

PROPOSED KRIEL-MATLA ASH TRANSFER LINK

Basic Assessment Report

December 2015

Final

Prepared for: Eskom Holdings SOC Ltd










Environmental, Social and OHS Consultants



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Amendments Page

Date:	Nature of Amendment	Amendment Number:
26 October 2015	First Draft for Internal Review	00
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environmental affairs

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

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

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

Yes ✓

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

The details of the specialists as well as the specialist declaration forms are provided in **Appendix I**. Copies of the following specialist studies are included in **Appendix D**

- Ecological Survey Report
- Heritage Impact Assessment
- Wetland Assessment Report
- Aquatic Assessment Report
- Surface water Report

1. PROJECT DESCRIPTION

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

Kriel Power Station is a coal fired power station comprising of six units which produce a combined base load of 3 000 MW. The power station has a remaining operating life of 26 years and is scheduled to be decommissioned in 2039. To generate 3 000 MW of electricity coal is burnt by the boilers which produces ash as a waste product. The ash is then disposed of and stored on the Ash Dam. Kriel Power Station Ash Dam will reach its maximum capacity in approximately June 2017 and Eskom is currently in the process of designing and undertaking the environmental authorisation for a new Ash Dam. However, according to the latest schedule a new ash dam will only be commissioned in September 2020, thus Kriel will not have sufficient capacity to deal with the ash generated between 2017 and 2020.

Eskom has therefore proposed the Kriel-Matla Ash Transfer Link which will involve the following, as an intermediate solution for a period of approximately 3.5 - 4 years until the new Kriel Ash Dam is developed:

- The transferring of 100% of Kriel Power Station Ash to Matla Power Station Ash Dam.
- The return of all Kriel Ash Water from the Matla Power Station Ash Dam to Kriel Power Station.

The proposed project will involve the development of four new ash pipelines from Kriel to Matla as well as an Ash Water Return (AWR) System comprising of three AWR pipelines. Information on the proposed pipelines are provided in **Table 1** below:

Table 1: Pipeline specifications

System	No. of Pipelines	Diameter (mm)	Pipeline Material	Configuration	Throughput capacity per pump (m ³ /hr)	Anticipated Volumes transported per day
Ash Water Return (AWR)	3	350	Commercial Steel (mild steel)	3 x Single pumps discharging into a dedicated pipeline operating simultaneously.	720	Kriel to Matla: 42 476.8 (m ³ /day) Matla to Kriel: 38 390.1 (m ³ /day)

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Slurry	4	300	Commercial Steel (mild steel)	3 x Single pumps discharging into a dedicated pipeline operating simultaneously. 1 x Single pump and pipeline on standby.	753.5	10 586.3 (Tons/day)
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New Booster Pump House for Kriel's AWR will be constructed adjacent to the existing Matla Booster Pump House, which will accommodate three new booster pumps. A new barge at the Matla ash water return dam (final cut) accommodating three pumps and pipelines to this new booster pump house will also be required. The existing slurry pump house and substations at the Kriel Ash Dam may also require upgrades to effectively pump the ash slurry to the Matla ash dam.

In addition to the above infrastructure, solution trenches will be installed on either side of the pipeline along the entire servitude to contain ash and AWR spillages as well as divert it to the nearest Ash Dam solution trench or containment sump. The servitude will also be equipped with a service road on either side of the pipes for ease of access for maintenance. The servitude at Kriel Power Station will also be equipped with two collection sumps, one on either side of the servitude, which will receive ash and/or AWR from the trenches and contain it during a spillage. A bridge that is enclosed at the bottom and sides will be installed over the watercourse which will contain and divert ash and/or AWR spillages to either of the collection sumps. The servitude at Matla Power Station will be equipped with two 675 mm outer diameter concrete drain pipes on either side of the servitude. These drain pipes will contain and divert ash and/or AWR spillages to the MPS Ash Dam solution trench. A bridge that is enclosed at the bottom and sides will also be installed over the watercourse which will divert ash to the drain pipes. Furthermore, the current service roads at MPS Ash Dam will be utilised to access the AWR- and Slurry pipes.

A mine haul road runs between Kriel and Matla Ash Dam which will be crossed by the pipe servitude. There are also two seasonal natural watercourses which exist on either side of the mine haul road (mine service road). Two pipe bridges will be required for the pipes to cross the two watercourses.

Furthermore, for the pipe crossing at the Mine Haul Road (mine service road), concrete pipe sleeves will be installed which will accommodate the pipes. Two additional sleeves will also be installed for redundancy. Pipe sections at the sleeves will consist of three meter sections to accommodate ease of maintenance during the installation and removal of pipes.

Design drawings are provided in **Appendix C**.

An overview of the project locality is provided below. The proposed development is located in an area immediately adjacent to the existing Kriel and Matla Ash Dams in Emalahleni Local Municipality (ELM) and the Nkangala District Municipality (NDM) in Mpumalanga Province. The site is located approximately 8 km west of Kriel, 27 km south of Ogies and 34 km north-west of Bethal. The power stations are located within 3 km of one another.



Figure 1: Project Location

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

Listed activity as described in GN 983, 984 and 985	Description of project activity
<p>Example: GN 983 Item xx xx): The construction of a bridge 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 bridge measuring 5 m in height and 10m in length, no wider than 8 meters will be built over the Orange river</p>
GN R 983 Item 10 (i) and (ii)	Four Ash Slurry Pipelines with a design flow rate of approximately 210 litres/s (753 m ³ /hour) and three Ash Water Return Pipelines with a design flow rate of 200 litres/s (720 m ³ /hour) will be put in place to transport ash from Kriel Ash Dam to Matla Ash Dam and Ash Return Water from Matla Ash Dam to Kriel Ash Dam. This activity will take place outside an urban area. In addition, two 0.675m diameter concrete drain pipes will be placed on either side of the pipe servitude to divert any slurry or ash water spillage to Matla Ash Dam.
GN R 983 Item 12 (iii) and (xii)	Two pipe bridges of approximately 308 m ² and 187 m ² respectively will be constructed within a watercourse outside an urban area.
GN R 983 Item 19 (i)	The excavation of more than 5m ³ of material from a watercourse.
GN R 983 Item 24 (ii)	Two access roads with a combined width of 10 m (2 x 5 m) will be constructed on either side of the pipelines.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

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

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

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Not Applicable as two alternative routes, **NOT SITES**, were selected as this proposed project involves a transfer linked (pipelines) between the Kriel Ash Dam and the Matla Ash Dam and is considered as a linear activity.

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

In the case of linear activities:

It should be noted that there are two alternative routes for the Slurry Transfer pipeline and two alternative routes for the Ash Water Return pipeline from the Kriel Ash Dam to the Matla Ash Dam and Back to the Kriel Ash Dam. Therefore an extra table was included in this report to accommodate for the second pipeline. Maps of the routes are provided in **Appendix A** however for orientation purposes, maps are provided below.

Alternative Slurry Pipeline and Ash Water Return Line 1:

Alternative 1 involves crossing under Mine haul road using pipe sleeves and crossing of two natural watercourses with pipe gantries. The main difference is that the road crossing is a 150 m west of alternative 2 and is thus closer from the wetland in the east.

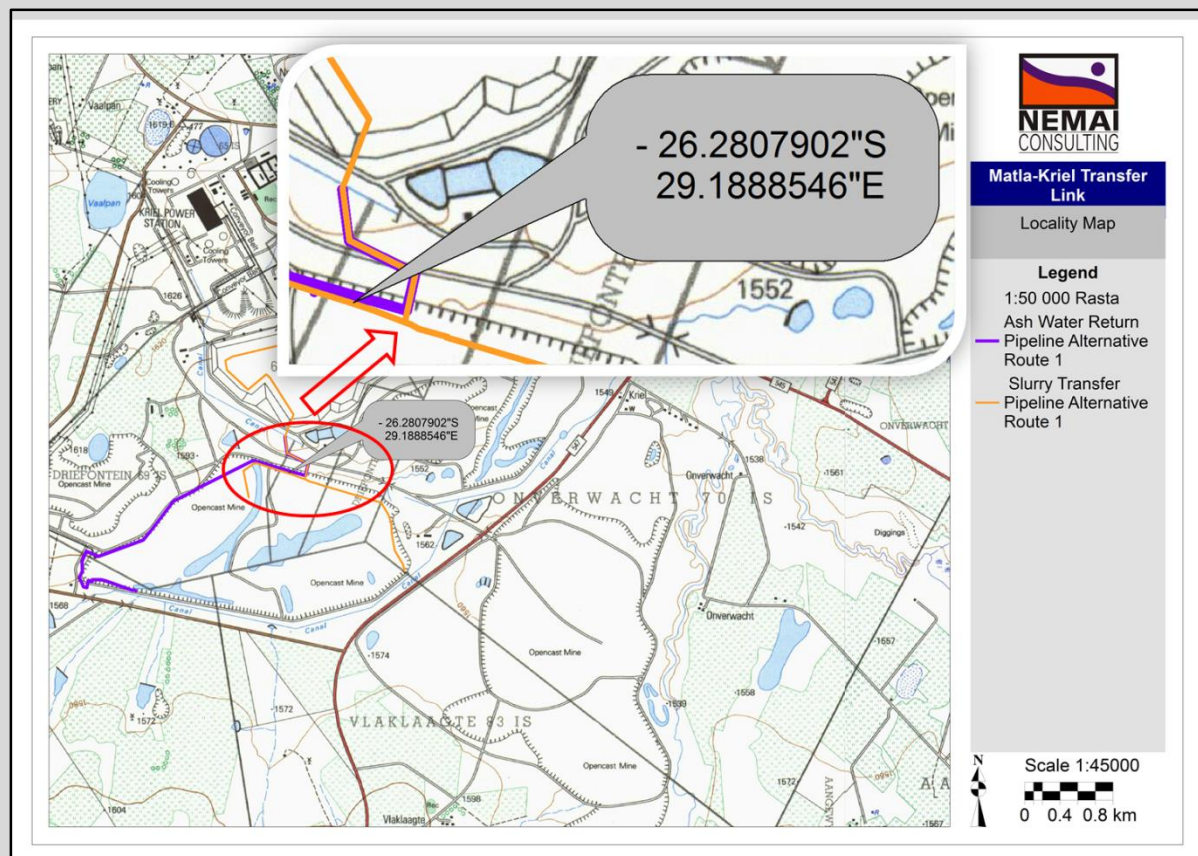


Figure 2: Alternative Slurry Pipeline and Ash Water Return Line 1

Alternative Slurry Pipeline and Ash Water Return Line 2:

Alternative 2 involves crossing under Mine haul road using pipe sleeves and crossing of two natural watercourses with pipe gantries and is similar in concept to Alternative 1 however longer gantry structures would be required due to wider watercourses and the crossing is closer to the wetland.

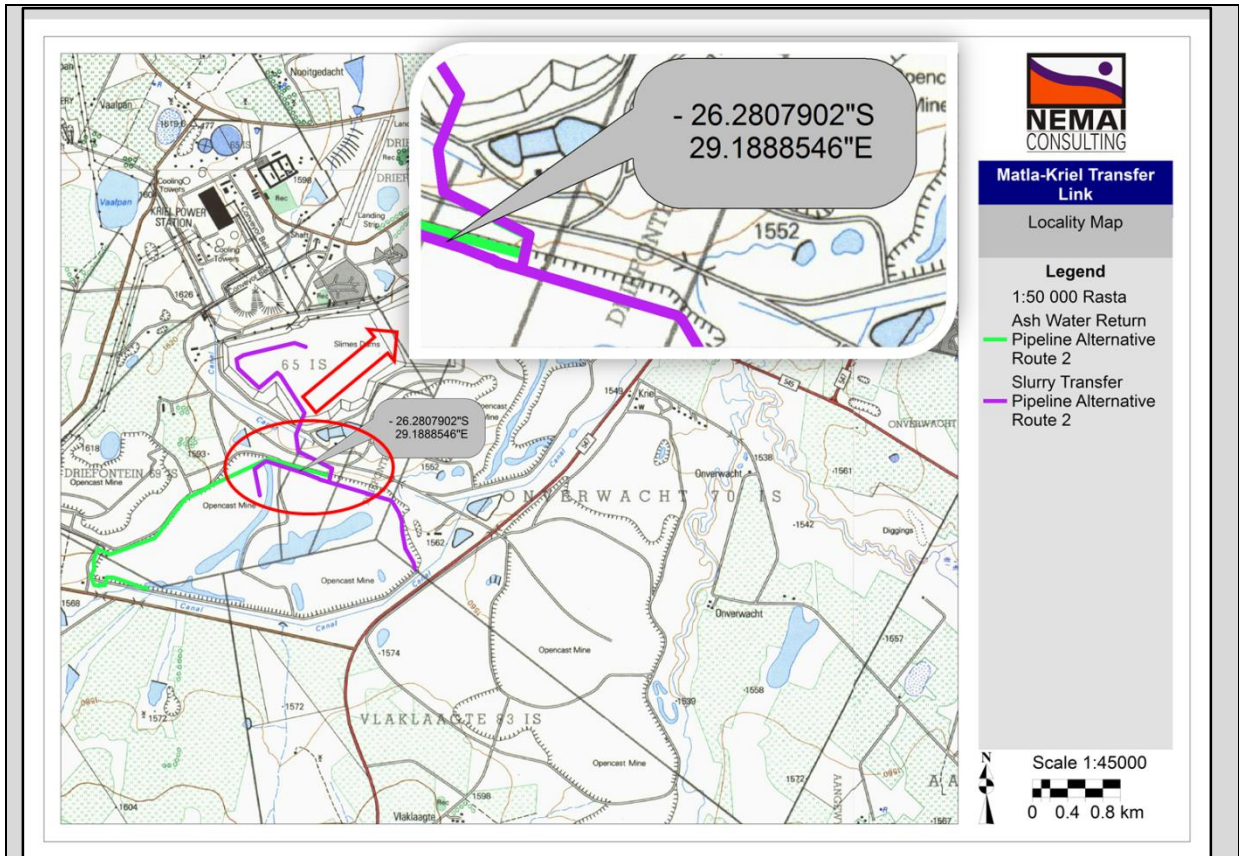


Figure 3: Alternative Slurry Pipeline and Ash Water Return Line 2

Slurry Transfer Pipeline

Alternative:	Latitude (S):	Longitude (E):
Alternative S1 (preferred)		
• Starting point of the activity	-26.26804	29.18818
• Middle/Additional point of the activity	-26.28052	29.18952
• End point of the activity	-26.29056	29.20051
Alternative S2 (if any)		
• Starting point of the activity	-26.26804	29.18818
• Middle/Additional point of the activity	-26.27699	29.18709
• End point of the activity	-26.29056	29.20051
Alternative S3 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

Ash Water Return Pipeline

Alternative:	Latitude (S):	Longitude (E):
Alternative S1 (preferred)		
• Starting point of the activity	-26.27702	29.18709
• Middle/Additional point of the activity	-26.28351	29.17455
• End point of the activity	-26.29263	29.17032

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Alternative S2 (if any)

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

-26.27976	29.18972
-26.28574	29.17265
-26.29263	29.17032

Alternative S3 (if any)

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

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

The co-ordinates taken every 250 meters along the route for each alternative alignment are shown in **Appendix J1**.

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

Not Applicable as two alternative routes, **NOT LAY-OUTS**, were selected as this proposed project involves a transfer linked (pipelines) between the Kriel Ash Dam and the Matla Ash Dam and is considered as a linear activity.

b) Lay-out alternatives

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

c) Technology alternatives

Not Applicable.

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

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

Not Applicable.

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

e) No-go alternative

Should the proposed project not commence, the Kriel Power Station, will reach its maximum capacity in approximately June 2017. Due to the lack of capacity at the Ash Dam, the Power Station would not be able to generate electricity for a period of approximately 3-4 years. This would have a significant negative impact on the currently constrained power grid. In addition, it is likely that many workers would lose their jobs.

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

3. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

- Alternative A1¹ (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Size of the activity:

or, for linear activities:

Alternative: Slurry Transfer Pipeline

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

Length of the activity:

5800 m
6700 m

Alternative: Ash Water Return Pipeline

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

Length of the activity:

4900 m
4900 m

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

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

The figure below shows a typical cross section of the servitude. Values in the figure are provided in millimetres however these have been converted to metres in the tables below. The total width of the proposed project will be 17.5 m. Solutions trench and channels will be built for pollution/spillage purposes. Design drawings are provided in Appendix C.

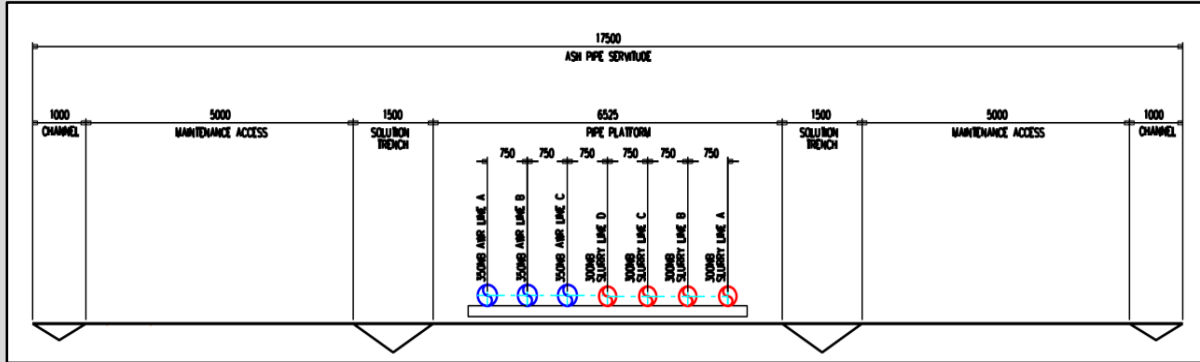


Figure 4: Typical cross section of the servitude

Alternative: Slurry Transfer Pipeline

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

Size of the servitude:

	17.5 m
	17.5 m

Alternative: Ash Water Return Pipeline

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

Size of the servitude

	17.5 m
	17.5 m

4. SITE ACCESS

Does ready access to the site exist?

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

YES ✓	

Describe the type of access road planned:

Site access is available through the existing mine haul road (see Appendix A5) and no new access road is needed for this proposed project.

However, maintenance roads on either side of the pipeline will take place and will have a gravel wearing course. Existing excavated material will be used as far as possible. Any additional material required will be imported. The location of the maintenance roads within the servitude are provided in Figure 4 above.

5. LOCALITY MAP

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

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

Please see **Appendix A1** for the locality maps for Alternative Route 1 and 2.

6. LAYOUT/ROUTE PLAN

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

The site or route plans must indicate the following:

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

The properties that is being affected is listed below as shown on the Map in **Appendix A2**.

- Kriel Power Station 65-IS
- Driefontein 69-IS Portion 10, 11, 12, 13, 15, 17 and 30
- Onverwacht 70-IS Portion 15 and 16
- Bakenlaagte 84-IS Portion 4
- Vlaklaagte 83 IS Portion 2

According to Eskom Real Estate, the properties affected by the development are still zoned as agricultural, however all the land that would be affected by the new proposed project are used for power generation and

other power station related activities. All the land portions are owned by Eskom.

7. SENSITIVITY MAP

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

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

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

Please see **Appendix A3** for the A3 Sensitivity Map. Please note that the Mpumalanga Biodiversity Sector Plan (MBSP) was used to identify sensitivities. MBSP noted that most of the area traversed by the pipeline is heavily modified, moderately modified or other natural areas (not CBAs etc.).

The Ecological Specialist identified, no threatened species were observed on site but only one plant species of conservation concern was noted, namely *Hypoxis hemerocallidea* (Star flower/African potato). This species is listed as Declining. *Hypoxis hemerocallidea* (Star flower/African potato) (**Figure 3**) occurs in open grassland and woodland and is widespread in South Africa in the eastern summer rainfall provinces (Eastern Cape, Free State, KwaZulu-Natal, Mpumalanga, Gauteng and Limpopo). It is used to treat headaches, dizziness, mental disorders, cancers, inflammation and HIV.

Further, the Heritage Impact Assessment (HIA) did not identify any heritage sites evident in the study area. It should be noted that the sub-surface archaeological and/or historical deposits and graves are always a possibility. Care should be taken during any work in the entire area and if any of the above is discovered, an archaeologist/heritage practitioner should be commissioned to investigate. The wetlands/watercourses delineated as part of the Aquatic study have also been included in the Sensitivity Map.

8. SITE PHOTOGRAPHS

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

Please see **Appendix A4** for the position of where the photographs were taken.
Please see **Appendix B** for Photographs.


9. FACILITY ILLUSTRATION(S)





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

Please see **Appendix C** for the facility illustrations.

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES ✓	[Redacted]	Please explain
According to Eskom Real Estate, the property zoning has not yet been amended and still reflects the previous agricultural zoning however the properties affected by the proposed development are all currently used for power station related activities and as such the activity is permitted in terms of the current land use. All properties affected are owned by Eskom.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	[Redacted]	NO ✓	Please explain
There are no Mpumalanga PSDF available as of yet. However it should be noted that the Districts SDF notes the importance of ensuring ' <i>reliable generation, distribution and transmission of electricity and demand for engineering infrastructure related to electricity</i> '. The proposed development aims to provide temporary measures for ash disposal in order to enable to the continued generation of electricity at Kriel Power Station. The proposed development is thus in line with the Districts SDF.			
(b) Urban edge / Edge of Built environment for the area	[Redacted]	NO ✓	Please explain
The Emalahleni Local Municipality SDF provides details on the urban edge in the municipality. The urban edge is located around the main towns (eMalahleni, Ogies, Rietspruit) and thus Kriel Power Station and Matla Power Station (and associated ash dams) do not occur within the formal urban edge. However, the SDF does note the position of the power stations and the proposed development occurs within the edge of the built environment of the Kriel and Matla Ash Dams (see Figure 5 below).			
			
<p>Figure 5: Proposed ash transfer link within the edge of the built environment of Matla and Kriel Ash Dams</p>			
The area is already used as an ash waste disposal facility for Eskom and thus the activity will be in line with the edge of the built environment of the Matla and Kriel Ash Dams.			

<p>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The Emalahleni Local Municipality IDP and SDF note the importance of electricity generation in the area with electricity generation activities contributing 14.4% to the municipal economy. Whilst most of the households in the municipality have access to electricity, the SDF does note that the municipality obtains electricity for distribution from Eskom. Therefore should Eskom have decreased capacity for electricity generation, this would negatively impact the municipality. Further, as mentioned above, the SDF does note the position of the power stations within the area. Based on this information, the approval of the activity would not compromise the integrity of the existing approved and credible IDP and SDF.</p>			
<p>(d) Approved Structure Plan of the Municipality</p>		<p>N/A ✓</p>	
<p>No Structure Plan is available for the Municipality.</p> <p>However it should be noted that the SDF does contain a Structure and Transportation Network which includes the location of both Kriel and Matla Power Stations. The development occurs within the boundary of both these power stations and thus the activity would be in line with current structures discussed in the SDF.</p>			
<p>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>There is no EMF for the municipal however the SDF does include information on sensitive environmental features as does the Mpumalanga Conservation Plan and MSDF. The proposed pipeline occurs within an area which is moderately to heavily modify and thus the construction of the pipelines would NOT compromise the integrity of the existing environmental management priorities for the area.</p> <p>In addition, the Olifants and Letaba River Catchment Area EMF does include the project area. Kriel and Matla Power Stations are located in Zone A (Highveld/Energy Hub). The zone represents the energy hub of Southern Africa and will continue to fulfil that function over the short to medium term. The main priorities are in regards to water management and air quality management in the area. The proposed activity relates only to the development of pipelines for the transfer of ash/ash water between the two power stations. The Activity is therefore in line with existing environmental priorities.</p>			
<p>(f) Any other Plans (e.g. Guide Plan)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed development is also in line with the Nkangala District Municipality SDF which highlights the importance of ensuring reliable generation, distribution and transmission of electricity.</p>			

3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?

YES ✓

Please explain

The SDF shows the position of the power stations. The surrounding area is identified as extensive agriculture.



EMALAHLENI LOCAL MUNICIPALITY Municipal Spatial Development Framework

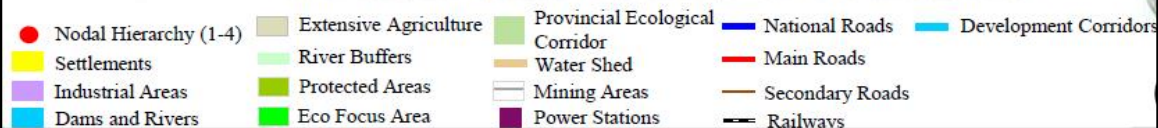


Figure 6: SDF

As the proposed development occurs with the Kriel and Matla Power Station boundaries, the activity is in line with the land use of the area.



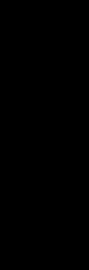




4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)

YES ✓

Please explain

Electricity generation is a national priority. At a local level, the proposed development occurs within existing Power Stations boundaries and is thus appropriate for the area.

BASIC ASSESSMENT REPORT

<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	<p>Yes ✓</p>		<p>Please explain</p>
<p>Yes, there are necessary services in place. No additional capacity needs to be created to cater for the development of the pipelines.</p>			
<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>			<p>N/A ✓</p>
<p>The proposed development is being undertaken by Eskom. No additional services are required. Information on consultation with the Municipality is provided in Section C.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed development will ensure that Kriel Power Station can continue to generate electricity and electricity generation is of national importance.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed pipeline footprint (and all adjacent properties) are currently used for power station related activities. The area is also owned by Eskom. Much of the proposed pipeline will be located on land which is identified as heavily modified by the MSBP. The location therefore favours this land use.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed pipeline footprint (and all adjacent properties) are currently used for power station related activities. The area is also owned by Eskom. Much of the proposed pipeline will be located on land which is identified as heavily modified by the MSBP. The proposed development provides a temporary measure to ensure the Kriel Power Station can continue to generate electricity even after the capacity of the Ash Dam has been reached. Based on this information, the development is the best practicable environmental option for this land. More information on the impact assessment is provided in Section D.</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>More information on the impact assessment is provided in Section D. however as mentioned, much of the proposed pipeline will be located on land which is identified as heavily modified by the MSBP and the proposed development provides a temporary measure to ensure the Kriel Power Station can continue to generate electricity even after the capacity of the Ash Dam has been reached. Therefore the benefit (ensuring continued generation of electricity by Kriel Power Station) does outweigh the negative impacts.</p>			

BASIC ASSESSMENT REPORT

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?		No ✓	Please explain
This activity will not set any precedents as the whole area is dominated by power generation and power station activities.			
12. Will any person's rights be negatively affected by the proposed activity/ies?		NO ✓	Please explain
The proposed development occurs within Eskom owned land and will not negatively affect any person's rights.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?		NO ✓	Please explain
The Emalahleni Local Municipality SDF provides details on the urban edge in the municipality. The urban edge is located around the main towns (eMalahleni, Ogies, Rietspruit) and thus Kriel Power Station and Matla Power Station (and associated ash dams) do not occur within the formal urban edge. However, the SDF does note the position of the power stations and the proposed development occurs within the edge of the built environment of the Kriel and Matla Ash Dams.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?		NO ✓	Please explain
The proposed development does not form part of any of the 17 SIPS.			
15. What will the benefits be to society in general and to the local communities?	Please explain		
Electricity will continue to be generated at Kriel Power Station.			
16. Any other need and desirability considerations related to the proposed activity?	Please explain		
Electricity is already sparse in South Africa and should Kriel Power Station no longer generate electricity, the constraints on the power grid would be greater. This would negatively impact the economy of the country as well as local communities in the area.			
17. How does the project fit into the National Development Plan for 2030?	Please explain		
The need for electricity in this country is always a concern and distribution of electricity over the majority of South Africa. National Development Plan for 2030 mentioned that the proportion of people with access to the electricity grid should rise to at least 90 percent by 2030, with non-grid options available for the rest which makes this project fit indirectly into the National Development Plan for 2030.			
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.			
In terms of the National Environmental Management Act (No. 107 of 1998) (as amended) (NEMA), the proposed development triggers a suite of activities, which requires authorisation from the competent environmental authority, the Department of Environmental Affairs (DEA). This authorisation is required prior to the commencement of the activity. In addition suitable mitigation measures have been included in the Environmental Management Programme (EMPr) to ensure sustainable development.			

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

Section 2 of the NEMA states National Environmental Management Principles in general terms. Section 23 of NEMA has been taken into account therefore an Environmental Impact Assessment (EIA-**Appendix F**) are included in the BAR. Additionally an EMPr (**Appendix G**) was also undertaken and included for the proposed project to ensure that all environmental impacts are reduced by mitigation measures.

Also included in this BAR is a Heritage Impact Assessment (HIA-**Appendix D2**), Ecological Survey Report (**Appendix D1**) and Aquatic Specialist Study (**Appendix D3**) as well as a WULA (**Appendix J2**) conducted by Digby Wells in order to ensure that all impacts of the proposed development are understood and suitably mitigated. Further, public participation will also be undertaken.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act No. 107 of 1998	Protection of the environment of the study area and surroundings	National & Provincial	27 November 1998
National Environmental Management: Waste Act (Act 59 of 2008)	Protection of the surrounding environment through efficient waste management by the appointed Contractor	National & Provincial	10 March 2009
National Environmental Management : Air Quality Act (Act No 39 of 2004)	Protection of air quality of the study through dust minimisation and the application of dust suppression measures	National & Provincial	24 February 2005
National Heritage Resources Act (No 25 of 1999)	Protection of heritage resources surrounding the study area and those uncovered during the development phase by reporting to the nearest heritage authority.	National & Provincial	28 April 1999
National Environmental Management: Biodiversity Act (10 of 2004)	Protection of biodiversity features and where not possible relevant permits will need to sort by the Contractor.	National & Provincial	07 June 2004
Occupational Health and Safety Act (No 85 of 1993)	Protection of workers on site through provision of Personal Protective Equipment's; Training and other health and safety amenities.	National & Provincial	23 June 1993
GN 921	Definition of licensable waste management activities	Department of Environmental Affairs	29 November 2013
GN 926	Norms and standards for storage of waste	Department of Environmental Affairs	29 November 2013
National Water Act no 36	Protection of water resources and where not possible relevant permits/licences will need to sort by the Contractor	National and Provincial	20 August 1998
All relevant Provincial regulations, Municipal bylaws	The Contractor will obey and abide by provincial and municipal bylaws which are related to the proposed project.	Provincial and Local	

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

YES ✓	
	40 m ³

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

The construction will take place for about 6 Months therefore approximately 240 m³ will be generated.

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

All construction waste will be collected, sorted and disposed of at suitably licensed disposal facilities.

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

The construction waste will be disposed of at a suitably licensed disposal facility.

Will the activity produce solid waste during its operational phase?

	NO ✓
--	------

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

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

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

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

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

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

	NO ✓
--	------

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

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

	NO ✓
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If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

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

	NO ✓
--	------

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

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

	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?

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:

c) Emissions into the atmosphere

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

NO ✓

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

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

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

The activity itself will not contribute directly to emissions released into the atmosphere except possible short-term dust and construction exhaust emissions during construction.

d) Waste permit

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

NO ✓

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

No waste licence required as Matla Power Station Ash Dam commenced in 1992 when GN 1986 of August 1990 of the Environmental Conservation Act (No 73 of 1989 - ECA) was in force. As such 'ash for the purpose of generating electricity as waste' was excluded and thus Section 20 of ECA was not applicable. As this proposed ash link involves the transfer of ash to the **existing lawful** Matla Ash Dam for disposal and the capacity of the Matla Ash Dam will not be increased, no Waste Management Licence (WML) will be triggered as Category B: Activity 7- 'The disposal of any quantity of hazardous waste to land' does not apply.

e) Generation of noise

Will the activity generate noise?

YES ✓

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

NO ✓

Describe the noise in terms of type and level:

During the brief construction phase it is anticipated that there will be an increase in noise due to construction vehicles and machinery. This will be managed through the implementation of mitigation measures in the Environmental Management Programme (EMPr).

13. WATER USE

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

	The activity will not use water ✓
The proposed activity will not require water during operation. Municipal water will be used during construction phase where required. Both Kriel and Matla Power Station have existing water services available.	

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:

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

YES ✓

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

The applicant is applying in terms of Chapter 4 under the National Water Act (NWA) (Act No.36 of 1998) for Section 21 (c) and (i) water use authorisation for construction within 500 m of a wetland. The Water Use License Application (WULA) was undertaken as a separate process but has been included as an annexure to the Final BAR. Proof of submission to Department of Water and Sanitation (DWS) is included in the Final BAR.

14. ENERGY EFFICIENCY

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

N/A

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

N/A

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

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

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

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

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

Property description/physical address:

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

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

The whole area is used for Power Station related activities. The area is currently zoned as agricultural as the zoning has not yet been amended.

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?

	NO ✓
--	------

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	
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Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	
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Alternative S3 (if any):

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1.1.1 Location in landscape

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

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

1.1.2 Groundwater, Soil and Geological stability of the site

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

	Alternative S1:	Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)	NO ✓	NO ✓	
Dolomite, sinkhole or doline areas	NO ✓	NO ✓	

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Seasonally wet soils (often close to water bodies)	YES ✓		YES ✓		
Unstable rocky slopes or steep slopes with loose soil		NO ✓		NO ✓	
Dispersive soils (soils that dissolve in water)		NO ✓		NO ✓	
Soils with high clay content (clay fraction more than 40%)		NO ✓		NO ✓	
Any other unstable soil or geological feature		NO ✓		NO ✓	
An area sensitive to erosion		NO ✓		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.

2. 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 with scattered aliens ^E	
Building or other structure (ash waste dumps)	

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.

3. SURFACE WATER

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

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

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

The pipelines will cross watercourses on the remainder portion of the farm Kriel Powerstation 65 IS and Portions 11 and 12 of the farm Driefontein 69 IS.

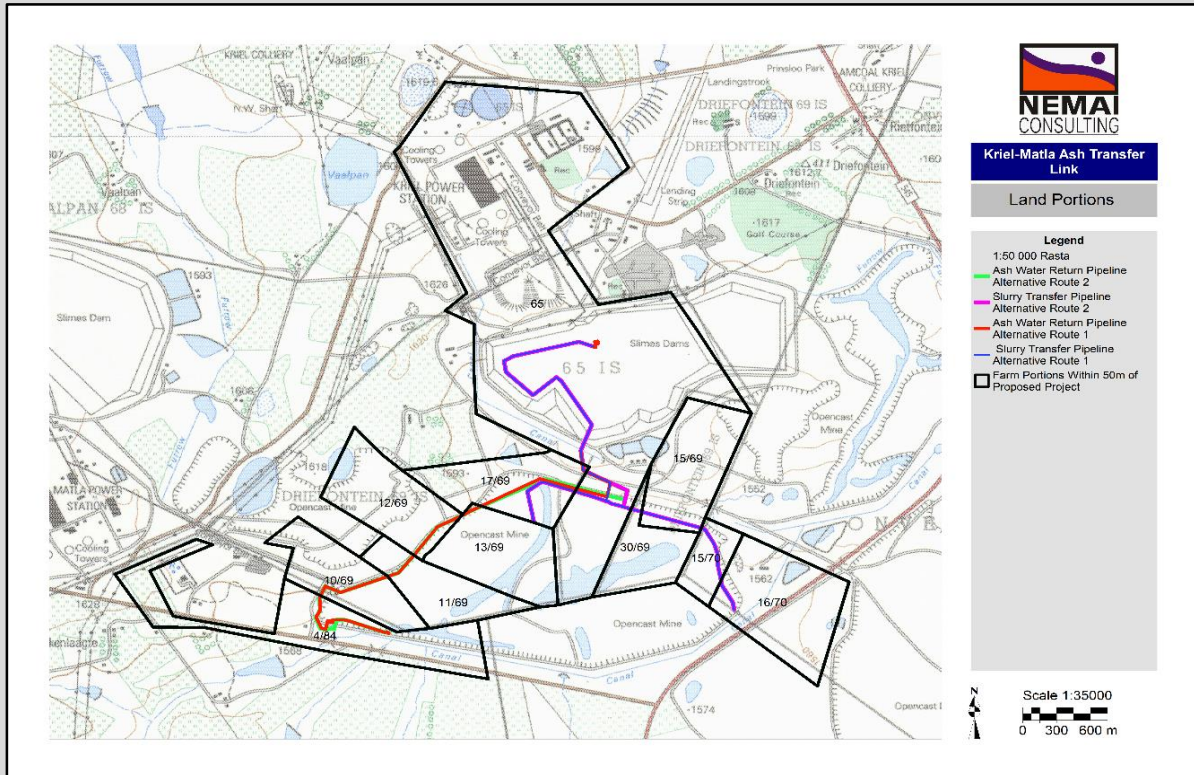


Figure 7: Map illustrating the Farm portion affected by the proposed Kriel-Matla Ash transfer Link.

The watercourses that the pipelines will traverse include an altered channelled valley bottom wetland and two non-perennial streams as well as an isolated seep wetland. The former being part of the Onverwachtspruit. This stream has been diverted in 1986 around the historical Kriel Mine's opencast pits and it currently flows between the two ash dams via a diversion channel. The stream is a tributary to the Steenkoolspruit.

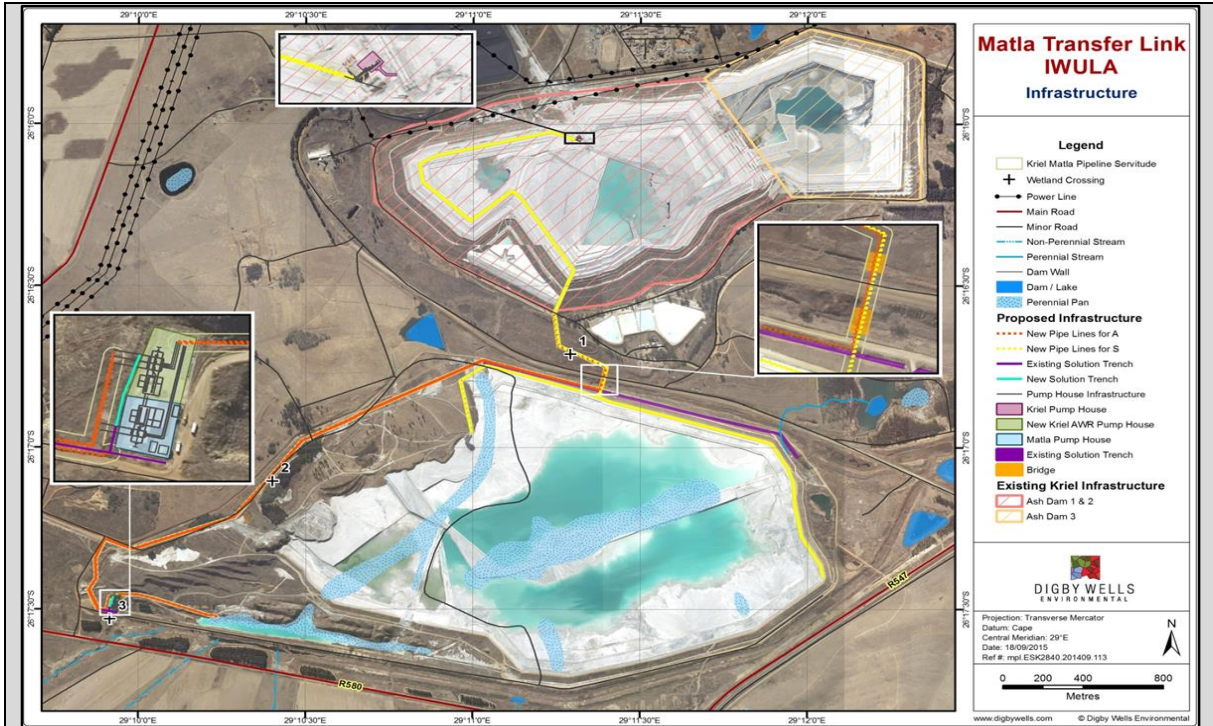


Figure 8: Infrastructure Layout.

There are two seasonal natural watercourses which exist on either side of the mine haul road (mine service road) in the proposed area. Two pipe bridges will be required for the pipes to cross the two watercourses (Figure 8). However the full WULA report is included in Appendix J2 of the BAR.

4. LAND USE CHARACTER OF SURROUNDING AREA

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

Natural area	Dam or reservoir
Spoil heap or slimes dam ^A	

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

[Redacted]

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

[Redacted]

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

[Redacted]

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

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

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

5. CULTURAL/HISTORICAL FEATURES

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

NO ✓

[Redacted]

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

[Redacted]

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

NO ✓

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

NO ✓

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

Archaetnos cc/Leonie Marais-Botes Heritage Practitioner was requested by Nema Consulting to conduct a Heritage Impact Assessment (HIA) for the proposed Kriel – Matla Ash Transfer Link.

A survey of the available literature was undertaken in order to obtain background information regarding the proposed project area and the surrounding environment. This was followed by the field survey which was conducted according to generally accepted HIA practices.

No heritage sites are evident in the study area. It should be noted that the sub-surface archaeological and/or historical deposits and graves are always a possibility. Care should be taken during any work in the entire area and if any of the above is discovered, an archaeologist/heritage practitioner should be commissioned to investigate.

6. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

Level of unemployment:

The Emalahleni LM experienced an increase in the total number of jobs – from 61.7% to 72.7% in 2001 and 2011 respectively. Unemployment declined from 38.3% in 2001 to 27.3% in 2011. This is a good indication of a positive local economy. Largely, the municipality has high levels of employment (72.7%).

Economic profile of local municipality:

The Emalahleni LM contributed a significant 17.9% to the provincial economy in 2011. The municipal GVA in 2011 was R40.5 billion at current prices and R19.9 billion at constant 2005 prices, making it the third largest economy in Mpumalanga Province. The strongest contributor to the municipal economy is Mining (35%), followed by Electricity (14.4%) and Finance (14.4%), and then Community Services (10.4%) Transport (9.1%) and Trade (8.6%) follow next. Interestingly, Manufacturing only stands at 5.2%, Construction at 2.3% and Agriculture a mere 0.5% of the municipal total.

Level of education:

The SDF (2015) for the Emalahleni LM stated that the overall level of education improved as the total number of no schooling declined significantly from 12.6% in 2001 to 4.8% in 2011. Furthermore, the total number of secondary education (grade 8-12) increased from 43.0% in 2001 to 51.2% in 2011 and the total number of individuals with a higher education increased from 5.0% to 11.0% for the same period. It is also positive to note that within the Emalahleni Rural area, no schooling declined significantly from 17.6% in 2001 to 8.1% in 2011, whilst secondary education (grade 8 to 12) increased from 35.5% in 2001 to 47.9% in 2011.

b) Socio-economic value of the activity

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

R 158 million

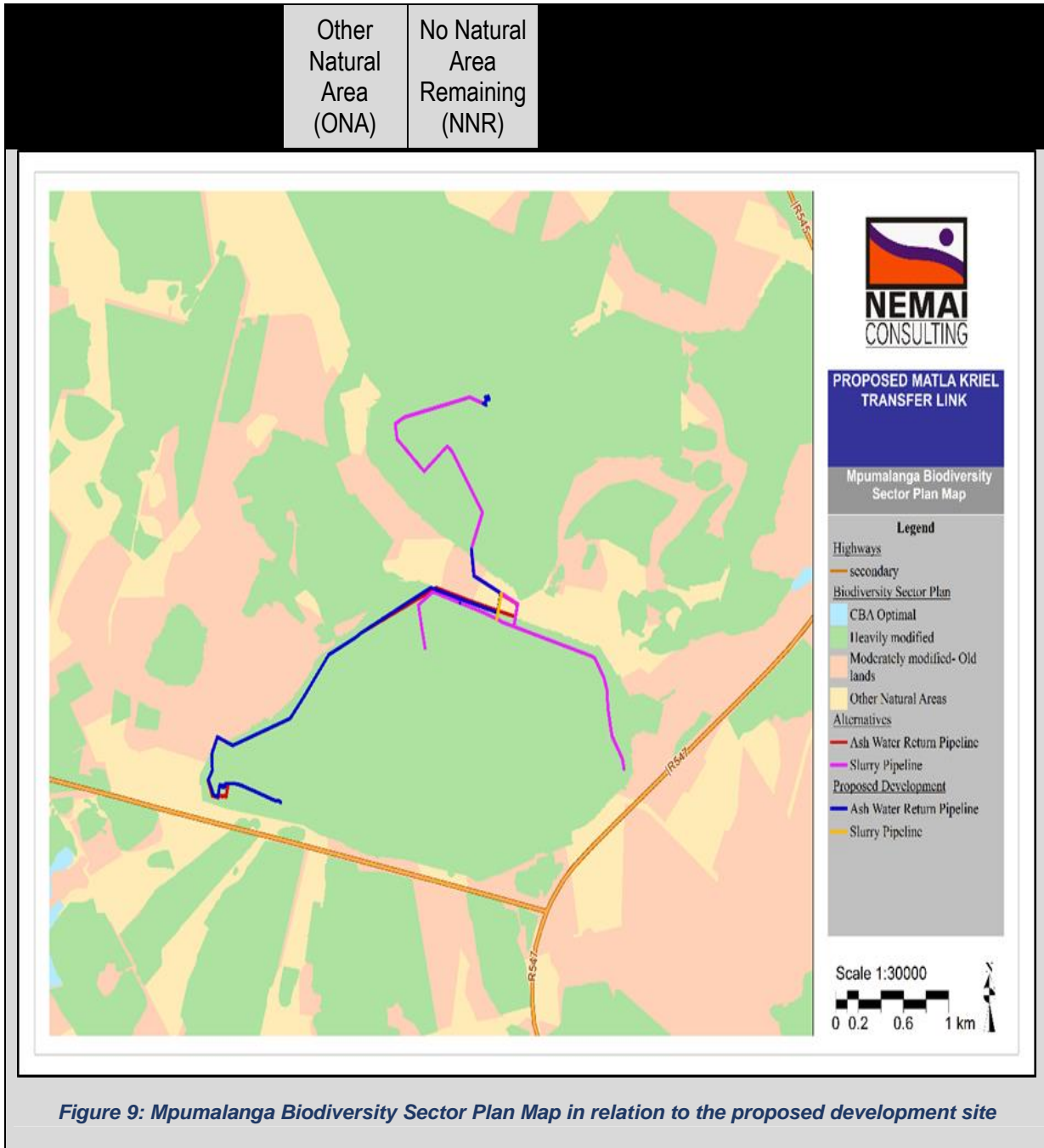
What is the expected yearly income that will be generated by or as a result of the activity?	None – the project aims to increase capacity of the existing Kriel Power Infrastructure
Will the activity contribute to service infrastructure?	NO ✓
Is the activity a public amenity?	NO ✓
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Estimated 30 unskilled & 10 skilled
What is the expected value of the employment opportunities during the development and construction phase?	Estimated 5 million
What percentage of this will accrue to previously disadvantaged individuals?	Estimated 90%
How many permanent new employment opportunities will be created during the operational phase of the activity?	No new employment opportunities will be created during the operational phase as the pipeline will be operated as part of the current Kriel Power Station Operations.
What is the expected current value of the employment opportunities during the first 10 years?	N/A as no new employment opportunities will be created during the operational phase as the pipeline will be operated as part of the current Kriel Power Station Operations.
What percentage of this will accrue to previously disadvantaged individuals?	N/A as no new employment opportunities will be created during the operational phase as the pipeline will be operated as part of the current Kriel Power Station Operations.

7. BIODIVERSITY

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

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

Systematic Biodiversity Planning Category	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
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b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	10 %	Only a small portion of natural grassland still exist on site.
Near Natural (includes areas with		

low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	90 %	The area mainly consist of Ash disposal facilities.

c) Complete the table to indicate:

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

Terrestrial Ecosystems		Aquatic Ecosystems	
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)		Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)	
	Vulnerable ✓		YES ✓

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

The following information was taken from the Ecological Survey. Please see **Appendix D1** for the full report.

Vegetation

The Eastern Highveld Grassland is recorded on the plains between Belfast in the east and the eastern side of Johannesburg in the west, extending southwards to Bethal, Ermelo and west of Piet Retief within the Mpumalanga and Gauteng Provinces of South Africa. This Grassland is found on slightly to moderately undulating plains, including some low hills and pan depressions and consist of short, dense grassland, dominated by the usual highveld grass composition (*Aristida*, *Digitaria*, *Eragrostis*, *Themeda*, *Tristachya* etc) with small, scattered rocky outcrops with wiry, sour grasses and some woody species. Woody species include *Acacia caffra*, *Celtis africana*, *Diospyros lycioides* subsp. *lycioides*, *Parinari capensis*, *Protea caffra* and *Rhus magalismontana*.

Conservation Status

The conservation status is described as Endangered with a conservation target of 24%. Approximately 44% of the Eastern Highveld Grassland has been transformed, primarily by cultivation, plantations, mining, urbanization and building of dams. Erosion is very low and no serious alien infestation is reported, although species such as *Acacia mearnsii* can become dominant in disturbed places.

During the field survey, no threatened species were observed on site but only one plant species of conservation concern was noted, namely *Hypoxis hemerocallidea* (Star flower/African potato). This species is listed as Declining. *Hypoxis hemerocallidea* (Star flower/African potato) (**Figure 10**) occurs in open grassland and woodland and is widespread in South Africa in the eastern summer rainfall provinces (Eastern Cape, Free State, KwaZulu-Natal, Mpumalanga, Gauteng and Limpopo). It is used to treat headaches, dizziness, mental disorders, cancers, inflammation and HIV.



Figure 10: Star flower/African potato recorded in the area.

The following information was taken from the WULA Report. Please see **Appendix J2** for the full report.

Watercourses

The watercourses that the pipelines will traverse include an altered channelled valley bottom wetland and two non-perennial streams as well as an isolated seep wetland. The former being part of the Onverwachtspruit. This stream has been diverted in 1986 around the historical Kriel Mine’s opencast pits and it currently flows between the two ash dams via a diversion channel. The stream is a tributary to the Steenkoolspruit. The delineation of these streams and wetlands are shown in **Figure 11**.

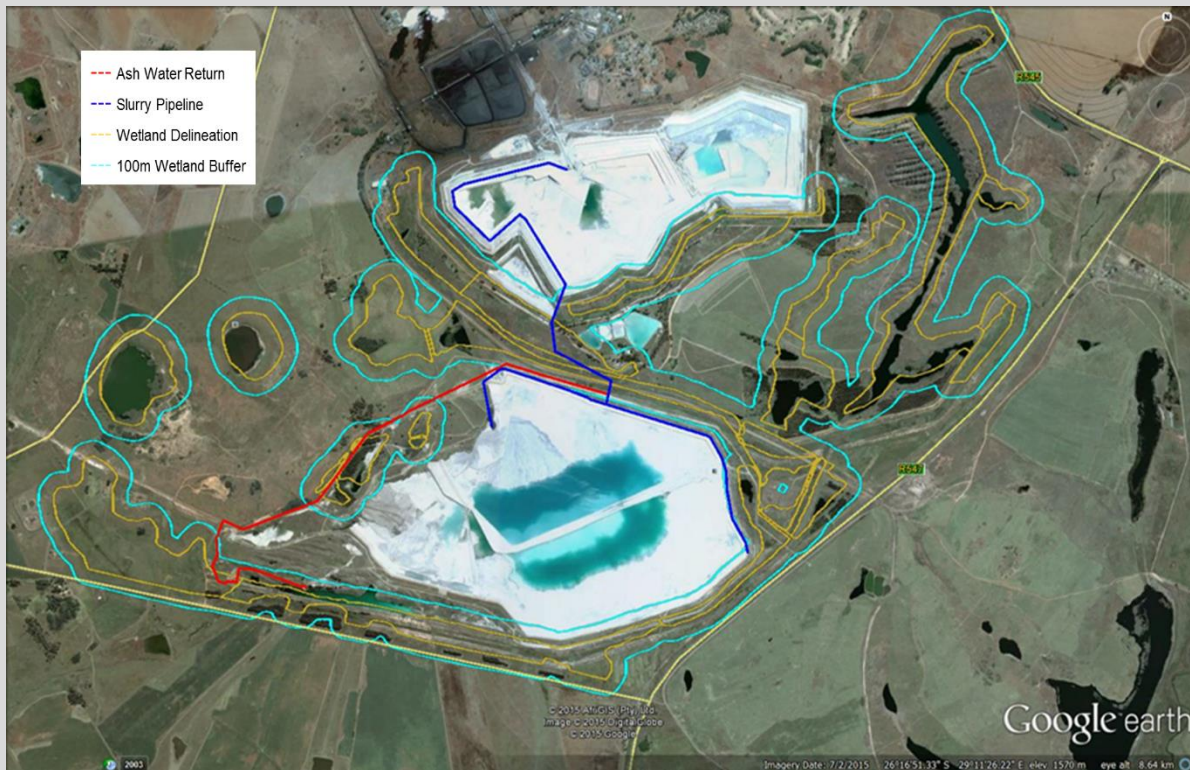


Figure 11: Wetland Delineation and 100m Wetland Buffer zones.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	The Witbank News	
Date published	6 November 2015	
Site notice position	Latitude	Longitude
Kriel Power Station	26°15'16.23"S	29°10'46.37"E
Matla Power Station	26°16'59.35"S	29°08'02.84"E
Mica hardware store	26°15'02.05"S	29°15'31.62"E
Local library/Local Municipality	26°14'50.17"S	29°15'48.56"E
Megamark Center	26°14'55.62"S	29°15'37.80"E
Clinic	26°14'51.90"S	29°15'48.72"E
Roads to PS (4)	26°17'24.10"S	29°08'37.76"E
	26°14'39.28"S	29°10'35.98"E
	26°14'59.02"S	29°06'59.11"E
	26°15'17.13"S	29°10'15.64"E
Date placed	4 November 2015.	

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

Site notices was placed at 10 different locations on the 4 November 2015. An advert was published on the 6 November 2015 in the Witbank News. Proof of the site notices and advert are provided in **Appendix E1**.

Whilst the site notices and advert did note that the review period would take place from 6 November 2015, a delay in the project resulted in the documents being made available from 11 November 2015. The review period was thus extended to 11 December 2015. In addition, all faxes, SMSES and emails noted that the review period would take place from 11 November 2015 to 11 December 2015.

In addition to the notices mentioned above, an advert was placed on the 27 November 2015 in the Witbank News to notify the public about a public meeting. The advert is also contained in **Appendix E1**.

2. DETERMINATION OF APPROPRIATE MEASURES

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

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

Title, Name and Surname	Affiliation/ stakeholder status	key	Contact details (tel number or e-mail address)
Lucky	Sublime Technologies		Fax: (086) 5803506 Tell: 017 648 6000/8/6/6035
Maphuti Baloka	Anglo American		Tell: 017 617 1157 / 1188 Email: Maphuti.boloka@angloamerican.com
Kim	Exxaro		Tell: 017 616 2309/2363 Cell: 072 277 6530
Tersia Walton	Eskom		Tell: 0 11 800 3759/8221-393

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Title, Name and Surname	Affiliation/ stakeholder status	key	Contact details (tel number or e-mail address)
			Cell: 082 921 3857 Email: WaltonT@eskom.co.za
Shumani Mavhungu	Eskom		Tell: 011 800 3751 Cell: 079 733 2173 Email: MavhunSN@eskom.co.za
Jan De Klerk	Eskom		Tell: 011 800 2264 Cell: 072 806 6435 Email: DKlerkJL@eskom.co.za
Danie Louw	Gerico pump station		Cell: 082 806 7714
De Wet AN (Seuns)	Adjacent to Eskom's Land		Cell: 082 230 9363
Erasmus Casper	Adjacent to Eskom's Land		Cell: 082 865 7163
Claasen N Rooiblom	Adjacent to Eskom's Land		Cell: 082 809 9967
Robertson Elsa (Walker)	Adjacent to Eskom's Land		Cell: 082 879 7838
Muller Edmund	Adjacent to Eskom's Land		Cell: 082 388 2139
Muller Owen	Adjacent to Eskom's Land		Cell: 082 388 2138
Van Niekerk AJ	Adjacent to Eskom's Land		Cell: 082 388 2133

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

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

Email; Fax and SMSES were sent to Interested and Affected Parties on 10 November 2015. Proof is included in **Appendix E2**.

In addition, a hard copy of the report BAR was provided to the Ward Councillor.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Notification of IAPs has been combined with the review of the Draft BAR. All comments received during the review period (11 November 2015 to 11 December 2015) is included in the Final BAR which is submitted to the Department.

No comments were received on the Draft Basic Assessment Report however two Interested and Affected Parties (IAPs) did register:

- Claire Threadingham; and
- Mark Whitcombe

Ms Millicent Solomons Department of Environmental Affairs (DEA) also requested that the project related documents be submitted to Ms Khashiwe Masinga as they were the relevant person.

Summary of main issues raised by I&APs	Summary of response from EAP
Please submit all project related documents to Khashiwe Masinga.	Noted. Ms Khashiwe Masinga was added to the IAP database.
How can I register for the project?	It was explained that the IAP registration form should be completed.
How can I get involved in the construction of the project?	Due to the size of the project, the appointment of the contractor will be through an open tender process.

A written acknowledgment of the Draft BAR was also received from the Department of Environmental Affairs (DEA) on 23 November 2015 stating that the Environmental Authorisation will lapse if the submission of the Final BAR do not meet the time-frames prescribed in terms of the Regulations. The Final BAR was submitted on the 14 December 2015 which is in line with the EIA Regulations, 2014.

In addition, Mark Whitcombe attended the public meeting held on 2 December 2015. The only comments raised by the IAP were commercial in nature (in regards to the tender process). It was explained that the contractor for the project, should it be authorised, would be appointed through an open tender process. The minutes of the meeting are contained in **Appendix E6**.

4. COMMENTS AND RESPONSE REPORT

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

Notification of IAPs has been combined with the review of the Draft BAR. All comments received during the review period (11 November 2015 to 11 December 2015) is included in the Comments and Response Report (**Appendix E3**) of the Final BAR.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Environmental Affairs	Khashiwe Masinga	(012) 395 1582	(012) 3207539	KMasinga@environment.gov.za	Cnr. Steve Biko (previously Beatrix Street) and Soutpansberg Road, Environment House, 473 Steve Biko, Arcadia, Pretoria, 0083
Department of Environmental	Lucas Mahlangu	(012) 310	(012) 3207539	Lmahlangu@environment.gov.za	Cnr. Steve Biko (previously

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Affairs - Waste Unit		3536			Beatrix Street) and Soutpansberg Road, Environment House, 473 Steve Biko, Arcadia, Pretoria, 0083
Mpumalanga Department of Water Affairs	Mr Masala Mulaudzi	(013) 759 7310	(013) 759 7525	mulaudzim@dwa.gov.za/ ralekoaw@dwa.gov.za	Cnr Brown and Paul Kruger Street, Prorum Building, Nelspruit, 1200
Nkangala District Municipality	M.M Skosana	(013) 2492 006	(013) 2492 050	nkosinm@nkangaladm.org.za	2A Walter Sisulu Street, Middelburg, Mpumalanga, 1055
Emalahleni Local Municipality	Nico Bongers	(017) 648 6255 / 082 788 1747	(017) 648 4764	Bongersnic@gmail.com	Quenton Street, GaNala, Private Bag 5014
	Zingisa Cameron Mbuku	(017) 648 6200/ 076 652 1282	(017) 648 6251	None	Quenton Street, GaNala, Private Bag 5014
Department of Labour	Bahlulile Tshabalala	(013) 655 8741	(013) 7663 463	bahlulile.tshabalala@labour.gov.za	Department of Labour (Mpumalanga), Labour Building, Cnr Hofmeyer Street and Beatty Avenue, Witbank
Department of Health	Dr Aggrey Mabuti Morake	(013) 7666 554	(013) 7668 449	aggreym@mpuhealth.gov.za	7 Government Boulevard Riverside Park Ex 2, Mbonbela 1200
Mpumalanga Department of Mineral Resources	Samual Mathabhela	(013) 6530 500	(013) 6563 288	samual.mathabhela@dmr.gov.za	Province House, C/o Paul Kruger & Botha Street, EMALAHLENI, 1035
Mpumalanga Department of Economic Development,	Mr Selby Hlatshwayo	(013) 766 6983	None	shlatshwayo@mpg.gov.za	18 Jones Street, Nelspruit 1200

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Environment and Tourism (DEDET)					
Mpumalanga Provincial Government Department Of Public Works Road And Transport	Mr K.M. Moholasedi	(013) 7666 554	(013) 7668 449	kmohlasedi@mpg.gov.za	7 Government Boulevard Riverside Park Ex 2, Mbonbela 1200

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

Hard copies of the Draft BAR was submitted to the following organs of state on 11 November 2015:

- Department of Environmental Affairs (DEA);
- Mpumalanga Department of Water and Sanitation (DWS);
- Nkangala District Municipality;
- Emalahleni Local Municipality;
- Mpumalanga Department of Mineral Resources (DMR); and
- Mpumalanga Department of Economic Development, Environment and Tourism (DEDET).

Copies of the proof of delivery are included in **Appendix E4** of the Final BAR

In addition, other commenting authorities were notified of the development via email. Proof of email/fax notification is included in **Appendix E4**.

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

6. CONSULTATION WITH OTHER STAKEHOLDERS

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

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

There is no deviation from the public participation requirements detailed in the 2014 EIA Regulations.

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

A copy of the I&AP database is provided in **Appendix E5**. All I&APs who subsequently register were included on the registered I&AP database is submitted as part of the Final BAR.

Two Interested and Affected Parties (IAPs) did register:

- Claire Threadingham; and
- Mark Whitcombe

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

A copy of the DEA acknowledgment - 23 November 2015 is included in **Appendix E6**. Emails received from Claire Threadingham and Milicent Solomons are also included.

A public meeting took place on 2 December 2015, the minutes of the meeting, attendance register and presentation is included in **Appendix E6**.

SECTION D: IMPACT ASSESSMENT

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

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

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

Please note the impacts provided below are the impacts **AFTER mitigation**. The full Impact Assessment is provided in **Appendix F**.

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Table 2: Impact Assessment for the Pre-Construction Phase.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
Pre-Construction	Loss of topsoil	Low	During site preparation, special care must be taken during the clearing of the work area where organic material will be stored separately from the topsoil and spoil material to ensure for the protection thereof. This topsoil must be re-used during the rehabilitation phase
	Loss of flora of conservation importance	Low	During site preparation, topsoil and subsoil are stripped separately from each other and must be stored separately from spoil material for use in the rehabilitation phase. It should be protected from wind and rain, as well as contamination from diesel, concrete or wastewater. Records of all environmental incidents must be maintained and a copy of these records must be made available to authorities on request throughout the project execution
	Loss of protected trees and declining listed data species	Low	Search and rescue needs to commence: The plant species of conservation importance, namely <i>Hypoxis hemerocallidea</i> , recorded along the proposed route should be rescued. It is recommended that the plants can be dug-up, and moved a few meters to just outside the development footprint, and then replanted temporarily. This should be done on the same day to minimise the risk of introducing diseases and parasites to the plants. Removal of plants should be done mechanically, using hand tools. The optimal timeframe for removal and replanting is to perform the search, rescue and relocation in spring or early summer (September to November), once first rains have fallen, in order to facilitate establishment. Alternatively, these species can be rescued and relocated to a conservation area.
	Loss of fauna of conservation importance.	Low	During site preparation special care must be taken during the clearing of the work areas to minimise damage or disturbance of roosting and nesting sites.

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Table 3: Impact Assessment for the Construction Phase.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
Construction Phase	- Geology and Soil		
	Soil erosion	Low	<p>Stabilisation of cleared areas to prevent and control erosion. Monitoring to be conducted to detect erosion. Rehabilitate all areas disturbed during construction. The Contractor shall take measures to the approval of the Engineer to ensure that there is no undue storm water damage and soil erosion resulting from the construction activities outside the construction camp and work areas. The Contractor shall ensure that run off from access and haul roads, does not cause erosion.</p> <ul style="list-style-type: none"> - At all stages of the project lifespan, storm water control measures as specified by the Engineer shall be applied to keep soil on site by minimising: erosion of temporary stockpiles of topsoil and permanent spoil dumps; - erosion from construction roads, excavations and other cleared areas; <p>silt-laden run off from all areas stripped of vegetation, including excavation surfaces and stockpiles of spoil and topsoil; contaminated run off from storage areas</p>
	Loss of topsoil	Low	<p>After excavation, all soils must be replaced in the same order as they were removed. Remove, stockpile and preserve topsoil for re-use during rehabilitation.</p> <p>Topsoil stripping management:</p> <ul style="list-style-type: none"> - Soil must be stripped to a minimum depth of 300 mm or to the depth of bedrock where soil was shallower than 300 mm. - Herbaceous vegetation, overlying grass and other fine organic matter must not be removed from the stripped soil. - Disturbance of topsoil on construction sites with severe slopes must be minimized at all costs. - The topsoil stored must be on site. - Topsoil must be stripped in a dry condition in order to prevent compaction. <p>Topsoil stockpiling:</p> <ul style="list-style-type: none"> - Soil stockpiles must not be higher than 1.5m and the slopes of soil stockpiles shall not have a vertical/horizontal gradient exceeding 1:1.5. - No vehicles are allowed access onto the stockpiles after they have been placed. Topsoil stockpiles must be clearly demarcated in order to prevent vehicle access and later identification as the resource for rehabilitation and vegetation establishment. <p>After topsoil stockpiling has been completed, the Contractor shall apply soil conservation measures to the stockpiles in the form of veld grass seeds, to allow grass to colonise topsoil piles during the construction phase. All areas onto which topsoil is to be spread shall be graded to the approximate original land form with maximum slopes of 1:2.5 and shall be ripped prior to topsoil placement. The entire area to be top soiled shall be ripped parallel to the contours to a minimum depth of 150 mm.</p>
	- Flora		
Soil contamination, vegetation loss and vegetation disturbance due to fuel and chemical spills to the canals and wetlands.	Low	<ul style="list-style-type: none"> - Employ on site personnel responsible for preventing and controlling potential soil pollution through fuel and oil leaks and spills. - Make sure construction vehicles are maintained and serviced to prevent oil and fuel leaks. - Emergency on-site maintenance should be done over appropriate drip trays and all oil or fuel must be disposed of according to waste regulations. 	

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> - Drip-trays must be placed under vehicles and equipment when not in use. - Require the suitable establishment of erosion control mechanisms.
	Vegetation and habitat disturbance due to the accidental introduction of alien species.	Low	<p>Promote awareness to all personnel. During construction activities, monitoring and control of alien weeds and invaders through hand removal; slashing (annuals) or chemical control (perennials). Chemical control may only be done upon approval from the Environmental Control Officer (ECO).</p> <p>Larger exotic species that are not included in the (Appendix D1) list of invasive species could also be allowed to remain for aesthetic purposes.</p>
	Vegetation and habitat disturbance due to pollution and littering during construction phase.	Low	<p>The Contractor should employ personnel on site responsible for preventing and controlling of litter. Promote housekeeping with daily clean-ups on site.</p> <p>Before construction commences, construction workers should be educated with regards to littering, <i>ad hoc</i> veld fires, and dumping. No fires are allowed on site.</p>
	Damage to plant life outside of the proposed pipeline route.	Low	Construction activities should be restricted to the development footprint area. All workers must be trained before construction commences. Areas which could be deemed as no go should be clearly marked.
	- Fauna		
	Disturbance to animals	Low	<ul style="list-style-type: none"> - Animals residing within the designated area shall not be unnecessarily disturbed. - During construction, refresher training can be conducted to construction workers with regards to littering and poaching. - The Contractor and his/her employees shall not bring any domestic animals onto site. - Toolbox talks should be provided to contractors regarding disturbance to animals. Particular emphasis should be placed on talks regarding snakes.
	Allow for safe animal passage through and specifically out of the construction site.	Low	<ul style="list-style-type: none"> - With regards to other areas which may need to be fenced temporarily during construction, i.e. aloe area where moles were found, a normal stock fence can be utilised, either diamond or rectangular fencing.
	- Air Quality		
	Excessive dust levels as a result of construction activities and movement of construction vehicles.	Low	<ul style="list-style-type: none"> - All reasonable measures should be taken to minimise air emissions in the form of smoke, dust and gases. - Speed limits to be strictly adhered to.
	Vehicles and construction machinery's emissions.	Low	<ul style="list-style-type: none"> - All construction vehicles must be serviced on a frequent basis as a means of limiting gaseous emissions. - The Contractor will take preventative measures to minimise complaints regarding dust nuisances (e.g. screening, dust control, timing, and pre-notification of affected parties).
	Smoke from uncontrolled fires	Low	<ul style="list-style-type: none"> - Bare areas must be watered to minimise dust. - Dust pollution should be suppressed on access roads and the construction site during dry periods by regular application of water or biodegradable soil stabilisation agent. If water is used it must not be used in such a manner that the contractor could be accused of water wasting. - No uncontrolled fires to be allowed on site.
	- Noise		
	Excessive noise levels as a result of construction activities.	Low	<ul style="list-style-type: none"> - Communities and local residents should be warned in advance by the Contractor of when construction activities and any/or blasting will start in their areas. - Construction activities to take place within the prescribed working hours. - Working hours to be agreed upon with Project Manager, so as to minimise disturbance to landowners and community members. - Noise preventative measures (e.g. screening, muffling, timing, pre-notification of affected parties) to be employed. - The Contractor should inform local residents and communities of any after – hour construction activities that will take place. - The Contractor must inform local communities and residents of any activity that could cause a nuisance to them. - Noise rules must be established for construction areas.

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> - A "Code of conduct for Construction Workers" should be drawn up and agreed by all workers. The code should address public behaviour of the construction workers as well as their intent to abide to the principles, practices and customs of the local communities. - All construction vehicles must be serviced on a frequent basis as a means of limiting excessive noise levels. - The contractor must ensure the silencers of all construction vehicles and machinery is working.
	- Safety and Security		
	Uncontrolled access to proposed boundary extension.	Low	<ul style="list-style-type: none"> - Compliance with Occupational Health and Safety Act (Act No. 85 of 1993). - Contractor to provide an Occupational Health and Safety Management Plan to the Construction Manager for approval prior to the commencement of works in terms of the Construction Regulations (2014).
	Construction employees getting injured.	Low	<ul style="list-style-type: none"> - Proper supervision of employees at all times. Employees to be clearly identifiable. - Employees to remain within the site boundary and no loitering to be allowed.
	Open trenches and construction vehicles may pose a safety risk to pedestrians and animals	Low	<ul style="list-style-type: none"> - Access into and out of the servitude must only be via existing access roads from local public roads. - Contractor to prepare and submit, for approval, a rescue procedure for employees in the case of an injury. - Any employees of the Contractor or his sub-contractors found to be in breach of any of the Environmental Protection specifications may be ordered to leave the site forthwith. - Supervisory staff of the contractor or sub-contractors shall not direct any person to undertake any activities, which would place such person/organization in contravention to any law, regulation or the EMPr itself. - Depending on the type of contravention or action it may also be necessary for the work to be called to a halt until such time as the contravention or action is corrected and investigated
- Waste Management			
Land, air and water pollution through poor waste management practises.	Low	<ul style="list-style-type: none"> - No ablution facilities to be positioned within riparian areas. - Sufficient ablution facilities to be provided at the Construction Camp and along construction servitude. - Suitable litter receptacles to be positioned strategically across the site at all working areas. - Waste must be separated at source (e.g. containers for glass, paper, metals, plastics, organic waste and hazardous wastes). - The Contractor shall dispose of all refuse generated on site or from the activities of construction or its related activities. The contractor shall on a weekly basis dispose of all refuse at an approved refuse disposal site. Proof of disposal must be kept on record. - Littering by the workers is prohibited. Clearly marked litterbins must be provided on site. - Monitor the presence of litter on site. All staff shall be sensitised to this effect. - The entire site will be cleared of construction material, metal, tins, glass bottles, and food packaging or any other type of empty container or waste material or waste equipment used by the construction team on a daily basis. - Waste material that may harm man or animals should be removed immediately. - No hazardous materials, e.g. oil, diesel and fuel should be disposed of in the veldt. Any diesel, oil or petrol spillages are to be collected and stored in specially marked containers and disposed of at a permitted waste disposal site and must be treated as hazardous waste. - No refuse or litter is allowed to be burnt on site. - The recycling of all waste is to be encouraged of both the contractor and staff. - All vehicle parking areas and vehicle servicing areas are to be inspected carefully for diesel, oil and other spillages weekly. - Excess spoil material should be disposed of at a location identified by the Contractor and approved by the Engineer and ECO. 	

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Activity	Impact summary	Significance	Proposed mitigation
	<p>- Socio-economic</p> <p>Damages to property, including structures, fencing, gates and roads. As well as damaging Eskom reputation for adjacent landowners/ public.</p>	Low	<ul style="list-style-type: none"> - Register to be kept of recorded damages. Construction-related damages to be repaired by Contractor. - Establish employment strategy. - Contractor to appoint a Community Liaison Officer (CLO), or to assign such responsibilities to a competent staff member who will have adequate time to fulfil relevant functions. - Good landowner/ public relations to be maintained
	<p>- Heritage</p> <p>Damage to archaeological sites.</p>	Low	<ul style="list-style-type: none"> - If any archaeological material, such sites, objects or features, as well as graves and burials are uncovered during construction activities on site. Work will cease immediately and an archaeologist should be contacted as a matter of urgency in order to assess such occurrences. - Permits to be obtained from the PHRA-G if heritage resources are to be impacted upon. - No person may, without a permit issued by SAHRA or a provincial heritage resources authority - Destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves; - Destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority or; - Bring onto or use at a burial ground or grave referred to in above any excavation equipment, or any equipment which assists in the detection or recovery of metals
	<p>- Watercourses</p> <p>Siltation of Water Resources The removal of vegetation around a construction area exposes the surface area leaving the soil prone to erosion. This may result in siltation of the water resource and this will have an impact on the downstream water users and the aquatic life as well; and Inadequate storm water management and soil stabilisation measures in cleared areas could lead to erosion and associated sedimentation of nearby watercourses.</p> <p>Pipeline Installation Movement of heavy construction machinery around stream may result in disturbance of the river banks, and destabilises the soil. This will increase the chance of erosion during rainfall thereby result in sedimentation of the water resources; Establishing of new access paths for construction across watercourses may lead to the erosion of banks and disturbance of</p>	Low	<ul style="list-style-type: none"> - The construction phase should be limited to the dry months of the year (May-October) where possible to limit mobilisation of sediments or hydrocarbon runoff; - Re-vegetation of the construction footprint as soon as possible; - Engineered solutions such as sediment fences or silt traps should be used where appropriate to limit increased sedimentation of surface water resources during construction; - Minimise the removal of vegetation in the infrastructure footprint area; - Existing access roads must be prioritized to avoid construction of new access roads in the area; and - The river must not be utilised for abstraction, or washing of equipment, etc., in order to minimise the risk of water pollution during construction activities. All necessary water abstractions from any surface water resource must be authorised as prescribed by the NWA and be subject to the provisions of a water use license and general authorisation.

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Activity	Impact summary	Significance	Proposed mitigation
	<p>riparian vegetation that may trigger the further development of gully (donga) erosion thereby reducing the quality of water.</p> <p>Contamination of Water (Hydrocarbon Spillages) The use of machinery during construction and installation of pipelines have the potential of hydrocarbons (fuel and oil) leakages which can result in the contamination of the receiving water resources.</p>		
	<p>Aquatic Impacts The impacts of the proposed pipeline crossing during the construction phase are presented below. The following impacts are expected to potentially occur as a result of the proposed water use. Increased runoff as a result of vegetative cover loss could result in instream and riparian habitat modification or destruction through erosion, flow, bed, channel and water quality modification. Water quality modification can be related to an increase in the amount of suspended/dissolved solids which can result in increased sedimentation and changes to the physical chemistry of the water in downstream regions. These physical impacts could lead to reduced aquatic biodiversity</p>	Low	<ul style="list-style-type: none"> - During the construction phase vehicles will be used in proximity to aquatic resources. The use of these vehicles presents risk of persistent hydrocarbon pollution events which can be avoided through the use of the following management actions: - Hydrocarbon spill kits and employee training in their use; - Regular inspection for leakages and subsequent repair (maintenance); and - The refuelling/oiling of vehicles in contained areas (bundled areas) built to the capacity of the facility provided with sumps. - The removal of vegetative cover as well as the construction of roads has been recognised as being responsible for increased runoff, sedimentation and subsequent water and habitat quality degradation in downstream portions of river systems (WRC, 2014). As such the careful management of vegetation removal and sedimentation control should take place. This can be achieved through the brief points below: - Minimise the removal of vegetation in the infrastructure footprint area; - Revegetation of the construction footprint as soon as possible; - Where storm water enters river systems, sediment/silt and debris trapping, as well as energy dissipation control measures must be put in place; - Storm water must be diverted from construction activities and managed in such a manner to disperse runoff and prevent the concentration of storm water flow; - Sequential removal of the vegetation (not all vegetation immediately); and - The vegetation of unpaved roadsides.
	<p>Wetland disturbance Disturbance due to Presence of Heavy Machinery</p>	Low	<ul style="list-style-type: none"> - Wetland areas should be avoided as far as possible during the construction and decommissioning phases. The following mitigation measures have been prescribed: - To prevent soil compaction in the wetland, the surface sediments should be lightly loosened after heavy machinery and vehicles have passed through the wetland areas; - Areas of bare soil should be revegetated with plugs or mats of <i>Cynodon dactylon</i> (Couch Grass) and <i>Imperata cylindrica</i> (Cottonwool Grass) to prevent erosion during floods; - Steel containment structures should be fitted along the length of the section of pipeline that crosses the wetland and - Diesel/oil spills should be reported within 24 hours and a spillkit should be readily available within proximity to the site to clean up the spill.

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Table 4: Impact Assessment for the Operational Phase

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
Operation Phase	- Geology and Soil		
	Soil erosion	Low	Monitoring to be conducted to detect erosion
	- Flora		
	The proposed construction activities may affect biodiversity through the encroachment of exotic vegetation following soil disturbance, in addition the maintenance of the area would disturb naturalised species within the area.	Low	<ul style="list-style-type: none"> - Newly cleared soils will have to be re-vegetated and stabilised as soon as construction has been completed and there should be an on-going monitoring program to control and/or eradicate newly emerging invasive. - Encroachment of alien vegetation should be monitored regularly and controlled; the area must be kept clear of all invader plants as per the Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983). Rehabilitation measures must be employed until such a time as indigenous species are established. - As much vegetation growth as possible should be promoted within the proposed replacement in order to protect soils and to reduce the percentage of the surface area which is left as bare ground. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping.
	- Fauna		
	Disturbance of faunal species	Low	<ul style="list-style-type: none"> - The disturbance of fauna should be minimized. - Animals residing within the designated area shall not be unnecessarily disturbed.
	- Aesthetics		
	Visual impacts associated with the operation of the pipeline	Low	<ul style="list-style-type: none"> - After the construction phase, the areas disturbed must be rehabilitated by appropriate landscaping, levelling, topsoil dressing, land preparation, alien plant eradication and vegetation establishment. - Monitor the re-growth of invasive vegetative material. - Manage encroachment of exotic vegetation as necessary.
	- Socio-economic		
Pipeline maintenance	Low	Monitoring of the leakage of pipes as well as the wear-and-tear of the pipeline.	
- Watercourse			
Spills or leaks associated with either poor seals or more significant faults such as breaks/bursts. This could lead to contamination of water resource when the slurry enters the stream or wetland.	Low	<ul style="list-style-type: none"> - It is recommended that pipeline structures at the river crossing should cover the bottom part of the pipeline, this should be designed and placed in way that enables it to contain and divert any spill/leakages away from the stream; - Monitoring of pipeline leakages on the section where it crosses the stream should be undertaken on a weekly base. This will ensure detection of leaks or faults in the pipeline and immediately repair before significant spill/burst occur; - It is recommended that water quality monitoring be undertaken on a monthly basis to ensure detection of impacts from leakages of the slurry; - If pipeline spills/leakage occurs the following mitigation approach is recommended: - Ensure that the emergency spillage response plan is drafted and accessible to the responsible monitoring team; - Containment of sludge and water as much as possible using berms and cut off trenches; - Sludge which is present within the river reaches should be removed by mechanical means; - Accidental spills or leaks or pipe bursts resulting in the contamination of the receiving water environment should be reported to the authorities and downstream communities/water users should be informed not to use the water until any potential impacts are sufficiently mitigated; - Storm water management channels or catchment paddocks will be put in place, these is necessary to both contain any spillage as well as to contain runoff generated during normal and extreme rainfall events; and 	

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			<ul style="list-style-type: none"> - All pump discharge pipelines will be fitted with pressure transmitters, which will be utilised to trip the associated pump if a pressure drop is detected and therefore the pumping of sludge will be terminated immediately
	<p>Aquatic Impacts The impacts of the proposed pipeline crossing during the operation phase are presented below. The following impacts are expected to potentially occur as a result of the proposed water use. Habitat impacts resulting in flow, bed and channel modification could potentially occur within a limited area downstream of the proposed infrastructure.</p>	Low	<ul style="list-style-type: none"> - No crossings should take place over riffle/rapid habitats as these are the most sensitive; slow deep/shallow habitats should be favoured; - The crossing points should be stabilised to reduce the resulting erosion and downstream sedimentation; - Structures must not be damaged by floods exceeding the magnitude of those which are may occur on average once in every 100 years; - The indiscriminate use of heavy vehicles and machinery within the instream and riparian habitat will result in the compaction of soils and vegetation and must be controlled; - Erosion prevention mechanisms must be employed to ensure the sustainability of all structures to prevent instream sedimentation; - The crossing points should be unobtrusive (above 1:100 water mark) to prevent the obstruction and subsequent habitat modification of downstream portions; - Diversion trenches and berms should convey dirty water to temporary ditches so as to contain runoff; - Soils adjacent the river that has been compacted must be loosened to allow for germination; - Stockpiling of removed soil and sand must be done outside the 1:100 floodline or delineated riparian habitat (whichever is greater). This will prevent solids from washing into the river; - Unpaved roads used to inspect and construct the pipelines should have their sides vegetated; - No hinges/flanges should be present within the pipeline over the river system as these points are prone to leakages. Therefore, an elongated section devoid of flanges/hinges should be used; and - Should a spillage occur an emergency management plan, including rehabilitation plan, with emergency cut off valves should be in implemented
	<p>Wetlands Disturbance due to Presence of Heavy Machinery Movement of heavy machinery through wetland areas during the construction of the pipeline may result in compaction of sediment in the wetland, reducing natural infiltration through those areas</p>	Low	<ul style="list-style-type: none"> - Wetland areas should be avoided as far as possible during the construction and decommissioning phases. The following mitigation measures have been prescribed: - To prevent soil compaction in the wetland, the surface sediments should be lightly loosened after heavy machinery and vehicles have passed through the wetland areas; - Areas of bare soil should be revegetated with plugs or mats of <i>Cynodon dactylon</i> (Couch Grass) and <i>Imperata cylindrica</i> (Cottonwool Grass) to prevent erosion during floods; - Steel containment structures should be fitter along the length of the section of pipeline that crosses the wetland and - Diesel/oil spills should be reported within 24 hours and a spillkit should be readily available within proximity to the site to clean up the spill

Please note that currently there are no decommissioning and closure phase that will take place for the proposed pipelines. However, if decommissioning will be undertaken a separate Basic Assessment Report inclusive of a site decommissioning Environmental Management Programme should be developed and implemented.

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Table 5: Impact Assessment for Decommissioning Phase

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
Decommissioning Phase	Topsoil Placement	Low	<p>Topsoil replacement and soil amelioration</p> <p>Execute topsoil placement only after all construction work has ceased.</p> <p>Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes and roads. Replace topsoil to the original depth.</p> <p>Place topsoil in the same area from where it was stripped off. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas of similar quality.</p>
	Rehabilitation of the site	Low	<p>All areas to be affected by the proposed project will be rehabilitated after construction and all waste generated by the construction activities will be stored in a temporary demarcated storage area, prior to disposal thereof at a licensed registered landfill site.</p> <p>As much vegetation growth as possible should be promoted within the proposed development site in order to protect soils and to reduce the percentage of the surface area which is left as bare ground. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping. The plant material to be used for rehabilitation should be similar to what is found in the surrounding area.</p>

The impact assessment for Alternative 2 is provided below. As with the assessment of Alternative 1, the **mitigated impacts** are provided

Table 6: Impact Assessment for the Pre-Construction Phase.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
Pre-Construction	Loss of topsoil	Low	<p>During site preparation, special care must be taken during the clearing of the work area where organic material will be stored separately from the topsoil and spoil material to ensure for the protection thereof. This topsoil must be re-used during the rehabilitation phase</p>
	Loss of flora of conservation importance	Low	<p>During site preparation, topsoil and subsoil are stripped separately from each other and must be stored separately from spoil material for use in the rehabilitation phase. It should be protected from wind and rain, as well as contamination from diesel, concrete or wastewater.</p> <p>Records of all environmental incidents must be maintained and a copy of these records must be made available to authorities on request throughout the project execution</p>

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Activity	Impact summary	Significance	Proposed mitigation
	Loss of protected trees and declining listed data species	Low	<p>Search and rescue needs to commence:</p> <p>The plant species of conservation importance, namely <i>Hypoxis hemerocallidea</i>, recorded along the proposed route should be rescued. It is recommended that the plants can be dug-up, and moved a few meters to just outside the development footprint, and then replanted temporarily. This should be done on the same day to minimise the risk of introducing diseases and parasites to the plants. Removal of plants should be done mechanically, using hand tools. The optimal timeframe for removal and replanting is to perform the search, rescue and relocation in spring or early summer (September to November), once first rains have fallen, in order to facilitate establishment. Alternatively, these species can be rescued and relocated to a conservation area.</p>
	Loss of fauna of conservation importance.	Low	During site preparation special care must be taken during the clearing of the work areas to minimise damage or disturbance of roosting and nesting sites.

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Table 7: Impact Assessment for the Construction Phase.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
Construction Phase	- Geology and Soil		
	Soil erosion	Low	<p>Stabilisation of cleared areas to prevent and control erosion. Monitoring to be conducted to detect erosion. Rehabilitate all areas disturbed during construction. The Contractor shall take measures to the approval of the Engineer to ensure that there is no undue storm water damage and soil erosion resulting from the construction activities outside the construction camp and work areas. The Contractor shall ensure that run off from access and haul roads, does not cause erosion.</p> <ul style="list-style-type: none"> - At all stages of the project lifespan, storm water control measures as specified by the Engineer shall be applied to keep soil on site by minimising: erosion of temporary stockpiles of topsoil and permanent spoil dumps; - erosion from construction roads, excavations and other cleared areas; <p>silt-laden run off from all areas stripped of vegetation, including excavation surfaces and stockpiles of spoil and topsoil; contaminated run off from storage areas</p>
	Loss of topsoil	Low	<p>After excavation, all soils must be replaced in the same order as they were removed. Remove, stockpile and preserve topsoil for re-use during rehabilitation.</p> <p>Topsoil stripping management:</p> <ul style="list-style-type: none"> - Soil must be stripped to a minimum depth of 300 mm or to the depth of bedrock where soil was shallower than 300 mm. - Herbaceous vegetation, overlying grass and other fine organic matter must not be removed from the stripped soil. - Disturbance of topsoil on construction sites with severe slopes must be minimized at all costs. - The topsoil stored must be on site. - Topsoil must be stripped in a dry condition in order to prevent compaction. <p>Topsoil stockpiling:</p> <ul style="list-style-type: none"> - Soil stockpiles must not be higher than 1.5m and the slopes of soil stockpiles shall not have a vertical/horizontal gradient exceeding 1:1.5. - No vehicles are allowed access onto the stockpiles after they have been placed. Topsoil stockpiles must be clearly demarcated in order to prevent vehicle access and later identification as the resource for rehabilitation and vegetation establishment. <p>After topsoil stockpiling has been completed, the Contractor shall apply soil conservation measures to the stockpiles in the form of veld grass seeds, to allow grass to colonise topsoil piles during the construction phase. All areas onto which topsoil is to be spread shall be graded to the approximate original land form with maximum slopes of 1:2.5 and shall be ripped prior to topsoil placement. The entire area to be top soiled shall be ripped parallel to the contours to a minimum depth of 150 mm.</p>
	- Flora		
Soil contamination, vegetation loss and vegetation disturbance due to fuel and chemical spills to the canals and wetlands.	Low	<ul style="list-style-type: none"> - Employ on site personnel responsible for preventing and controlling potential soil pollution through fuel and oil leaks and spills. - Make sure construction vehicles are maintained and serviced to prevent oil and fuel leaks. - Emergency on-site maintenance should be done over appropriate drip trays and all oil or fuel must be disposed of according to waste regulations. 	

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> - Drip-trays must be placed under vehicles and equipment when not in use. - Require the suitable establishment of erosion control mechanisms.
	Vegetation and habitat disturbance due to the accidental introduction of alien species.	Low	<p>Promote awareness to all personnel. During construction activities, monitoring and control of alien weeds and invaders through hand removal; slashing (annuals) or chemical control (perennials). Chemical control may only be done upon approval from the Environmental Control Officer (ECO).</p> <p>Larger exotic species that are not included in the (Appendix D1) list of invasive species could also be allowed to remain for aesthetic purposes.</p>
	Vegetation and habitat disturbance due to pollution and littering during construction phase.	Low	<p>The Contractor should employ personnel on site responsible for preventing and controlling of litter. Promote housekeeping with daily clean-ups on site.</p> <p>Before construction commences, construction workers should be educated with regards to littering, <i>ad hoc</i> veld fires, and dumping. No fires are allowed on site.</p>
	Damage to plant life outside of the proposed pipeline route.	Low	Construction activities should be restricted to the development footprint area. All workers must be trained before construction commences. Areas which could be deemed as no go should be clearly marked.
	- Fauna		
	Disturbance to animals	Low	<ul style="list-style-type: none"> - Animals residing within the designated area shall not be unnecessarily disturbed. - During construction, refresher training can be conducted to construction workers with regards to littering and poaching. - The Contractor and his/her employees shall not bring any domestic animals onto site. - Toolbox talks should be provided to contractors regarding disturbance to animals. Particular emphasis should be placed on talks regarding snakes.
	Allow for safe animal passage through and specifically out of the construction site.	Low	<ul style="list-style-type: none"> - With regards to other areas which may need to be fenced temporarily during construction, i.e. aloe area where moles were found, a normal stock fence can be utilised, either diamond or rectangular fencing.
	- Air Quality		
	Excessive dust levels as a result of construction activities and movement of construction vehicles.	Low	<ul style="list-style-type: none"> - All reasonable measures should be taken to minimise air emissions in the form of smoke, dust and gases. - Speed limits to be strictly adhered to.
	Vehicles and construction machinery's emissions.	Low	<ul style="list-style-type: none"> - All construction vehicles must be serviced on a frequent basis as a means of limiting gaseous emissions. - The Contractor will take preventative measures to minimise complaints regarding dust nuisances (e.g. screening, dust control, timing, and pre-notification of affected parties).
	Smoke from uncontrolled fires	Low	<ul style="list-style-type: none"> - Bare areas must be watered to minimise dust. - Dust pollution should be suppressed on access roads and the construction site during dry periods by regular application of water or biodegradable soil stabilisation agent. If water is used it must not be used in such a manner that the contractor could be accused of water wasting. - No uncontrolled fires to be allowed on site.
	- Noise		
	Excessive noise levels as a result of construction activities.	Low	<ul style="list-style-type: none"> - Communities and local residents should be warned in advance by the Contractor of when construction activities and any/or blasting will start in their areas. - Construction activities to take place within the prescribed working hours. - Working hours to be agreed upon with Project Manager, so as to minimise disturbance to landowners and community members. - Noise preventative measures (e.g. screening, muffling, timing, pre-notification of affected parties) to be employed. - The Contractor should inform local residents and communities of any after – hour construction activities that will take place. - The Contractor must inform local communities and residents of any activity that could cause a nuisance to them. - Noise rules must be established for construction areas.

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> - A "Code of conduct for Construction Workers" should be drawn up and agreed by all workers. The code should address public behaviour of the construction workers as well as their intent to abide to the principles, practices and customs of the local communities. - All construction vehicles must be serviced on a frequent basis as a means of limiting excessive noise levels. - The contractor must ensure the silencers of all construction vehicles and machinery is working.
	- Safety and Security		
	Uncontrolled access to proposed boundary extension.	Low	<ul style="list-style-type: none"> - Compliance with Occupational Health and Safety Act (Act No. 85 of 1993). - Contractor to provide an Occupational Health and Safety Management Plan to the Construction Manager for approval prior to the commencement of works in terms of the Construction Regulations (2014).
	Construction employees getting injured.	Low	<ul style="list-style-type: none"> - Proper supervision of employees at all times. Employees to be clearly identifiable. - Employees to remain within the site boundary and no loitering to be allowed.
	Open trenches and construction vehicles may pose a safety risk to pedestrians and animals	Low	<ul style="list-style-type: none"> - Access into and out of the servitude must only be via existing access roads from local public roads. - Contractor to prepare and submit, for approval, a rescue procedure for employees in the case of an injury. - Any employees of the Contractor or his sub-contractors found to be in breach of any of the Environmental Protection specifications may be ordered to leave the site forthwith. - Supervisory staff of the contractor or sub-contractors shall not direct any person to undertake any activities, which would place such person/organization in contravention to any law, regulation or the EMPr itself. - Depending on the type of contravention or action it may also be necessary for the work to be called to a halt until such time as the contravention or action is corrected and investigated
- Waste Management			
Land, air and water pollution through poor waste management practises.	Low	<ul style="list-style-type: none"> - No ablution facilities to be positioned within riparian areas. - Sufficient ablution facilities to be provided at the Construction Camp and along construction servitude. - Suitable litter receptacles to be positioned strategically across the site at all working areas. - Waste must be separated at source (e.g. containers for glass, paper, metals, plastics, organic waste and hazardous wastes). - The Contractor shall dispose of all refuse generated on site or from the activities of construction or its related activities. The contractor shall on a weekly basis dispose of all refuse at an approved refuse disposal site. Proof of disposal must be kept on record. - Littering by the workers is prohibited. Clearly marked litterbins must be provided on site. - Monitor the presence of litter on site. All staff shall be sensitised to this effect. - The entire site will be cleared of construction material, metal, tins, glass bottles, and food packaging or any other type of empty container or waste material or waste equipment used by the construction team on a daily basis. - Waste material that may harm man or animals should be removed immediately. - No hazardous materials, e.g. oil, diesel and fuel should be disposed of in the veldt. Any diesel, oil or petrol spillages are to be collected and stored in specially marked containers and disposed of at a permitted waste disposal site and must be treated as hazardous waste. - No refuse or litter is allowed to be burnt on site. - The recycling of all waste is to be encouraged of both the contractor and staff. - All vehicle parking areas and vehicle servicing areas are to be inspected carefully for diesel, oil and other spillages weekly. - Excess spoil material should be disposed of at a location identified by the Contractor and approved by the Engineer and ECO. 	

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	<p>- Socio-economic</p> <p>Damages to property, including structures, fencing, gates and roads. As well as damaging Eskom reputation for adjacent landowners/ public.</p>	Low	<ul style="list-style-type: none"> - Register to be kept of recorded damages. Construction-related damages to be repaired by Contractor. - Establish employment strategy. - Contractor to appoint a Community Liaison Officer (CLO), or to assign such responsibilities to a competent staff member who will have adequate time to fulfil relevant functions. - Good landowner/ public relations to be maintained
	<p>- Heritage</p> <p>Damage to archaeological sites.</p>	Low	<ul style="list-style-type: none"> - If any archaeological material, such sites, objects or features, as well as graves and burials are uncovered during construction activities on site. Work will cease immediately and an archaeologist should be contacted as a matter of urgency in order to assess such occurrences. - Permits to be obtained from the PHRA-G if heritage resources are to be impacted upon. - No person may, without a permit issued by SAHRA or a provincial heritage resources authority - Destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves; - Destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority or; - Bring onto or use at a burial ground or grave referred to in above any excavation equipment, or any equipment which assists in the detection or recovery of metals
	<p>- Watercourses</p>		
	<p>Siltation of Water Resources The removal of vegetation around a construction area exposes the surface area leaving the soil prone to erosion. This may result in siltation of the water resource and this will have an impact on the downstream water users and the aquatic life as well; and Inadequate storm water management and soil stabilisation measures in cleared areas could lead to erosion and associated sedimentation of nearby watercourses.</p> <p>Pipeline Installation Movement of heavy construction machinery around stream may result in disturbance of the river banks, and destabilises the soil. This will increase the chance of erosion during rainfall thereby result in sedimentation of the water resources; Establishing of new access paths for construction across watercourses may lead to the erosion of banks and disturbance of</p>	Low	<ul style="list-style-type: none"> - The construction phase should be limited to the dry months of the year (May-October) where possible to limit mobilisation of sediments or hydrocarbon runoff; - Re-vegetation of the construction footprint as soon as possible; - Engineered solutions such as sediment fences or silt traps should be used where appropriate to limit increased sedimentation of surface water resources during construction; - Minimise the removal of vegetation in the infrastructure footprint area; - Existing access roads must be prioritized to avoid construction of new access roads in the area; and - The river must not be utilised for abstraction, or washing of equipment, etc., in order to minimise the risk of water pollution during construction activities. All necessary water abstractions from any surface water resource must be authorised as prescribed by the NWA and be subject to the provisions of a water use license and general authorisation.

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	<p>riparian vegetation that may trigger the further development of gully (donga) erosion thereby reducing the quality of water.</p> <p>Contamination of Water (Hydrocarbon Spillages) The use of machinery during construction and installation of pipelines have the potential of hydrocarbons (fuel and oil) leakages which can result in the contamination of the receiving water resources.</p>		
	<p>Aquatic Impacts The impacts of the proposed pipeline crossing during the construction phase are presented below. The following impacts are expected to potentially occur as a result of the proposed water use. Increased runoff as a result of vegetative cover loss could result in instream and riparian habitat modification or destruction through erosion, flow, bed, channel and water quality modification. Water quality modification can be related to an increase in the amount of suspended/dissolved solids which can result in increased sedimentation and changes to the physical chemistry of the water in downstream regions. These physical impacts could lead to reduced aquatic biodiversity</p>	Low	<ul style="list-style-type: none"> - During the construction phase vehicles will be used in proximity to aquatic resources. The use of these vehicles presents risk of persistent hydrocarbon pollution events which can be avoided through the use of the following management actions: - Hydrocarbon spill kits and employee training in their use; - Regular inspection for leakages and subsequent repair (maintenance); and - The refuelling/oiling of vehicles in contained areas (bundled areas) built to the capacity of the facility provided with sumps. - The removal of vegetative cover as well as the construction of roads has been recognised as being responsible for increased runoff, sedimentation and subsequent water and habitat quality degradation in downstream portions of river systems (WRC, 2014). As such the careful management of vegetation removal and sedimentation control should take place. This can be achieved through the brief points below: - Minimise the removal of vegetation in the infrastructure footprint area; - Revegetation of the construction footprint as soon as possible; - Where storm water enters river systems, sediment/silt and debris trapping, as well as energy dissipation control measures must be put in place; - Storm water must be diverted from construction activities and managed in such a manner to disperse runoff and prevent the concentration of storm water flow; - Sequential removal of the vegetation (not all vegetation immediately); and - The vegetation of unpaved roadsides.
	<p>Wetland disturbance Disturbance due to Presence of Heavy Machinery</p>	Low	<ul style="list-style-type: none"> - Wetland areas should be avoided as far as possible during the construction and decommissioning phases. The following mitigation measures have been prescribed: - To prevent soil compaction in the wetland, the surface sediments should be lightly loosened after heavy machinery and vehicles have passed through the wetland areas; - Areas of bare soil should be revegetated with plugs or mats of <i>Cynodon dactylon</i> (Couch Grass) and <i>Imperata cylindrica</i> (Cottonwool Grass) to prevent erosion during floods; - Steel containment structures should be fitted along the length of the section of pipeline that crosses the wetland and - Diesel/oil spills should be reported within 24 hours and a spillkit should be readily available within proximity to the site to clean up the spill.

BASIC ASSESSMENT REPORT

Table 8: Impact Assessment for the Operational Phase

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
Operation Phase	- Geology and Soil		
	Soil erosion	Low	Monitoring to be conducted to detect erosion
	- Flora		
	The proposed construction activities may affect biodiversity through the encroachment of exotic vegetation following soil disturbance, in addition the maintenance of the area would disturb naturalised species within the area.	Low	<ul style="list-style-type: none"> - Newly cleared soils will have to be re-vegetated and stabilised as soon as construction has been completed and there should be an on-going monitoring program to control and/or eradicate newly emerging invasive. - Encroachment of alien vegetation should be monitored regularly and controlled; the area must be kept clear of all invader plants as per the Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983). Rehabilitation measures must be employed until such a time as indigenous species are established. - As much vegetation growth as possible should be promoted within the proposed replacement in order to protect soils and to reduce the percentage of the surface area which is left as bare ground. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping.
	- Fauna		
	Disturbance of faunal species	Low	<ul style="list-style-type: none"> - The disturbance of fauna should be minimized. - Animals residing within the designated area shall not be unnecessarily disturbed.
	- Aesthetics		
	Visual impacts associated with the operation of the pipeline	Low	<ul style="list-style-type: none"> - After the construction phase, the areas disturbed must be rehabilitated by appropriate landscaping, levelling, topsoil dressing, land preparation, alien plant eradication and vegetation establishment. - Monitor the re-growth of invasive vegetative material. - Manage encroachment of exotic vegetation as necessary.
	- Socio-economic		
	Pipeline maintenance	Low	Monitoring of the leakage of pipes as well as the wear-and-tear of the pipeline.
- Watercourse			
Spills or leaks associated with either poor seals or more significant faults such as breaks/bursts. This could lead to contamination of water resource when the slurry enters the stream or wetland.	Low	<ul style="list-style-type: none"> - It is recommended that pipeline structures at the river crossing should cover the bottom part of the pipeline, this should be designed and placed in way that enables it to contain and divert any spill/leakages away from the stream; - Monitoring of pipeline leakages on the section where it crosses the stream should be undertaken on a weekly base. This will ensure detection of leaks or faults in the pipeline and immediately repair before significant spill/burst occur; - It is recommended that water quality monitoring be undertaken on a monthly basis to ensure detection of impacts from leakages of the slurry; - If pipeline spills/leakage occurs the following mitigation approach is recommended: - Ensure that the emergency spillage response plan is drafted and accessible to the responsible monitoring team; - Containment of sludge and water as much as possible using berms and cut off trenches; - Sludge which is present within the river reaches should be removed by mechanical means; - Accidental spills or leaks or pipe bursts resulting in the contamination of the receiving water environment should be reported to the authorities and downstream communities/water users should be informed not to use the water until any potential impacts are sufficiently mitigated; - Storm water management channels or catchment paddocks will be put in place, these is necessary to both contain any spillage as well as to contain runoff generated during normal and extreme rainfall events; and 	

BASIC ASSESSMENT REPORT

	<p>Aquatic Impacts The impacts of the proposed pipeline crossing during the operation phase are presented below. The following impacts are expected to potentially occur as a result of the proposed water use. Habitat impacts resulting in flow, bed and channel modification could potentially occur within a limited area downstream of the proposed infrastructure.</p>	Low	<ul style="list-style-type: none"> - All pump discharge pipelines will be fitted with pressure transmitters, which will be utilised to trip the associated pump if a pressure drop is detected and therefore the pumping of sludge will be terminated immediately - No crossings should take place over riffle/rapid habitats as these are the most sensitive; slow deep/shallow habitats should be favoured; - The crossing points should be stabilised to reduce the resulting erosion and downstream sedimentation; - Structures must not be damaged by floods exceeding the magnitude of those which are may occur on average once in every 100 years; - The indiscriminate use of heavy vehicles and machinery within the instream and riparian habitat will result in the compaction of soils and vegetation and must be controlled; - Erosion prevention mechanisms must be employed to ensure the sustainability of all structures to prevent instream sedimentation; - The crossing points should be unobtrusive (above 1:100 water mark) to prevent the obstruction and subsequent habitat modification of downstream portions; - Diversion trenches and berms should convey dirty water to temporary ditches so as to contain runoff; - Soils adjacent the river that has been compacted must be loosened to allow for germination; - Stockpiling of removed soil and sand must be done outside the 1:100 floodline or delineated riparian habitat (whichever is greater). This will prevent solids from washing into the river; - Unpaved roads used to inspect and construct the pipelines should have their sides vegetated; - No hinges/flanges should be present within the pipeline over the river system as these points are prone to leakages. Therefore, an elongated section devoid of flanges/hinges should be used; and - Should a spillage occur an emergency management plan, including rehabilitation plan, with emergency cut off valves should be in implemented
	<p>Wetlands Disturbance due to Presence of Heavy Machinery Movement of heavy machinery through wetland areas during the construction of the pipeline may result in compaction of sediment in the wetland, reducing natural infiltration through those areas</p>	Low	<ul style="list-style-type: none"> - Wetland areas should be avoided as far as possible during the construction and decommissioning phases. The following mitigation measures have been prescribed: - To prevent soil compaction in the wetland, the surface sediments should be lightly loosened after heavy machinery and vehicles have passed through the wetland areas; - Areas of bare soil should be revegetated with plugs or mats of <i>Cynodon dactylon</i> (Couch Grass) and <i>Imperata cylindrica</i> (Cottonwool Grass) to prevent erosion during floods; - Steel containment structures should be fitter along the length of the section of pipeline that crosses the wetland and - Diesel/oil spills should be reported within 24 hours and a spillkit should be readily available within proximity to the site to clean up the spill

Please note that currently there are no decommissioning and closure phase that will take place for the proposed pipelines. However, if decommissioning will be undertaken a separate Basic Assessment Report inclusive of a site decommissioning Environmental Management Programme should be developed and implemented.

BASIC ASSESSMENT REPORT

Table 9: Impact Assessment for Decommission Phase

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
Decommission Phase	Topsoil Placement	Low	<p>Topsoil replacement and soil amelioration</p> <p>Execute topsoil placement only after all construction work has ceased.</p> <p>Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes and roads. Replace topsoil to the original depth.</p> <p>Place topsoil in the same area from where it was stripped off. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas of similar quality.</p>
	Rehabilitation of the site	Low	<p>All areas to be affected by the proposed project will be rehabilitated after construction and all waste generated by the construction activities will be stored in a temporary demarcated storage area, prior to disposal thereof at a licensed registered landfill site.</p> <p>As much vegetation growth as possible should be promoted within the proposed development site in order to protect soils and to reduce the percentage of the surface area which is left as bare ground. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping. The plant material to be used for rehabilitation should be similar to what is found in the surrounding area.</p>

Table 10: Impact Assessment of the No-Go option.

Activity	Impact summary	Significance	Proposed mitigation
No-go option			
	None of the impacts identified for the proposed activity will occur (including positive and negative impacts) if the proposed activity does not proceed.	High	<ul style="list-style-type: none"> - The proposed pipelines ash transfer link needs to be built. - There are no mitigation measures which can suitably mitigate the impact of the no-go option for this reasons, the no-go option is not believed to be feasible.
	The KPS will shut down and no power will be generated.	High	
	Jobs will be lost.	High	

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

1. ENVIRONMENTAL IMPACT STATEMENT

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

Alternative A (preferred alternative)

It is evident that the proposed pipelines route will have minimal impacts on the receiving environment. Two alternative pipeline crossings were considered, and there is no ecological preference between the alternatives as they cross the similar habitats. The proposed development should proceed subject to the above, and mitigation measures must be employed to minimise potential impacts from the project. The environment is defined into these factors: Biophysical, Social and Economic

Biophysical:

Advantages	Disadvantages
➤ The pipeline crossing is a greater distance from the wetland and thus impacts to the wetland are reduced.	➤ No disadvantages have been identified in regards to Alternative 1.

Social:

Advantages	Disadvantages
➤ There are no differences between the two alternatives from a social perspective.	

Economic:

Advantages	Disadvantages
➤ Electricity will still be produced	➤ None

Engineering

Advantages	Disadvantages
➤ Shorter gantry structures are required as the width of the watercourse is less.	➤ None

Most of the potential impacts on the environment will take place during the construction phase. As a result, with the proposed mitigations enforced, disturbance to the area can be reduced.

The main positive impact identified for this project is related to the extended life of Kriel Power Station. With the implementation of the Kriel-Matla Ash Transfer Link, Kriel Power Station will continue to generate electricity whilst the new Ash Dam is being designed and constructed.

All negative impacts identified for the construction phase of the proposed development can be minimised provided that the proposed mitigation measures provided in this Basic Assessment Report, the Environmental Management Programme, the Ecological Impact Assessment, HIA and WULA (refer to **Appendix D**, **Appendix G** and **Appendix I** of the BAR) are adequately implemented during the construction and operation phases of the project. With this in mind, it is recommended that Alternative 1 be authorised.

Alternative B

The environment is defined into these factors: Biophysical, Social and Economic

Biophysical:

Advantages	Disadvantages
➤	➤ The proposed route is located in close proximity to a wetland and as such there will be a greater disturbance.

Social:

Advantages	Disadvantages
➤ There are no significant differences between the alternatives from a social perspective.	

Economic:

Advantages	Disadvantages
➤ There are no significant differences between the alternatives from a social perspective.	

Engineering

Advantages	Disadvantages
➤ None	➤ Longer gantry structures are required as the width of the watercourse is greater.

Based on the comparison above, the proposed Route 2 is not preferred due to its **close proximity to a wetland** and the fact that longer gantry structures would be required for the watercourse crossings.

Alternative C

No-go alternative (compulsory)

Should the proposed project not commence, the Kriel Power Station, will reach its maximum capacity in approximately June 2017, and would have to shut down as there would be no ash storage capacity. As a result of this, no electricity will be generated. Workers would lose their jobs which in some case may be the only income of a family. This would also place tremendous stresses on the Matla Power Station to fulfil the needs of the local communities in regards to electricity demands and failures such as more frequent power failures.

There are no mitigation measures which can suitably mitigate the impact of the no-go option for this reasons, the no-go option is not believed to be feasible.

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 ✓	
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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).

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.

Please refer to the EMPr in **Appendix G**

Based on the information contained in this report, and taking into account the outcome of the impact assessment, opinions and recommendations included in the specialist studies as well as all supporting documentation, it is the recommendation of the practitioner that Environmental Authorisation be granted by the Department of Environmental Affairs to proceed with the Kriel-Matla Ash Transfer Link.

The following pertinent conditions for inclusion in the Environmental Authorisation are recommended:

- Appointment of an Environmental Control Officer to monitor compliance with the Environmental Authorisation and the approved Environmental Management Programme;
- All mitigation measures provided in Appendix D, Appendix F, Appendix I and Appendix G (Specialist reports, WULA, Impact Assessment and EMPr) of the BAR are to be adhered to. Specifically the following:
 - Site clearing of flora, taking into account the rehabilitation potential.
 - Search and rescue of plant species of conservation importance.
 - Search and rescue of protected trees.
 - Restrict construction activities to footprint area.
 - Encroachment of alien vegetation should be monitored regularly and controlled.
 - Minimise vegetation disturbance due to fuel and chemical spills to the river.
 - Care must be taken during clearing of site to minimize damage or disturbance of roosting and nesting sites.
 - Animals residing within the designated area shall not be unnecessarily disturbed.
 - Animals should be allowed to move freely within their habitat.
 - For any chance finds, all work will cease in the area affected and the Contractor will immediately inform the Project Manager. A registered heritage specialist must be called to site for inspection. The relevant heritage resource agency (PHRA-G) must be informed about the finding.
 - Should any remains be found on site that is potentially human remains, the South African Police Service should also be contacted.
 - If there are chance finds of fossils during construction, a palaeontologist must be called to the site in order to assess the fossils and rescue them if necessary (with a SAHRA permit). The fossils must then be housed in a suitable, recognized institute
 - Control the spread of alien and invasive vegetation.
 - Rehabilitate and revegetate the excavated areas.
 - Erosion prevention and sediment control measures need to be implemented
 - Construction camp to be established in an already disturbed area;
 - 'No go' area to be demarcated;
 - To manage handling, use and storage of materials on site; and
 - Rehabilitation to be undertaken post construction where required.

If the above recommendations and the EMPr are strictly enforced to mitigate the identified possible impacts associated to it, then construction disruptions should have minimal lasting effect on the ecosystems of the proposed development.

Is an EMPr attached?

YES ✓

BASIC ASSESSMENT REPORT

The EMPr must be attached as Appendix G.

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

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

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

NAME OF EAP: Angelique Daniell (Nemai Consulting)



SIGNATURE OF EAP

11/12/2015

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: MAPS

- Appendix A1: Locality Maps
- Appendix A2: Layout/Zoning Maps
- Appendix A3: Sensitivity Map
- Appendix A4: Positions of Photographs Map
- Appendix A5: Site Plan

Appendix B: SITE PHOTOGRAPHS

Appendix C: FACILITY ILLUSTRATION(S)

Appendix D: SPECIALIST REPORTS (INCLUDING TERMS OF REFERENCE)

- Appendix D1: Ecological Survey Report
- Appendix D2: Heritage Survey Report
- Appendix D3: Aquatic Specialist Reports

Appendix E: PUBLIC PARTICIPATION

- Appendix E1: Proof of Advertisements and Site Notices
- Appendix E2: Proof of Written Notices Issued
 - Appendix E2(i): Background Information Document (BID)
 - Appendix E2(ii): Proof of IAPs Notification
- Appendix E3: Comments and Responses Report
- Appendix E4: Proof of Written Notice to Authority and Organs of State
- Appendix E5: List of Registered I&APs
- Appendix E6: Correspondence and Minutes

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and Expertise

Appendix I: Specialist's Declaration of Interest

- Appendix I1: Ecological Specialist Declaration
- Appendix I2: Heritage Specialist Declaration
- Appendix I3: Aquatic Specialist Declarations

Appendix J: Additional Information

- Appendix J1: The co-ordinates taken every 250 meters along the route for each alternative alignment.
- Appendix J2: Water Use Licence Application (WULA)