatively common within the survey area, must be avoided at all times.

In terms of agricultural importance, due to Alternative 2 being situated on agricultural lands that could be utilised at a later stage, the establishment of the pump station on the farm Sand Draai 391, portions 0 and 5 (28° 47.108'S, 21° 53.240'E) is preferred from an environmental point of view.

Alternative 2: Pump station 2

The findings of the specialist studies undertaken within this Basic Assessment process provide an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed project. The findings conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding, provided that the recommended mitigation and management measures are implemented.

According to the Biodiversity assessment the proposed study area does not consist of areas of particular ecological sensitivity through the association with existing infrastructure (Transnet servitude, railway, existing pipeline) and the transformation of the land and vegetation structures through farming activities (livestock and agriculture). Tree species, namely *Acacia erioloba* (SA Tree no 168) and *Acacia haematoxylon* (SA Tree no

169) are relatively common within the survey area, must be avoided at all times. Based on the biodiversity assessment, alternative 2 is slightly more preferred.

In term of wetlands, no wetlands exist within the study area. In addition the drainage lines are dry with no wetland vegetation or soils supporting vegetation.

No Red Data Listed faunal or floral species were noted during the field survey and the habitat quality and present land use is presumed to largely exclude the possibility of these species occurring where they would be impacted by the development activities.

In terms of agricultural importance, Alternative 1 is preferred.

No-go alternative (compulsory)

The *no go option* would be to not construct the pipeline, pump station and associated infrastructure, that will be used to generate power at the authorised 50 MW CSP plant located at Bokpoort. The consequence will be that the authorised 50 MW CSP plant located at Bokpoort will not be capable of being constructed.

Increasing economic growth and social development within South Africa is placing a growing demand on energy supply. Coupled with the rapid advancement in economic and social development, is the growing awareness of environmental impact, climate change and the need for sustainable development.

South Africa has a high level of renewable energy potential and to this end the South African Government has set a target of 10 000 GWh renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilised for power generation and non-electric technologies such as solar water heating and bio-fuels. This equates to approximately 4% (1 667 MW) of the projected electricity demand for 2013 (41 539 MW)⁵.

Should no action be taken the current state will worsen considerably. Power cuts would be prevalent and additional customers would re-locate to areas where power is readily available. This will have a ripple effect on the business sector and in turn impact on the GDP.

⁵ Department of Minerals and Energy. 2003. *White Paper on Renewable Energy*.

SECTION E. RECOMMENDATION OF PRACTITIONER

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

YES ✓	NO
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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):

N/A

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:

Tree species, namely *Acacia erioloba* (SA Tree no 168) and *Acacia haematoxylon* (SA Tree no 169) that were relatively common within the survey area, must be avoided at all times.

All mitigation measures stated in the Water Use License application must be adhered to.

Recommended mitigation measure for the proposed activity throughout the project life-cycle are included in the Environmental Management Programme (EMPr) attached to this document.

The storage dam must be lined using a high density polyethylene geo-membrane sheet 1.5mm thick. The sheet should have appropriate overlaps at the joins to guarantee correct laying thereof and special attention should be paid to the finishes where the sheet joins concrete item, where control will be stressed even more. The sheet must be laid over a geo-drain made from a 300 g/m² non-woven geo-textile sheet on the upper part in contact with the geo membrane, and with a draining layer below. Underneath the geo-drain, a layer of clay to protect the sub-pressure that will act as an impermeable (or *quasi-impermeable*) layer should be laid. This material must be permeable to a degree no less than 10⁻⁶ cm/s.

Is an EMPr attached?

YES ✓	NO
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The EMPr must be attached as Appendix F.

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information