APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION FOR THE CONSTRUCTION OF A WATER SUPPLY PIPELINE AT THE DUVHA POWER STATION, MPUMALANGA PROVINCE

FINAL BASIC ASSESSMENT REPORT - JUNE 2016

NAKO ILISO
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Title:	Basic Assessment Report for the proposed water supply pipeline at Duvha Power Station
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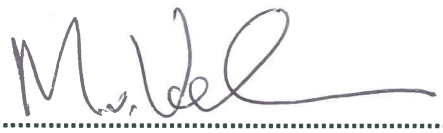
Date:	June 2016

Approved for NAKO-ILISO by:



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Professor Martin van Veelen

Director: NAKO-ILISO

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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File Reference Number:	
Application Number:	
Date Received:	

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	NO
	X	

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

1. PROJECT DESCRIPTION

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

Eskom Holdings SOC Ltd is proposing to construct a water supply pipeline at Duvha Power Station between 2.285 and 2.510 km long. The proposed pipeline will be situated on the Remaining Portion (Portion 0) of Farm Duvha Kragstasie 337JS (**Figure 1** and a full figure in **Appendix A**) in the Mpumalanga Province.

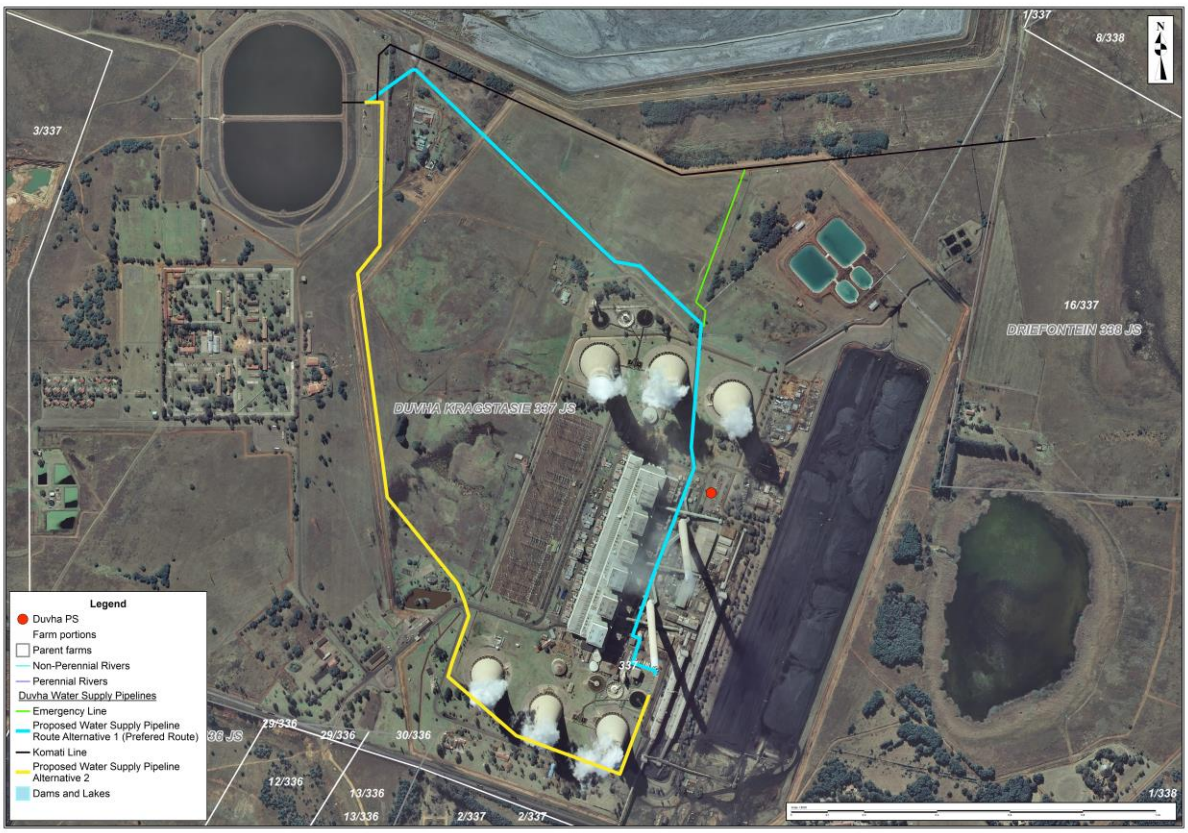

Figure 1: Location of the proposed water supply pipeline

This power station has six units, each with an installed generating capacity of 600 Megawatts (MW) and was designed for water supply from the Komati Water Scheme (KWS) and from the Witbank Dam (which is no longer used).

The Komati Raw Water Reservoir gets its water from the Vygeboom and Nooitgedagt Dams via the KWS. Other stations in the scheme are Arnot, Komati and Hendrina Power Station. Duvha Power Station is the last station in this series to receive Komati water. Additional water is currently supplied from the Vaal-Usutu River System (Vaal Water). Raw water can be fed directly to the station or the reservoir, depending on the water requirements. An additional High-Density Polyethylene (HDPE)

emergency supply pipeline was available for demineralised water production, but is no longer in operation. **Figure 2** provides a schematic diagram of the current water supply system at Duvha Power Station.

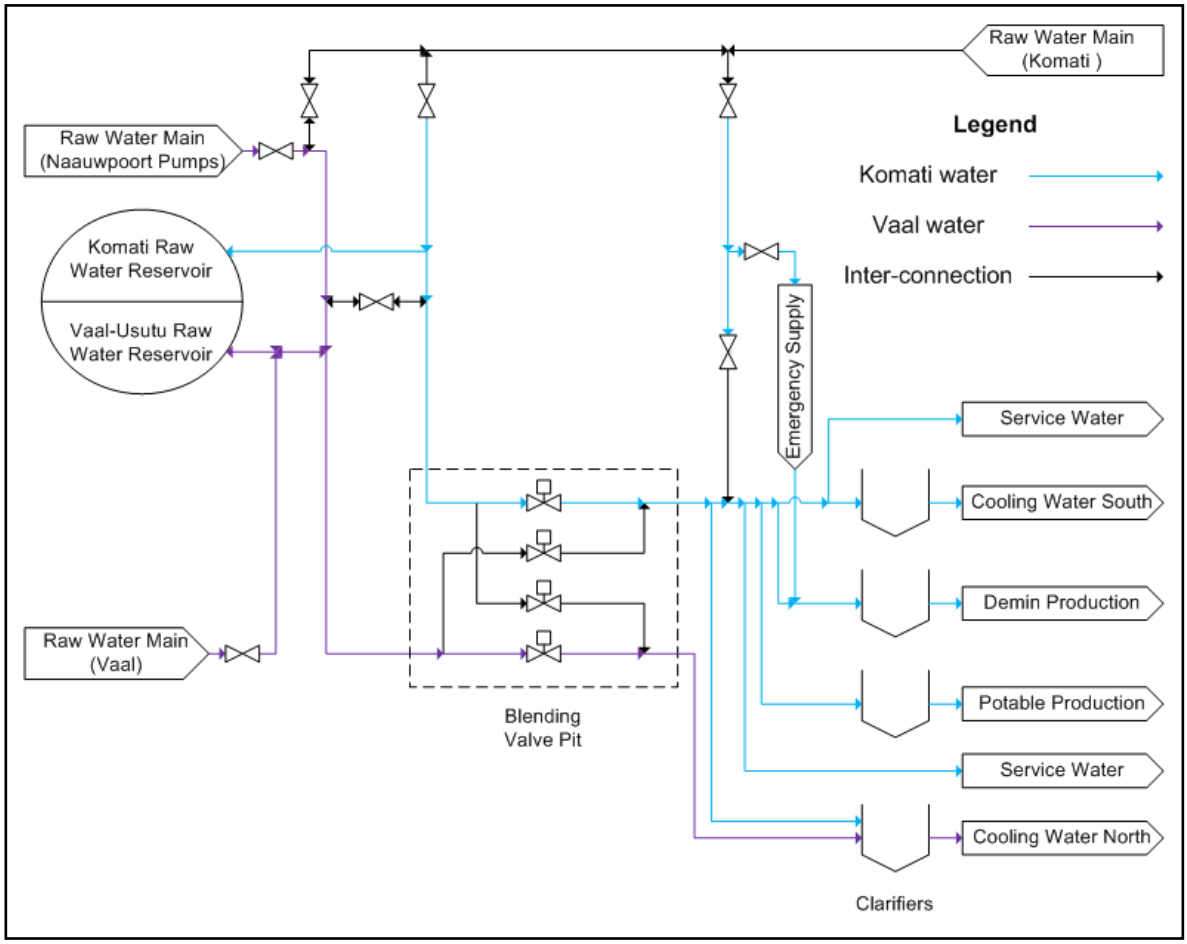

Figure 2: Schematic diagram of the current water supply system at Duvha Power Station

The largest usage of raw water is in the cooling water system, which is split in two systems. Vaal water can be used for the North system, while Komati water can be used on both the North and South system. Raw water (Komati) is further treated at the South Water Treatment Plant (WTP) to produce demineralised water and potable water; and also used for service water. The water is stored in a reservoir at the power station that consist of two compartments with a capacity of 440 ML each (880 ML total). The minimum storage level of the reservoirs is 20% and the maximum operating level is 85%.

The Vaal-Usutu Raw Water Reservoir was historically supplied with Witbank dam water, via the Naauwpoort pump station, which takes suction in the Witbank Dam. Supply has, however, stopped due to a deteriorated water quality from this dam. This reservoir is now supplied with Vaal water via the Rietfontein weir. The Vaal water line was commissioned in 2013 in response to less Komati water being available with Komati Power Station coming online. Similar to the Komati water supply, Vaal water can be supplied to either the station or reservoir.

After the reservoir, there is a Blending Valve Pit which would allow the Komati and Vaal water to be mixed (blended), to give the pipeline network more flexibility in terms of water use. The blending valve pit is not operational at present due to various mechanical, electrical, control and instrumentation

defects.

At the WTP there are 3 clarifiers to either treat the raw water makeup or Concentrated Cooling Water (CCW) (**Figure 3**). The raw water clarifier, Clarifier 157, treats water required for potable and demineralised water production. There are two smaller clarifiers for potable (Clarified 156) and demineralised (Clarifier 186) water production, but these are not utilised due to their size limitations.

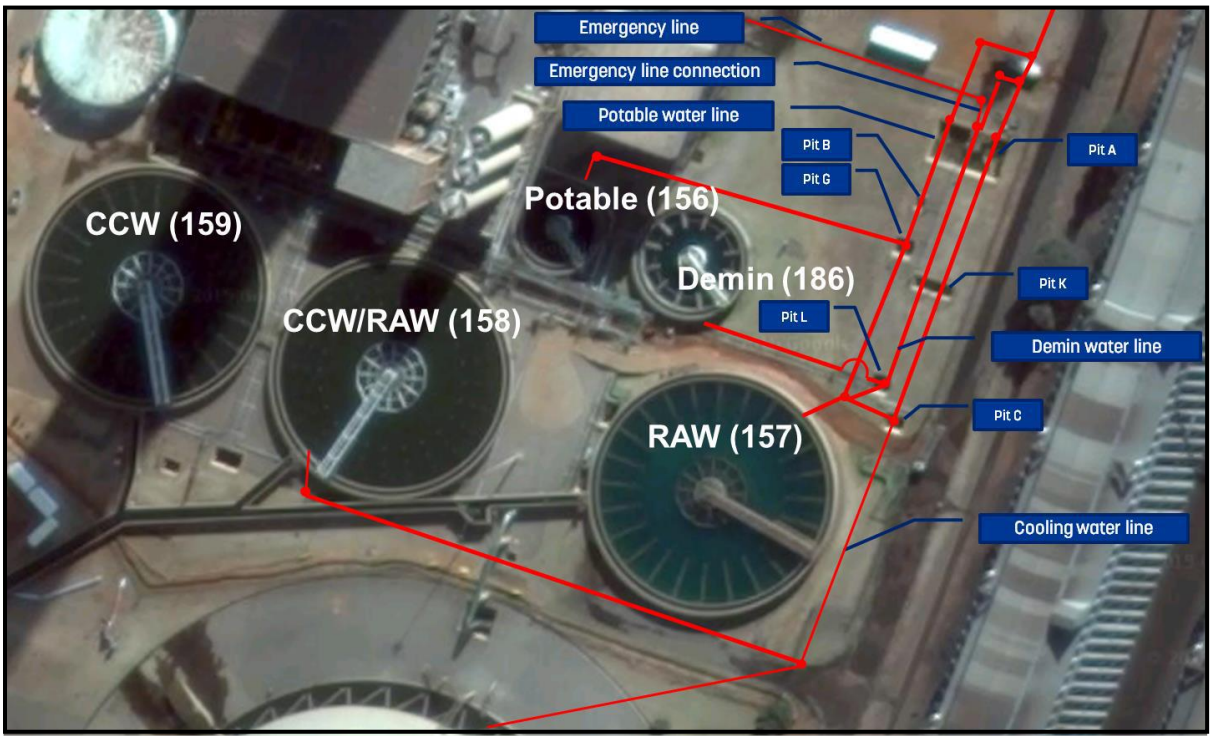

Figure 3: Current South WTP Site Layout

Inspections done on the emergency supply line also showed that in some places the line is broken and will need to be repaired so that it can be used. The supports for this pipe are incorrectly installed and will also need to be addressed.

The Department of Water and Sanitation (DWS) is planning a three week inspection/repair on the KWS (which includes the Hendrina-Duvha pipeline) and then a possibility for refurbishment which could last between six to twelve months is expected. For both cases, there is a risk to the availability and reliability of demineralised water supply to Duvha Power Station. Considering the state of the WTP, the runtime will be reduced and the availability of demineralised water will be hampered.

An assessment conducted on the current system found that there will not be enough Komati water in the reservoir during the outage period to supply the power station (**Appendix J: Concept Engineering Report**).

To mitigate the impact of the outages, the reserve capacity of the Komati Water reservoir will be maximised by using Vaal Water as a source of make-up for the condenser cooling water systems. Modification to the pipeline network is required to achieve supply of Vaal Water for cooling water and Komati Water for demineralised and potable water production. This modification will require a connection pipeline to be installed from the Komati raw water reservoir to the WTP on the south side of the power station which is the subject of this application.
The proposed pipeline project will entail the design, supply, construction and commissioning of a new

HDPE (High Density Polyethylene) pipeline from the Komati raw water reservoir to the WTP. The project will also include the design, supply and construction of valves and pipe supporting structures including fasteners and concrete plinths. It is estimated that a 450 mm pipeline with a water flow rate of 540 m^3/hour will be required. The pipeline will be 2.285 km long.

Two alternative routes were considered for the layout of the pipeline as shown in **Figure 1**. The intended life for both alternatives is 35 years. Although the purpose of the pipeline is to supply Komati water to the WTP during the outage, the pipeline will add further flexibility for water management at Duvha Power Station. The pipeline can thus be used at any time in the future, if the supply of water to the power station is at risk such as drought conditions.

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

Listed activity as described in GN 734, 735 and 736	Description of project activity
Example: ***GN 734 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.***	***A bridge measuring 5 m in height and 10m in length, no wider than 8 meters will be built over the Orange river***
GN R 983 Item 9: *The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water-* *i. with an internal diameter of 0,36 metres or more; or* *ii. with a peak throughput of 120 litres per second or more;*	The proposed water supply pipeline will be approximately 2.285 km long, with an internal diameter of 0.45 metres and a water flow rate of 540m^3 per hour. This property is owned by Eskom Duvha Power Station and falls outside the urban area.

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

Alternative Route 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
As stipulated in the Eskom study entitled '*Works Information for Water Supply During KWS Outage'* this alternative is described as having two sections, namely: • The Komati Reservoir to WTP emergency pipeline (point 1 to 3 in **Figure 4**); and • The WTP Emergency pipeline (point 3 to 5 in **Figure 4**).	25°57'19.284"	29°20'26.334"

Figure 4: Alternative Route 1

Reservoir to WTP emergency pipeline

Figure 4 shows the required reconfiguration of the new pipeline. This new pipeline will run below ground parallel to the existing ash pipelines until the existing emergency line (point 1 to point 3). The line will be connected to the existing connection point of the emergency line, at point 3. A reconfiguration of the reservoir pipework, at point 1 will be done to provide isolation of the Komati reservoir compartment. The existing 400 mm drain valve will be used for a connection point to the new 450 mm HDPE pipe. The valve 00VA12S501 (**Figure 5**) will be closed to isolate the station's main supply lines and then opened for Vaal water to be directed to the south cooling water system.

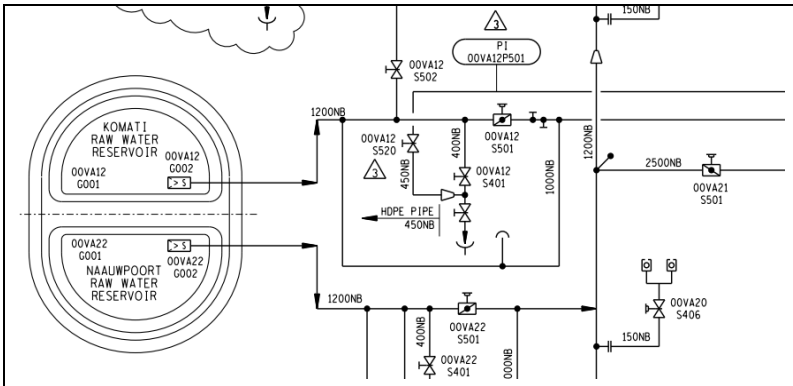

Figure 5: Interconnecting Valve

WTP Emergency pipeline

The 450mm line will be connected to the existing connection point of the existing emergency line which will then be decommissioned and removed completely. A new 450mm reservoir connection pipeline will be installed in place of the old 200mm emergency line from point 3 to the WTP (point 5). The pipeline between point 3 and 4 will be below ground, while above ground between point 4 and 5.

Figure 6 provides the schematic diagram of Alternative 1.

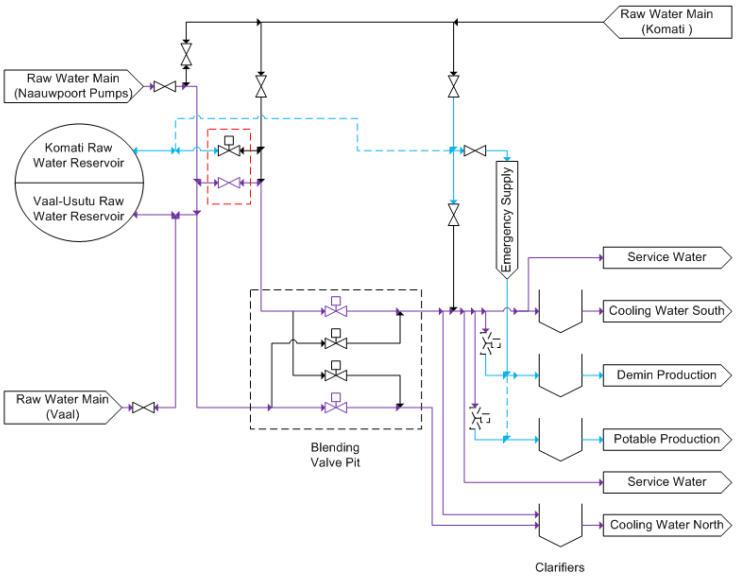

Figure 6: Schematic Diagram of Alternative 1

The total length of the proposed alternative 1 is 2.285km.

Figure 7 provides the location of Alternative 1.

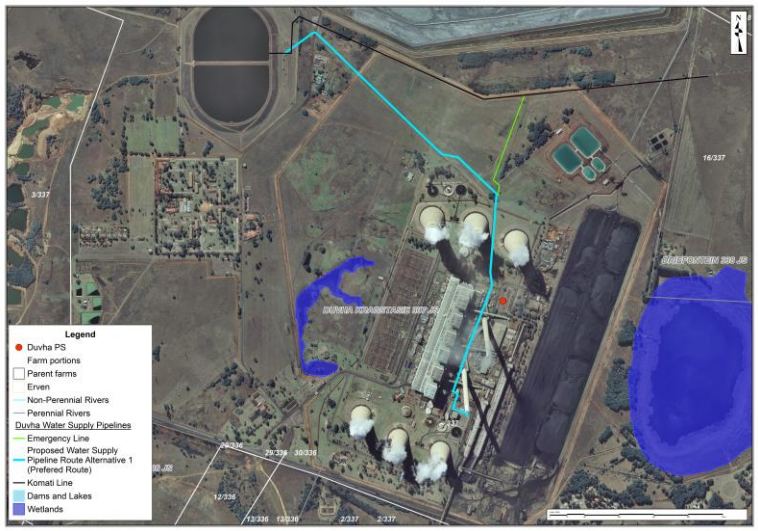

Figure 6: Location of Alternative Route 1

Currently the emergency line is supported on concrete sleeper supports and once in the station it is supported on a steel support that is mounted on a short brick wall or short steel stub column as shown in the **Figure 7**.

Figure 7: Steel Pipe Supports

These supports require refurbishment as at various spots the steel saddle has broken off and the pipes are seated on the ground unsupported as can be seen in the **Figure 8.**

<table>
<tr><td> 
Figure 8: Current State of the Pipe Supports on Site

The envisaged sequence of construction for Alternative 1 is the following:
1. The HDPE pipe is laid from the Komati Raw Water Reservoir to the WTP valve pit A and supports installed.
2. The Emergency Supply line is removed as the new pipe is installed.
3. The HDPE pipe is connected to the Emergency line tie in valve.
4. The HDPE pipe is connected to the drain valve at the Komati raw water reservoir.
5. Drain valve opened and the HDPE pipe is filled with water.
6. Manual valve configurations are completed and the system is running.

All existing supports will need to be refurbished and modified to accommodate the new pipe size. The new routing will require the pipe line to pass through the station perimeter fence which will be achieved by routing the pipe line through an existing pipe culvert that runs under the security fence that is used for the ash lines.</td><td></td><td></td></tr>
<tr><td colspan="3">Alternative Route 2</td></tr>
<tr><td>Description</td><td>Lat (DDMMSS)</td><td>Long (DDMMSS)</td></tr>
<tr><td>In the Reservoir to WTP connection alternative (hereafter referred to as Alternative 2), the proposed pipeline as with Alternative 1, will connect at the reservoir, be routed immediately south of the reservoir, route immediately South of the Southern Cooling Towers, and join the WTP (Figure 9).

Alternative 2 is approximately 2.510 km in length and the whole pipeline will be below ground (buried).</td><td>25°57'30.145”</td><td>29°19'54.762"</td></tr>
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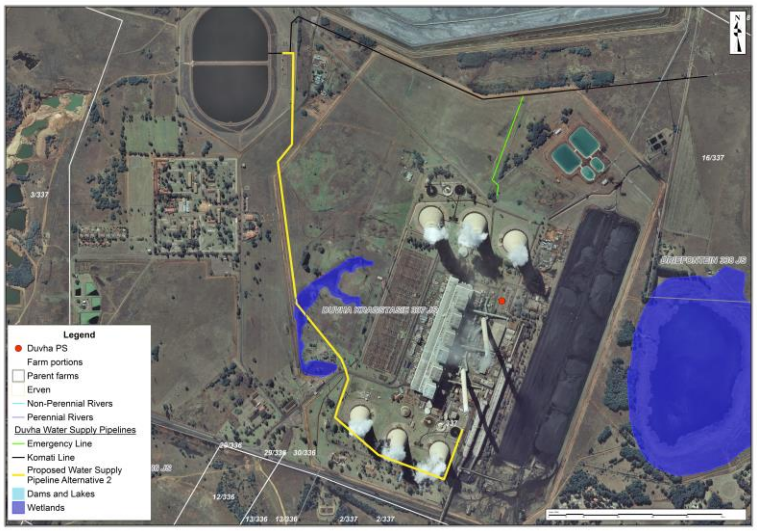

Figure 9: Location of Alternative Route 2

Alternative 3 (N/A)		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative S1 (preferred)		
• Starting point of the activity	25°56'59.595"	29°19'53.3726"E
• Middle/Additional point of the activity	25°57'19.2836"	29°20'26.3368"E
• End point of the activity	25°57'50.4364"	29°20'21.8252"E
Alternative S2 (if any)		
• Starting point of the activity	25°56'59.595"	29°19'53.3726"E
• Middle/Additional point of the activity	25°57'30.1454"	29°19'54.7617"E
• End point of the activity	25°57'52.4326"	29°20'21.2131"E
Alternative S3 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

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

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

b) Lay-out alternatives

None.

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

None.

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

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

Alternative 1 (preferred alternative): N/A
Alternative 2: N/A
Alternative 3: N/A

e) No-go alternative

The no-go option means that the Duvha Power Station will continue to make use of the Komati Water via the existing Komati pipeline until the scheduled outage. This would put the supply of the Komati Water to the Duvha Power Station at risk. This option has been included in the impact assessment.

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:	**Size of the activity:**
Alternative A1[1] (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or, for linear activities:

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

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	2 285 m
Alternative A2 (if any)	2 510 m
Alternative A3 (if any)	m

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

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	2 285 m^2
Alternative A2 (if any)	2 510 m^2
Alternative A3 (if any)	m^2

4. SITE ACCESS

Does ready access to the site exist?	YES X	NO
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

The current existing road network is sufficient to provide access to the construction site. No additional temporary or permanent access roads are planned.

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

5. LOCALITY MAP

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

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

6. LAYOUT/ROUTE PLAN

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

The site or route plans must indicate the following:

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

7. SENSITIVITY MAP

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

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

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

8. SITE PHOTOGRAPHS

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

9. FACILITY ILLUSTRATION

Not Applicable

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

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES X	NO	Please explain
The land use rights on the property are held by Eskom Holdings SOC Ltd for the construction and operation of the Duvha Power Station. The proposed pipeline will be part of Duvha Power Station operations.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO X	Please explain
The proposed pipeline will be located within, and will form part of, the existing Duvha Power Station property and will not have any bearing on the Provincial Spatial Development Framework (PSDF).			
(b) Urban edge / Edge of Built environment for the area	YES	NO X	Please explain
The proposed pipeline will be located outside the urban edge/edge of built up environment, within the already developed precinct of Duvha Power Station.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO X	Please explain
The proposed pipeline will not compromise the integrity of the existing approved and credible municipal IDP and SDF as it will be located mostly within Duvha Power Station precinct.			
(d) Approved Structure Plan of the Municipality	YES	NO X	Please explain
The proposed pipeline will be located within the already developed Duvha Power Station precinct and will have no bearing on the approved Structure Plan of Emalahleni Local Municipality.			

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES X	NO	Please explain

According to the Environmental Management Framework that was developed for the Olifants and Letaba River Catchments (the Olifants and Letaba River Environmental Management Framework (OLEFM), the project area is situated within Environmental Management Zone A: Highveld/Energy Hub Area.

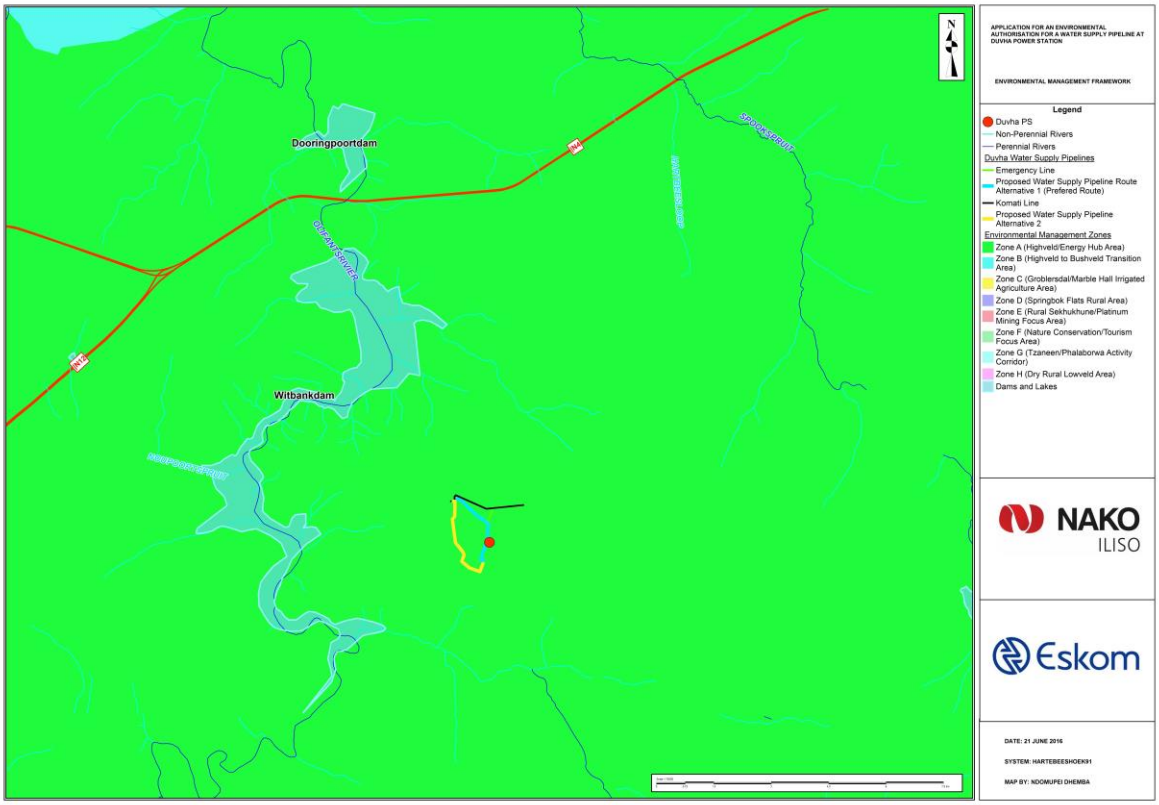

Figure 10: OLEMF in relation to the project

The OLEMF states that the EMZ is characterised by an over allocation of the water resources. The mining activities, industrial activities and power stations have a large negative impact on the natural environment, especially air and water quality. The poorly functioning municipal sewage treatment plants are of concern as this also contributes to the degradation of water quality and river health. The zone also contains drought prone areas. There is very little natural habitat remaining within this zone. Remaining pans and wetlands are important refuges for natural life and should be protected if possible.

Alternative 1 will not impact any water resources and wetlands. Alternative 2 will impact an artificial wetland. According to the wetland delineation studies conducted for the area, the wetland is of low ecological importance and sensitivity. Construction related activities would therefore have a low impact on this habitat unit, since ongoing disturbance is present within the surrounding areas of the study area. No significant impact is anticipated should the development proceed. However, to prevent unnecessary impacts to the wetland habitat unit, pipeline alternative 1 (preferred alternative) is supported from an ecological perspective. The mitigation measures identified in the accompanying EMPr are deemed adequate to minimise or avoid impacts that the project may have on the wetland feature.

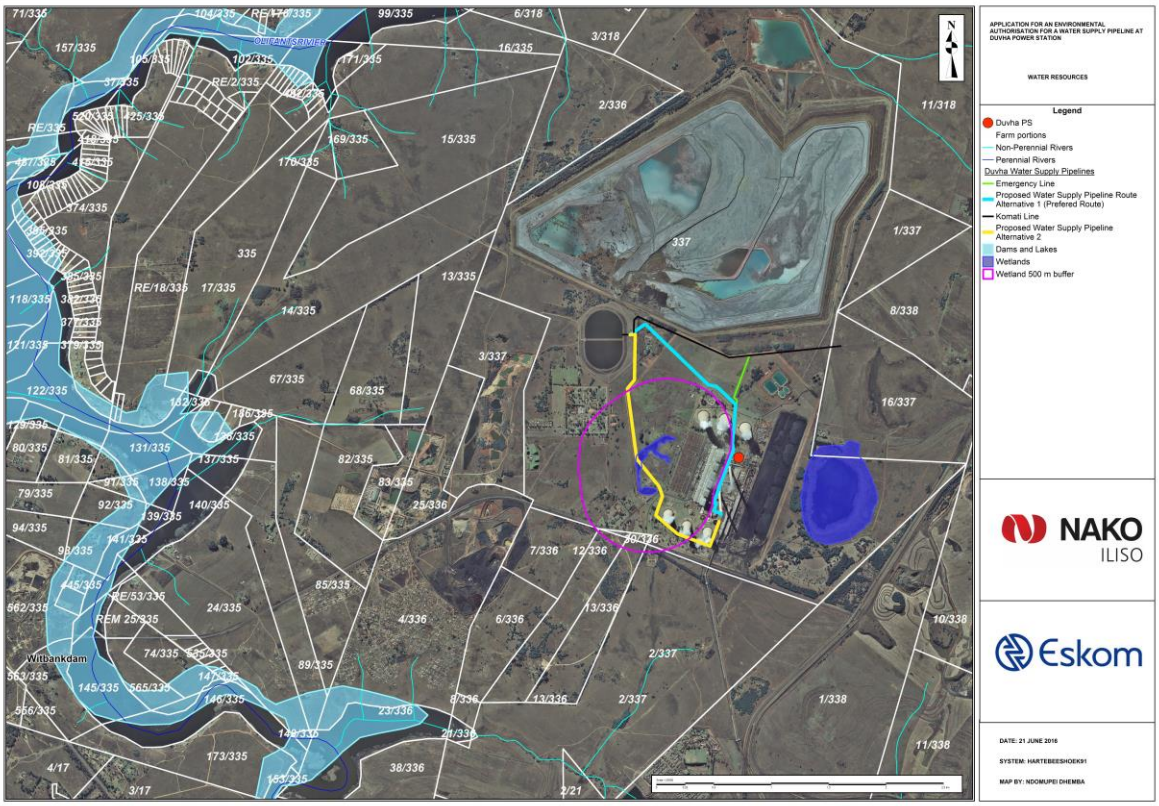

Figure 11: Wetlands in the study area

(f) Any other Plans (e.g. Guide Plan)	YES	NO X	Please explain
None. The proposed pipeline will be located within the Duvha Power Station property and will have no bearing on any other plans.			
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 X	NO	Please explain
The project will contribute towards the key focus areas that were developed for the Emalahleni Local Municipality as per national Key Performance Areas. The focus area that the project will contribute towards is Service Delivery and Infrastructure Development. Construction of the pipeline will enable the outage of the old and fragile Komati pipeline, without interrupting the supply of water and processes at the Duvha Power Station, which supplies 3 600 MW of power to South Africa.			
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 X	NO	Please explain
The pipeline will be located at Duvha Power Station and is required to ensure uninterrupted supply of water for its processes, which will ensure that Duvha Power Station's contribution to the power grid is not interrupted during the scheduled outage.			

5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES X	NO	Please explain
No additional capacity will be required for the project.			
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO X	Please explain
The proposed pipeline will not have any impact on the infrastructure planning of the Emalahleni Local Municipality as the proposed pipeline will be located within the Duvha Power Station property.			
7. Is this project part of a national programme to address an issue of national concern or importance?	YES X	NO	Please explain
The project indirectly forms part of the Integrated National Electrification Programme (INEP) which was established by the Government in 2001/02 to address backlogs of households in line with Energy White Paper (1998) which placed emphasis on household access to adequate energy services for cooking, heating, lighting and communication. The main goal of the INEP is to ensure universal access to electricity in South Africa. The construction of the pipeline will enable the outage of the old and fragile Komati pipeline, without interrupting the supply of water to Duvha Power Station, which contributes 3 600 MW of power to South African power grid.			
8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES X	NO	Please explain
The proposed pipeline will be located within the boundaries of the Duvha Power Station therefore the current location is deemed to be the best location.			
9. Is the development the best practicable environmental option for this land/site?	YES X	NO	Please explain
The proposed pipeline will be located within the boundaries of Duvha Power Station and will impact on areas that have already been affected by the Power Station and its associated infrastructure.			

10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES X	NO	Please explain
The impact assessment conducted for the application showed that the benefits (continued uninterrupted supply of water to Duvha Power Station) outweighs the possible negative impacts identified. The assessment determined that the main negative impacts would be on biodiversity in terms of loss of vegetation and faunal and floral species of conservation concern. Alternative 2 is associated with an artificial wetland. The assessment showed that most of the identified possible negative impacts can be mitigated to ***low*** and ***very low*** significance.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO X	Please explain
Development will take place on an already developed area, within the boundaries of the Duvha Power Station.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO X	Please explain
The proposed pipeline will be constructed within the boundaries of Duvha Power Station, which is owned by the applicant (Eskom Holdings SOC Ltd), thus no person's rights will be negatively affected by the proposed project.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO X	Please explain
It is not expected that the activity will compromise the urban edge as the proposed pipeline will be located outside the urban edge. Although development is encouraged inside the urban edges, the pipeline will be located in an already developed Duvha Power Station precinct.			

14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES X	NO	Please explain

SIP 18: Water and sanitation infrastructure

The purpose of the proposed pipeline is to ensure continued supply of non-potable water to Duvha Power Station. The activity contributes towards SIP 18: **Water and sanitation infrastructure**. One of the key focus areas of SIP 18 is on ensuring improvement of water service delivery countrywide. The projects that have been earmarked under this SIP are for the provision of new infrastructure, rehabilitation and upgrade of existing infrastructure which includes:

- Development of water resources;
- Potable water supply;
- Non-potable water distribution;
- Collection of water-borne sewage;
- Waste water treatment; and
- On-site sanitation.

The activity also indirectly contributes to the energy SIPs 9 (**electricity generation to support socioeconomic development**) and 10 (**electricity transmission and distribution for all**) which are aimed at ensuring generation of electricity to meet the needs of the economy and address historical imbalances as well as expanding the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. The construction of the pipeline will ensure provision of water to the Duvha Power Station for its processes and will ensure the uninterrupted supply of electricity to the grid.

15. What will the benefits be to society in general and to the local communities?	Please explain
Society and local communities will benefit from the continued and uninterrupted supply of water to the Duvha Power Station as this will allow the power station to continue supplying electricity. The proposed project will also result in employment and technical skills transfer to the local communities during the construction phase. During the **planning and design phase**, a number of local and non-local consultants such as engineers, environmental practitioners, development economists, etc. have been employed to do design, preliminary assessments and planning for the proposed pipeline. In additional to employment, the proposed development also holds the potential for skills transfer. With an increase in employment, a definite transfer of skills will result. Skills development is a requisite for human resource development, and will have a lasting impact on the economy. This impact is essentially relevant to the following phases: planning, construction, operation, and system reconfiguration. During the construction phase**,** the project has the potential to have a positive impact on economic activity in the local area, region, province, and possibly nationally (depending on the location of the contractors). Estimates indicate that a total of approximately R 5.9 million will be spent on the entire construction phase representing a low investment. Nonetheless, over and above the originally invested money during the construction phase, additional revenue would be generated due to the multiplier effect in the different sectors of the economy. The local area and its activities (businesses and shops, etc.) are also expected to be stimulated economically, due to the increased spending expected from the increased salaries and wages paid to employees during construction. All of this will have a positive impact due to the increased direct employment by construction contractors, as well as stimulation of local businesses and informal traders.	
16. Any other need and desirability considerations related to the proposed activity?	Please explain
None	

17. How does the project fit into the National Development Plan for 2030?	Please explain
The National Development Plan (NDP) offers a long-term perspective. It defines a desired destination and identifies the role different sectors of society need to play in reaching that goal. The NDP aims to eliminate poverty and reduce inequality by 2030. According to the plan, South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society. The main aims of the NDP for 2030 are to eliminate income poverty and to reduce inequality. One of the enabling milestones that will allow the Government of South Africa fulfil the aims of the NDP for 2030 is the production of sufficient energy to support industry at competitive prices, ensuring access for poor households, while reducing carbon emissions per power by about one-third. The National Development Plan (NDP) envisages that by 2030 South Africa will have an adequate supply of electricity and liquid fuels to ensure that economic activity and welfare are not disrupted, and that at least 95% of the population will have access to grid or off-grid electricity. The continued supply of water to Duvha Power Station for its processes will ensure that the power station will continue contributing to the South African electricity grid and will ensure that the Government fulfils the aims of the NDP for 2030.	
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 24 of NEMA have been taken into account.	
The proposed project has been undertaken according to section 24 of the National Environmental Management Act (NEMA) (No 107 of 1998) and the following aspects have been considered: • An Application for the Environmental Authorisation was lodged to the Department of Environmental Affairs in April 2016; • Potential environmental impacts and risks associated with the project have been identified and assessed according to their significance; • The Interested and Affected Parties (I&APs) were consulted from the onset and throughout the Basic Assessment process; and • The principles of NEMA such as the "polluter pays principle" and Section 28 of the NEMA "Duty of Care have also been considered within the Environmental Management Programme (EMPr) for the project, where Eskom Holdings (the applicant) and its appointed Contractors will be responsible for avoiding negative impacts and where not possible, mitigating or rectifying any damages caused in the environment.	
19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.	
The proposed project has been assessed against the requirements of sustainable development and the need to place people and their needs at the forefront of environmental management. The Basic Assessment process sought to enhance the benefits of the project and the Public Participation Process (PPP) was inclusive and comments from Interested And Affected Parties (I&APs) were taken into account.	

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, 1998 (Act No, 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014, as corrected.	The project triggers NEMA listed activity	National Department of Environmental Affairs	2014
Integrated Environmental Management Guideline Series (Guideline 7) - Public Participation in the Environmental Impact Assessment Process	Used in the PPP	National Department Of Environmental Affairs	2014
Environmental Impact Assessment Regulations, GNR 983	Used in conducting the basic assessment process	National Department Of Environmental Affairs	2014
IDP (2013/2014) for Emalahleni	Directly relates to the proposed land use	Emalahleni LM	2009
Spatial Development Framework for Emalahleni	Directly relates to the proposed land use	Emalahleni LM	2011
Olifants-Letaba River Environmental Management Framework (OLEMF)	Directly relates to the proposed land use	Mpumalanga Provincial Government	2011

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES X	NO
If YES, what estimated quantity will be produced per month?	950 m^3	

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

The concrete and PVC waste from the dismantling of the emergency pipeline will be disposed of at a suitable licenced site.

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

Waste will be disposed of at the Middelburg general waste site.

Will the activity produce solid waste during its operational phase?	YES	NO X
If YES, what estimated quantity will be produced per month?	N/A	

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

N/A

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)?

N/A

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

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	YES	NO X

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

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	NO X

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

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO X
If YES, what estimated quantity will be produced per month?		m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO X

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	NO X

If YES, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		**Cell:**	
E-mail:		**Fax:**	

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

N/A

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?	YES	NO X
If YES, is it controlled by any legislation of any sphere of government? N/A	YES	NO X

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:

During construction, there will be particulate emissions (dust) related to debris handling; truck transport; materials storage, handling and transfer; open areas (windblown emissions). Gas emissions are also expected to occur due to vehicle and construction equipment activity (exhaust fumes).These impacts, however, can be mitigated and managed to acceptable levels, with a post mitigation impact that is not significant.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	YES	NO X

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

e) Generation of noise

Will the activity generate noise?	YES X	NO
If YES, is it controlled by any legislation of any sphere of government?	YES	NO X

Describe the noise in terms of type and level:

The proposed project will result in the production of construction related noise from construction vehicles and machineries which may cause a nuisance to people living in the vicinity of the project area. However the implementation of appropriate mitigation measures would reduce the noise levels to remain within applicable and acceptable SANS levels (SANS 10103:2008). Occupational health and safety standards will apply.

13. WATER USE

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

Approximately 100 m^3 of water will be required for concrete mixing and for pipe supports. The water required for construction will be transported to the area via tanker trucks. The required water will be sourced from the WTP at the power station.

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

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	N/A	
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	YES	NO X
If YES, please provide proof that the application has been submitted to the Department of Water Affairs.		

14. ENERGY EFFICIENCY

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

The appointed Contractor will be advised to transport all construction materials on site at the same time where possible and the collection of waste materials will be conducted simultaneously with other activities to reduce the amount of fuel usage for such transportation.

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

Diesel fuel will be used on site instead of electricity.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. 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): [ ]

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

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

YES	NO
X	

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	Mpumalanga
District Municipality	Nkangala District Municipality	
Local Municipality	Emalahleni Local Municipality (MP312)	Emalahleni Loc
Ward Number(s)	19	25, 26 and 27
Farm name and number	Duvha Kragstasie 337 JS	
Portion number	Remainder (Portion 0) of Farm Duvha Kragstasie 337 JS	
SG Code	T0JS00000000033700000	

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:

Power Station

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

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

YES	NO
	X

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

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

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

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

5. SURFACE WATER

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

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

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

There are several non-perennial rivers that traverse properties adjacent to the affected farm. There are no rivers or streams located on the affected property (**Figure 12**).

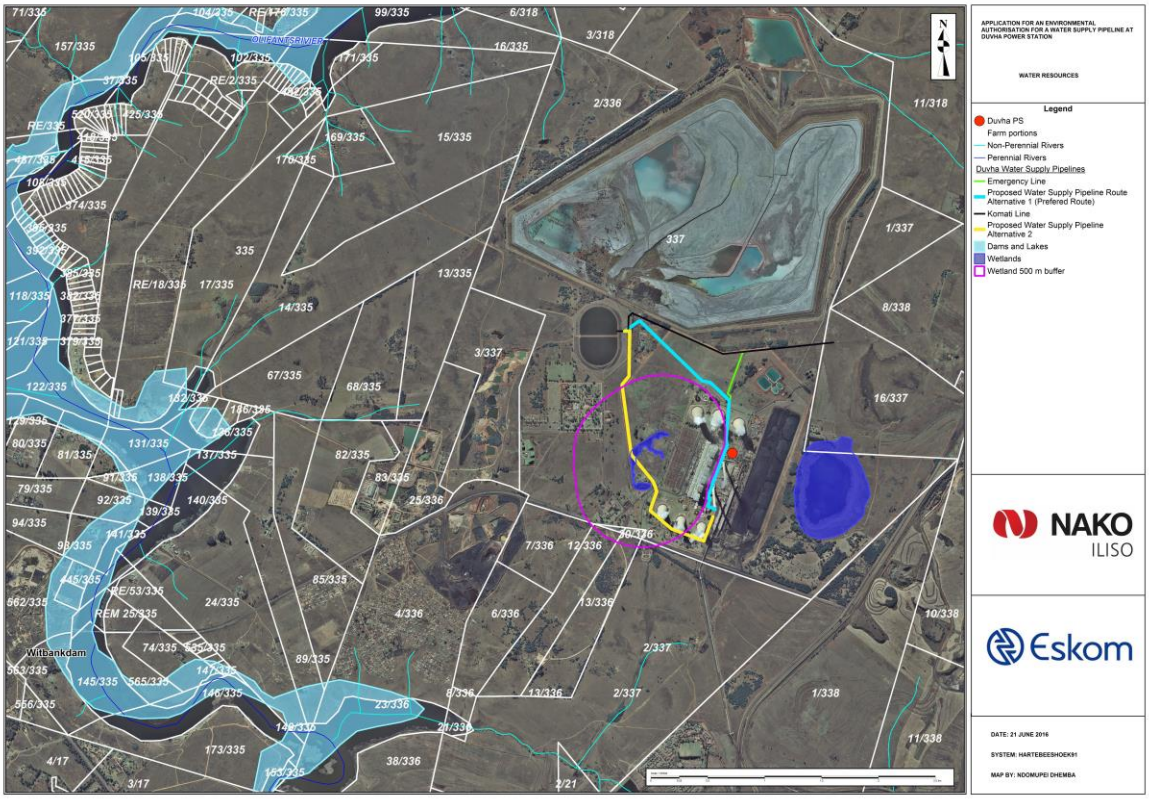

Figure 12: Water courses in the project area

A wetland delineation study was conducted by SAS Environmental Consultants. The study found that Alternative Route 1 does not affect any wetlands. Alternative Route 2 will cross an artificial wetland as shown in **Figure 13**.

Figure 13: Wetlands in the project area

Figure 14: Representative photograph of the artificial wetland traversed by alternative 2.

According to the wetland assessment and delineation:

- The artificial wetland was formed as a result of altered topography associated with the construction of Duvha Power Station, which has led to localised ponding and the establishment of facultative and obligate wetland floral species. This feature was not considered to be a natural wetland as defined in the DWAF, 2005: "*A practical Guideline Procedure for the Identification and Delineation of Wetlands and Riparian Zones'*. As a result, the feature is not as fully functional as a natural wetland would be. Furthermore, due to its anthropogenic nature, it is inherently disturbed.
- The wetland was assigned the following scores:
  - Present Ecological Status (PES): PES Category: D: The feature has formed as a result of localised ponding due to topographic disturbances associated with the construction of Duvha Power Station. As a result, the feature is not as fully functional as a natural wetland would be. Furthermore, due to its anthropogenic nature, it is inherently disturbed (Scientific Aquatic Services (SAS), 2015)
  - Eco-service Provision: Moderately low: The artificial wetland feature obtained a moderately low score, as it is artificial and not as fully functional as a true wetland. This feature is most important in terms of Phosphate, Nitrate and Toxicant assimilation as well as being important in terms of carbon storage and biodiversity maintenance (SAS, 2015).
  - Recommended Ecological Category (REC): Category: D
  - Overall EIS: EIS Category: D Wetlands that are not ecologically important and sensitive at any scale. This wetland feature did not score a high importance in terms of diversity, habitat and wetland function as it is of anthropogenic origin and thus inherently disturbed (SAS, 2015).

The ecological and socio-cultural service provision graph for the artificial wetland is provided in **Figure 15**.

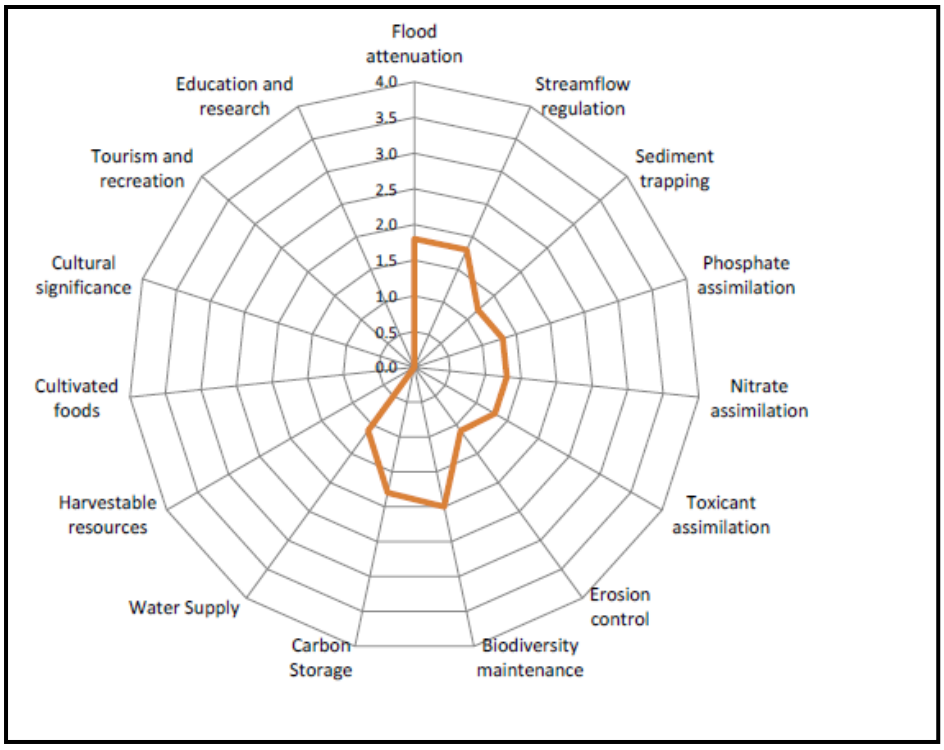

Figure 15: Ecological and socio-cultural service provision graph

6. LAND USE CHARACTER OF SURROUNDING AREA

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

Figure 16 shows the land use character of the area within 500m of the project area.

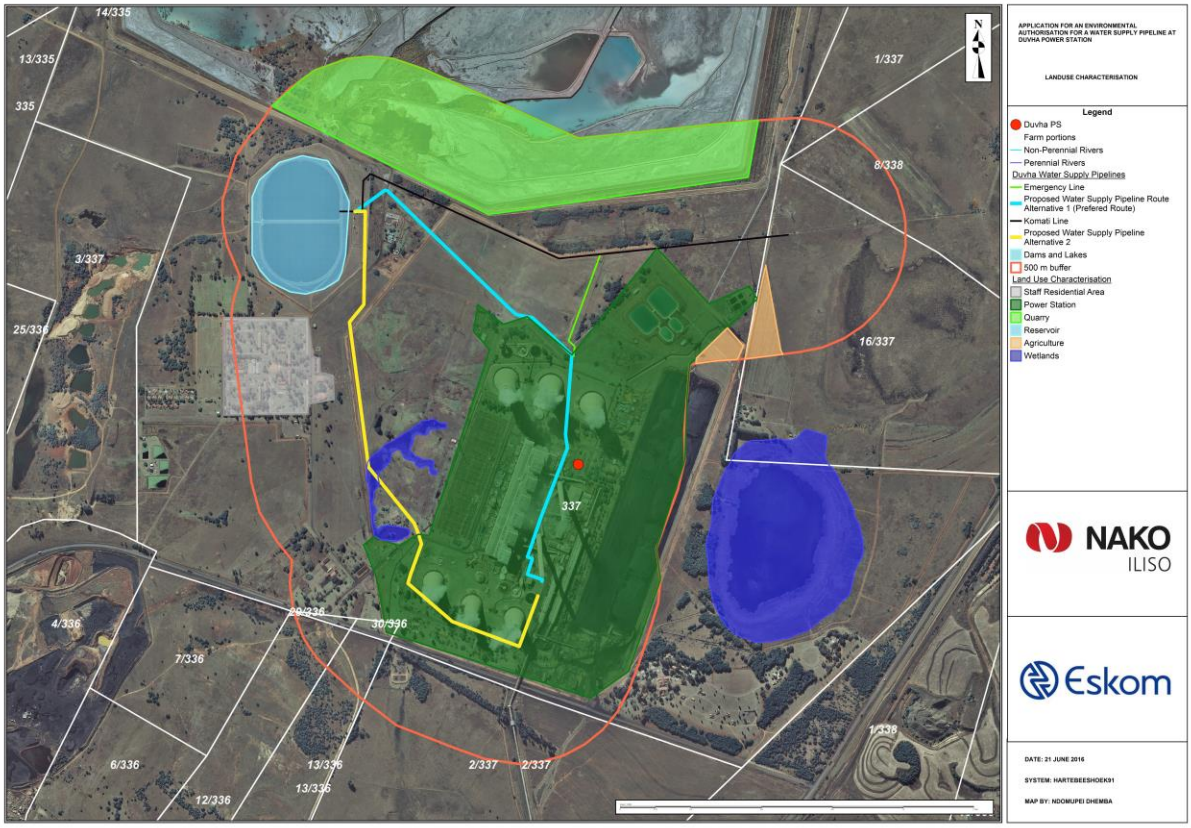

Figure 16: Land Use Characterisation of Areas within 500 m of the project area

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

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

N/A

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

N/A

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

N/A

Does the proposed site (including any alternative sites) fall within any of the following:
Please see **Figure 17**.

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

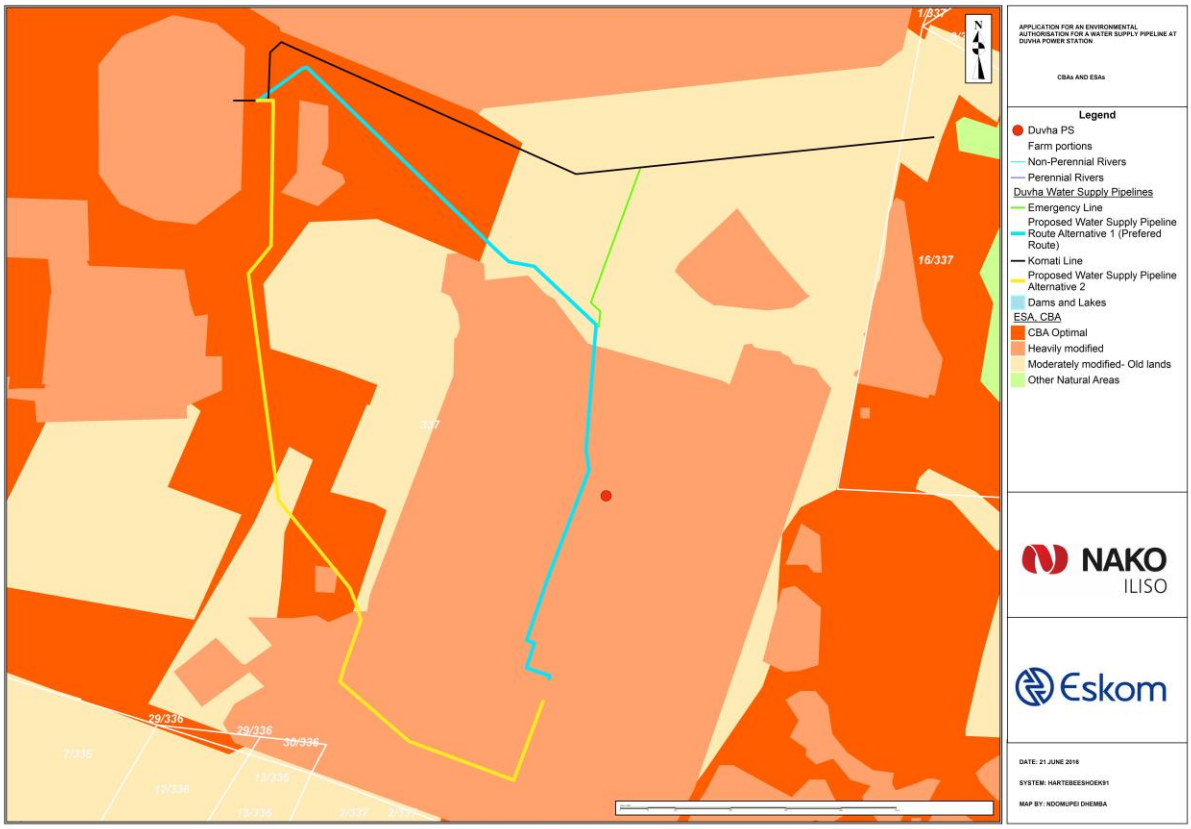

Figure 17: Conservation Plan Areas affected by the project

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

7. CULTURAL/HISTORICAL FEATURES

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

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:

A specialist investigation conducted by Dr Johnny van Schalkwyk on the same property as part of the Environmental Impact Assessment for the proposed Solar Photovoltaic (PV) Power Plant at Duvha found that there are no culturally or historically significant elements in the project area. The specialist conducted a desktop assessment and confirmed that the area affected by the Duvha pipeline was included in the Solar PV Power Plant assessment. The letter of confirmation is included in **Appendix D**. **Table 1** provides a summary of identified heritage resources in the study area as follows:

Table 1: Summary of identified heritage resources in the study area

Identified heritage resources	
Category, according to NHRA	*Identification/Description*
Formal protections (NHRA)	
National heritage site (Section 27)	None
Provincial heritage site (Section 27)	None
Provisional protection (Section 29)	None
Place listed in heritage register (Section 30)	None
General protections (NHRA)	
structures older than 60 years (Section 34)	None
archaeological site or material (Section 35)	None
paleontological site or material (Section 35)	None
graves or burial grounds (Section 36)	None
public monuments or memorials (Section 37)	None
Other	
Any other heritage resources (describe)	None

The project therefore has no impact on any heritage resources.

Will any building or structure older than 60 years be affected in any way?	YES	NO X
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO X

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

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

Level of unemployment:

According to Statistics South Africa (StatsSA), Emalahleni Local Municipality (ELM) had 281 768 people within a working age in 2011. This number accounted for 77 % of the total working age population, from which approximately 138 500 were employed. Compared to South Africa's labour participation rate of over 55 %, the ELM labour participation rate was higher and equal to 68 %. Essentially, just under one third of the working age population in the ELM was non-economically active, a significant portion of whom were discouraged job seekers (19%). Of the economically active

population (190 662), 27 % were unemployed, which means that the unemployment rate in the municipality was lower than in the rest of the country. The number of unemployed people in the ELM, though, has been increasing since 1995 with a sharp rise in 2005, 2007, and 2011. Considering that the labour force participation rate in the ELM was greater than in South Africa, the lower unemployment rate indicates that the population of the ELM could be experiencing better socio-economic conditions compared to the rest of the country. This could also be as a result of labour in-migration in search of work in Emalahleni.

According to the IDP for Emalahleni the unemployment rates in 2011 were as follows:

- 27.3% (strict definition) in 2011: 52 114 unemployed as a percentage of the Economic Active Population (EAP) of 190 662. The IDP states that the 2011 unemployment rate had decreased from 38.4 % in 2001; and
- 37.1% for females, 20.8 % for males and 36.0% for youth.

Table 2 provides a summary of the labour indicators as provided in the Emalahleni IDP 2013/2014:

Table 2: Labour Indicators

Labour Indicators	Census (2001)	Census (2011)	Share of Nkangala's Figure (2011)	Ranking: Best (1) – Worst (18)
Economically Active Population (EAP)/Labour Force	124 371	190 662		
Number of employed	76 668	138 548	39.0%	
Number of unemployed	47 703	52 114	34.2%	
Unemployment rate (%)	38.4%	27.3%		8

Economic profile of local municipality:

The GDP-R contribution for Emalahleni between 2003 and 2013 increased from R15.8 billion to R50.3 billion. **Table 3** provides the GDP-R figures per year per area between 2003 and 2013.

Table 3: GDP-R (R billions) at current prices (2014 release), 2003-2013

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
South Africa	1155	1270	1401	1572	1792	2028	2180	2423	2635	2820	3030
Mpumalanga	78	85	93	105	119	143	155	172	189	205	213

Nkangala District	30	34	37	43	49	60	66	73	81	89	90
Emalahleni LM	15	17	19	22	25	33	35	40	45	50	50

Source: Quantec standardized regional data, 2011, Stats SA Census 2001 and Kayamandi calculations

Table 4 shows the average annual growth rates per region between 2003 and 2013. It can be highlighted that the ELM is experiencing a slightly lower growth rate than the other regions, with 2.6 % average growth per annum while the Province and South Africa are experiencing 2.8 %; and 3.4 % average annual growth respectively.

Table 4: Average annual GDP-R growth (at constant 2005 prices), 2003-2013

GEOGRAPHY	Average annual growth rate (2003-2013)
South Africa	3.4%
Mpumalanga	2.8%
Nkangala District	2.6%
Emalahleni LM	2.6%

Source: Quantec standardized regional data, 2011 and Kayamandi calculations.

Table 5 provides an indication of the sectoral distribution of GDP-R and **Figure 18** indicates the GDP-R distribution per sector for the ELM. Both show that in Emalahleni, the Nkangala District and the Mpumalanga Province, mining and manufacturing have the strongest GDP-R percentages. The government services sector in the ELM is particularly lower than in the other regions. This highlights that the local economy is fairly strong as government services play a smaller role in sustaining the economy through job creation in the public sector. The weakest sector in the ELM is the agriculture sector.

Table 5: Percentage GDP-R distribution by sector at current prices, 2013

SECTOR		South Africa	Mpumalanga	Nkangala DM	ELM
Primary sector	Agriculture	2%	3%	1%	1%
	Mining	9%	30%	40%	52%
Secondary sector	Manufacturing	11%	11%	10%	8%
	Utilities	3%	7%	9%	10%
	Construction	4%	2%	3%	2%
Tertiary sector	Trade	17%	12%	8%	7%
	Transport	9%	8%	9%	6%
	Business	22%	11%	9%	5%
	Government and community services	23%	16%	11%	9%
Total		100%	100%	100%	100%

Source: Quantec standardized regional data, 2011, Stats SA Census 2001 and Kayamandi calculations

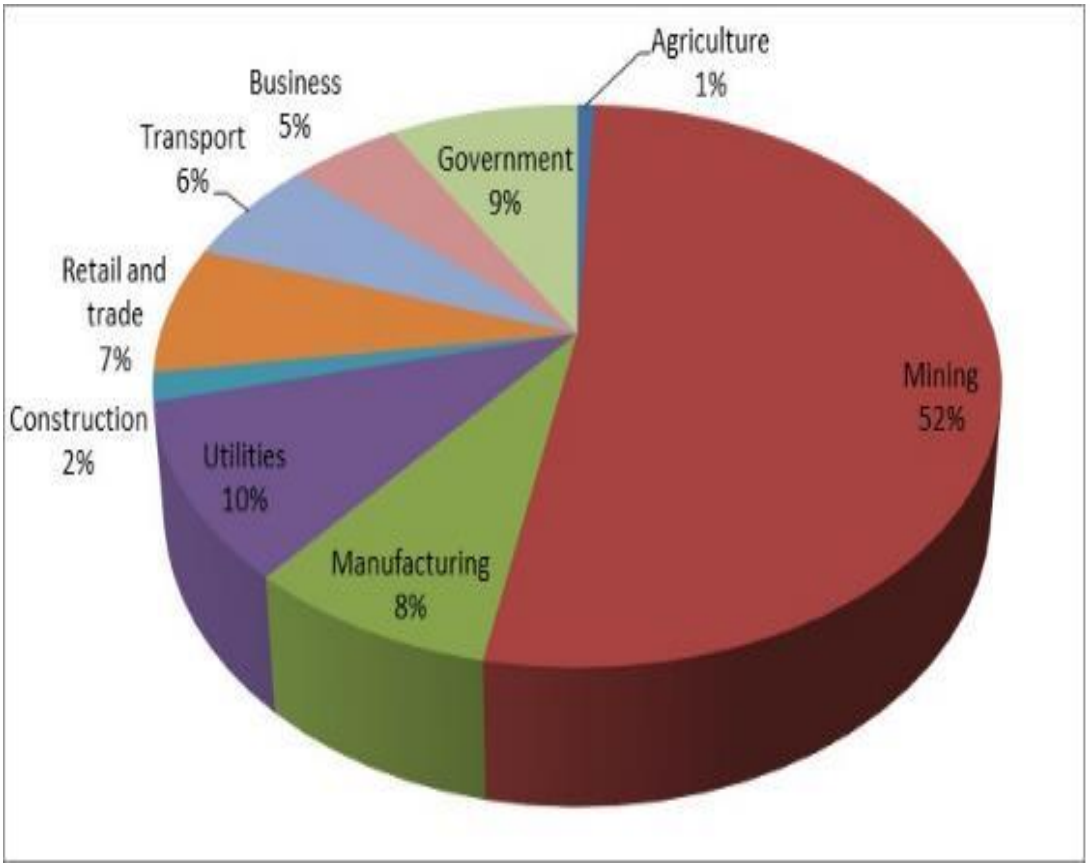

Figure 18: Sectoral GDP-R distribution at current prices for Emalahleni LM, 2013

Level of education:

Table 6 provides an indication of the level of education as recorded in 2011 and reveals that approximately a third of the population aged 20 years and older that reside within Emalahleni have a matric qualification or higher. This is slightly higher than the average for the District, Province and the rest of the country. In addition to this, only 5 % of the population aged 20 years and older in the ELM have no schooling, compared to 9 % for the District, and 10 % for the Province.

Table 6: Level of education of population aged 20 years and older, 2011

GEOGRAPHY	LEVEL OF EDUCATION						TOTAL
	No schooling	Some primary	Complete primary	Some secondary	Grade 12/std 10	Higher	
South Africa	7%	26%	5%	32%	22%	8%	100%
Mpumalanga	10%	27%	5%	31%	21%	6%	100%
Nkangala District	9%	25%	5%	32%	22%	7%	100%
Emalahleni LM	5%	21%	5%	34%	25%	10%	100%
Masakhane SP	8%	22%	6%	38%	24%	2%	100%

The IDP shows that the levels of education in the municipality had improved between 2001 and 2011. The functional literacy rate (15+ with grade 7+) is also improving and is currently the highest in the Mpumalanga Province. The matric pass rate in 2012 was estimated to be 72.0% - 7th highest in province. **Figure 19** provides a summary of the highest levels of education for the Emalahleni Local Municipality.

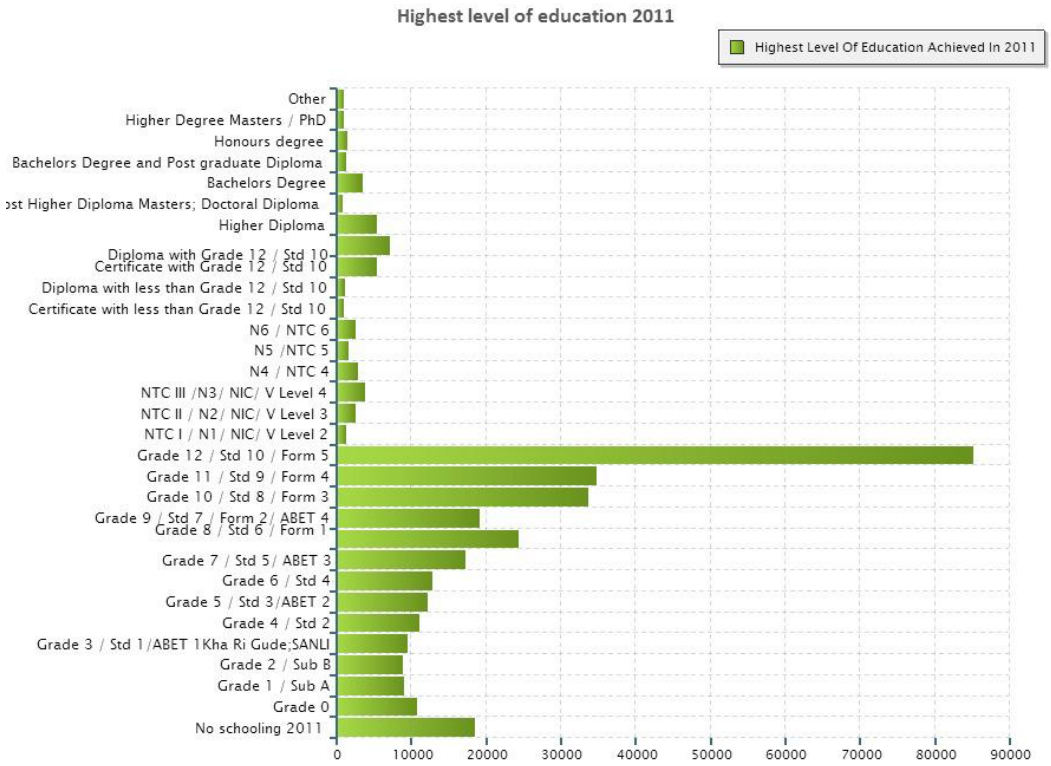

Figure 19: Highest Level of education

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 5 970 700
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown. The proposed project is indirectly linked to the production of electricity. Duvha Power Station is a coal fired power station contributing 3 600 MW to the South African power grid.
Will the activity contribute to service infrastructure?	YES / NO X
Is the activity a public amenity?	YES / NO X

How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Estimated 10 part time employment at semi-skilled/ unskilled level
What is the expected value of the employment opportunities during the development and construction phase?	Approximately R1 000 000
What percentage of this will accrue to previously disadvantaged individuals?	50%
How many permanent new employment opportunities will be created during the operational phase of the activity?	N/A. The pipeline will be operated and maintained by staff at Duvha Power Station.
What is the expected current value of the employment opportunities during the first 10 years?	R 0.00
What percentage of this will accrue to previously disadvantaged individuals?	N/A

9. BIODIVERSITY

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

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

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

Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	According to the Mpumalanga Biodiversity Sector Plan (MBSP): Terrestrial database, the project is located in an area classified Critical Biodiversity Areas: Optimal within the study area (**Figure 16**). The CBA Optimal Areas are areas optimally located to meet both various biodiversity targets and other criteria defined in the analysis. According to the MBSP: Freshwater database, the wetlands located in the study area are classified as ESA and ONA. **ESA Wetlands:** According to the MBSP, although the wetlands are not as FEPAs, these wetlands support the hydrological functioning of rivers, water tables and freshwater biodiversity, as well as providing a host of ecosystem services through the ecological infrastructure that they provide. **Other Natural Areas:** The MBSP describes these wetland areas as areas that have not been identified as priority in the current systematic biodiversity plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructural functions.

According to the MBSP terrestrial database other sections of the areas affected by the proposed pipeline and alternative are classified as follows:

- Heavily Modified Areas: areas that are modified to such an extent that any valuable biological and ecological functions have been lost; and
- Moderately Modified Old Lands: old cultivated lands that have been allowed to recover (within the last 80 years), and support some natural vegetation. Although biodiversity pattern and ecological functioning may have been compromised, the areas may still play a role in supporting biodiversity and providing ecosystem services.

Figure 20 shows the classification of the areas affected by the proposed pipeline alternatives in terms of the MBSP: Terrestrial database.

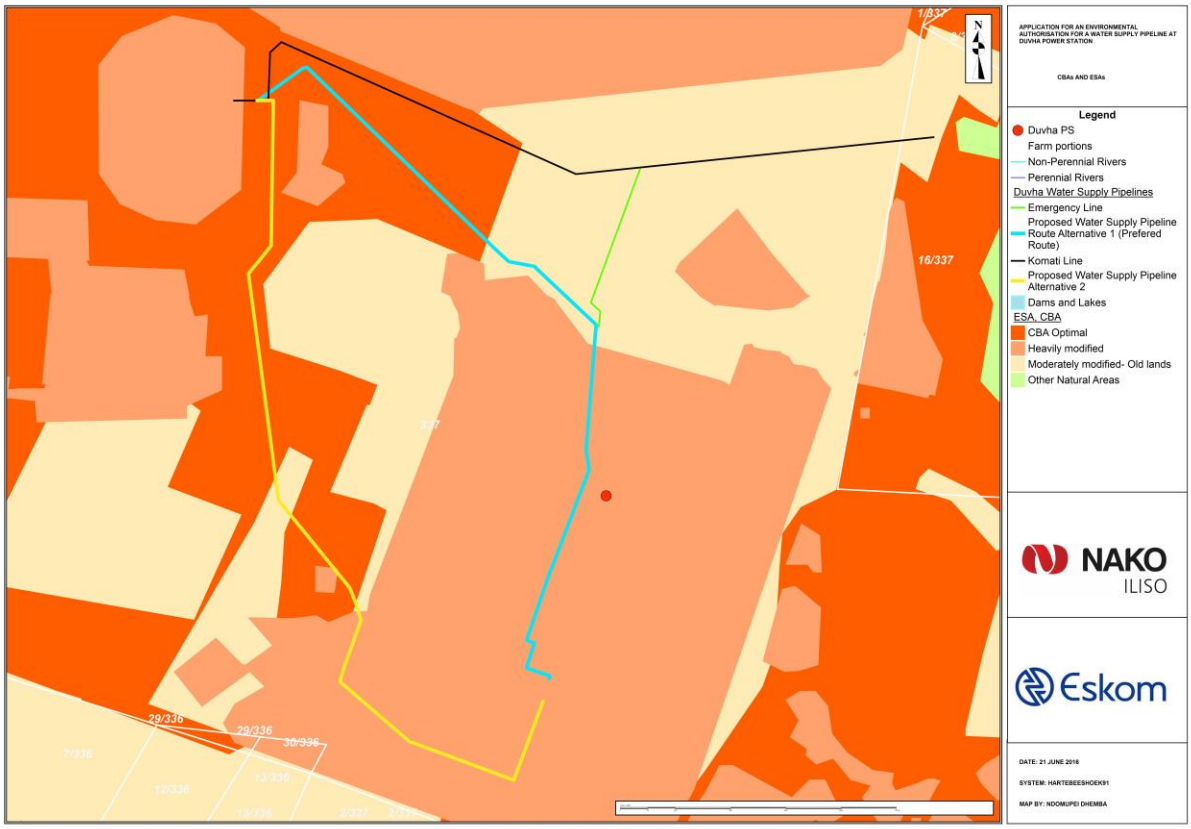

Figure 20: Systematic biodiversity planning categories in terms of the MBSP

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	0%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	
Degraded (includes areas heavily invaded by alien plants)	5 %	The wetland habitat unit comprises an artificial wetland which formed as a result of altered topography associated with the construction of Duvha Power Station and has been affected by edge effects from the power station, road construction, historic agriculture and general anthropogenic activities, which has negatively affected the habitat integrity of this system. The floral diversity within the wetland habitat unit is low and limited to species such as *Juncus effusus, Cyperus*

		rupestris, Eragrostis plana, and *Hyparrhenia tamba*.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	95 %	The transformed habitat unit is considered to be in a modified ecological condition, with significantly high levels of transformation (historic agricultural activities, vegetation cleared/ mowed as part of maintenance activities around the power station, and buildings associated with Eskom Duvha Power station). In addition, significant alien proliferation has taken place due to soil disturbance, overgrazing and encroachment by *Datura ferox* and *D. stramonium.* Transformation has occurred within the transformed habitat unit to the degree that secondary grassland conditions prevail and alien and invader species abundance is high.

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

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

According to the SANBI data, the project area is situated within an area with ecosystems that are classified as Vulnerable. A section of Alternative 2 will affect an artificial wetland. Alternative 1 (preferred alternative) does not impact any wetlands (**Figure 21**).

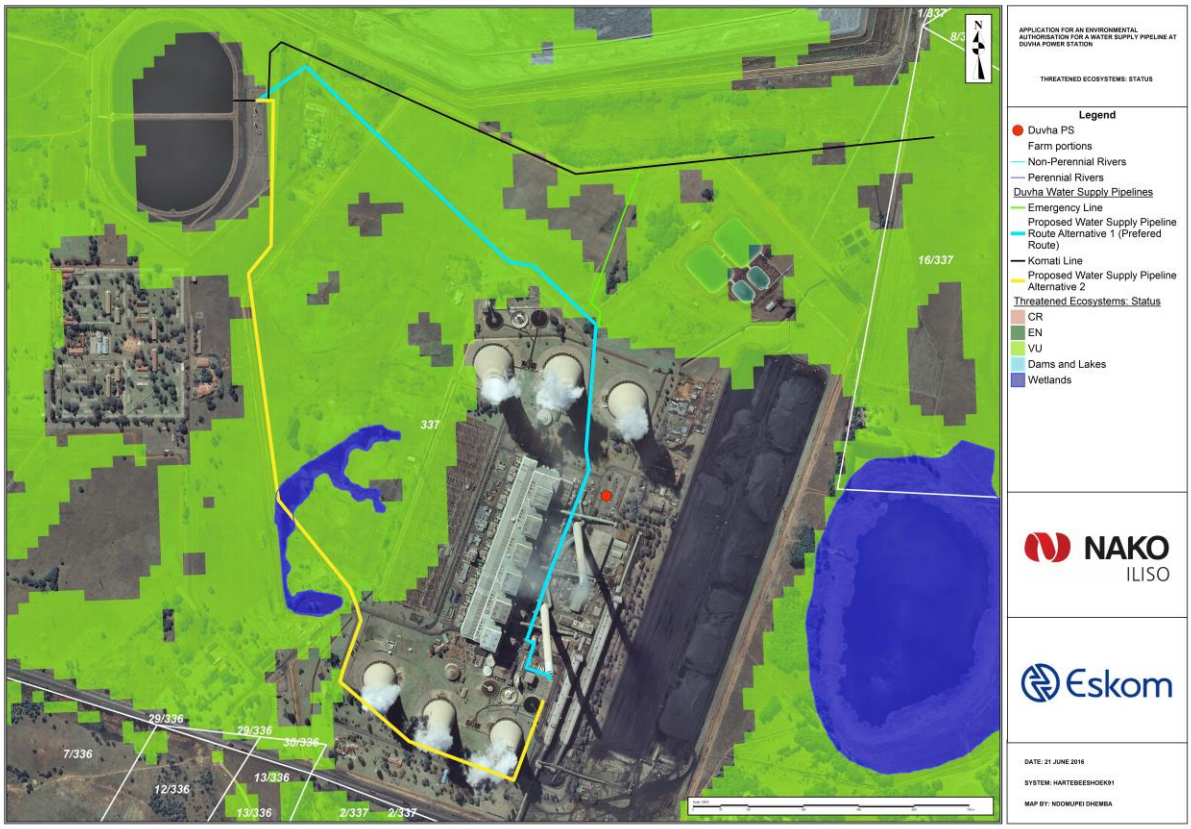

Figure 21: Threatened Terrestrial Ecosystem Status

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)

According to Mucina and Rutherford (2006), the proposed project is situated within the Eastern and Rand Highveld Grasslands (**Figure 22**). Both Eastern Highveld and the Rand Highveld Grasslands are considered to be vulnerable as shown in **Figure 21**.

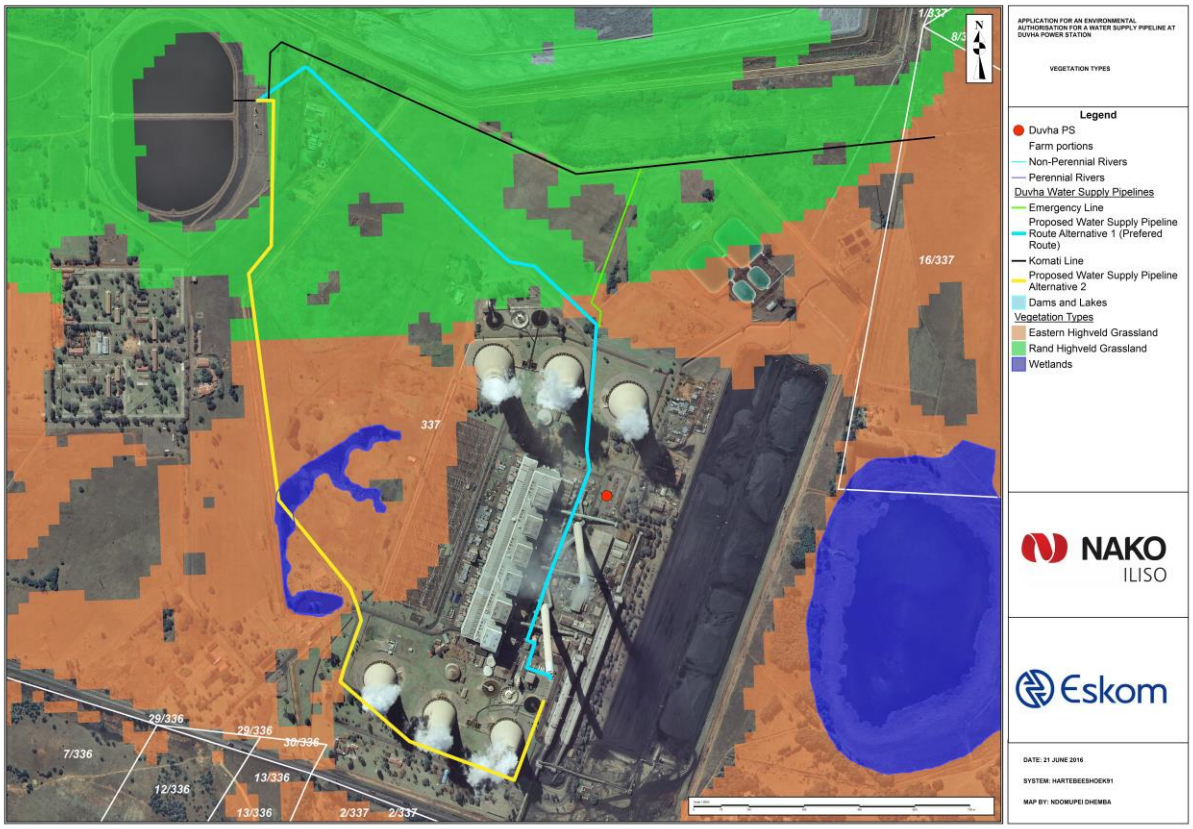

Figure 22: Vegetation Types in the study area

An ecological study conducted by SAS showed that there are two broad habitat units within the study area and immediate surrounds, namely transformed grasslands and wetlands. The majority of the study area is considered to be the transformed habitat unit, and the water pipeline alternative 2 traverses the wetland habitat unit. According to the ecological studies and wetland delineation, the following applies to the study area:

- Although both vegetation types are classified as endangered, limited vegetation representative of the vegetation types remains and the transformed habitat unit is dominated by floral species associated with disturbed areas. The wetland habitat unit has been affected to varying degrees by edge effects from the power station, road construction, historic agriculture and general anthropogenic activities, which have negatively affected the habitat integrity of this system.
- Habitat is severely transformed and dominated by alien species such as *Datura ferox*, *D. stramonium*, and *Bidens pilosa*, among other species within the transformed and wetland habitat units.
- The transformed habitat unit is characterised by low ecological functioning. Dominant grass species included *Cynodon dactylon*, *Paspalum notatum, Eragrostis plana* and *E. chloromelas*. These species are associated with transformation and usually grow in disturbed places such as old cultivated lands and along roadsides. In addition, the transformed habitat unit has a significant build-up of moribund material due to the natural burning regime, which significantly reduces forb diversity.

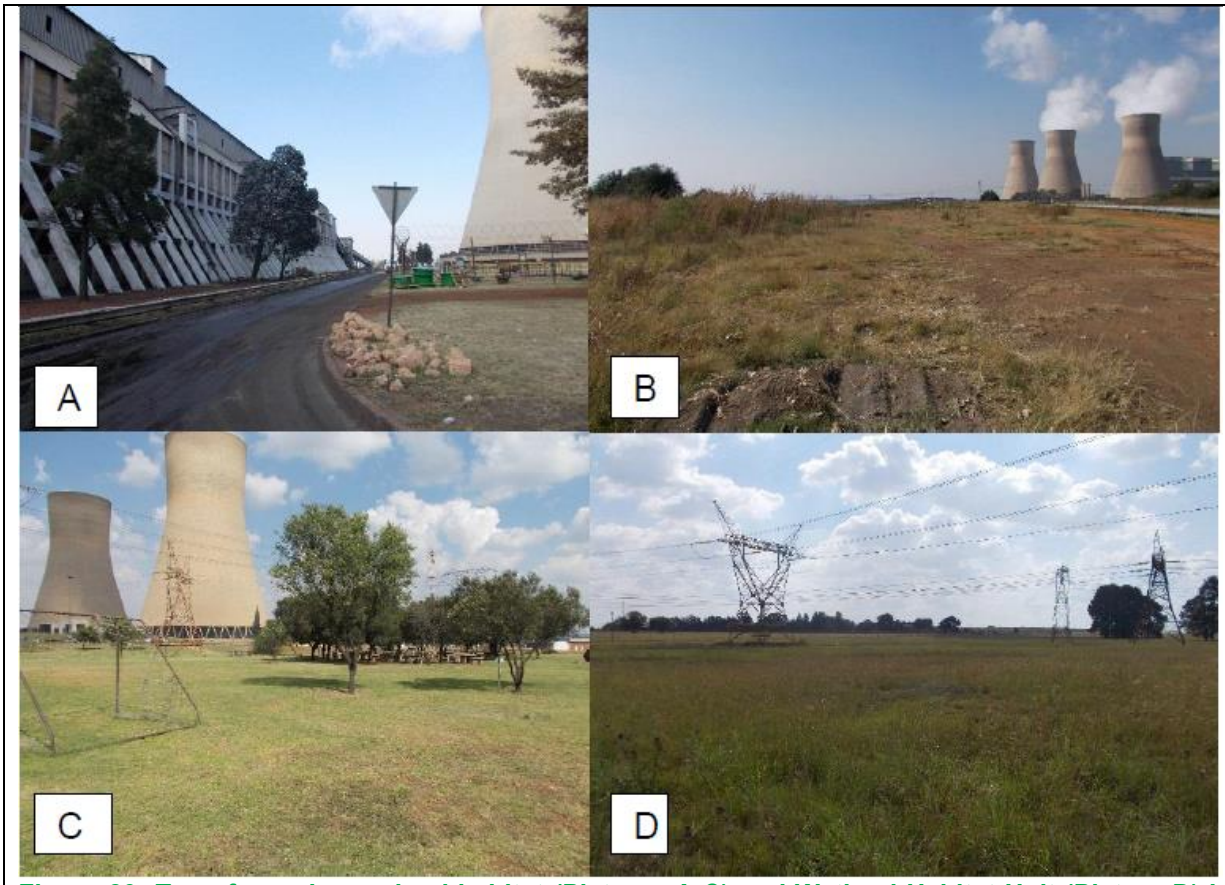

Figure 23: Transformed grassland habitat (Pictures A-C) and Wetland Habitat Unit (Picture D) in the study area

The floral habitat sensitivity graph is provided in **Figure 24**.

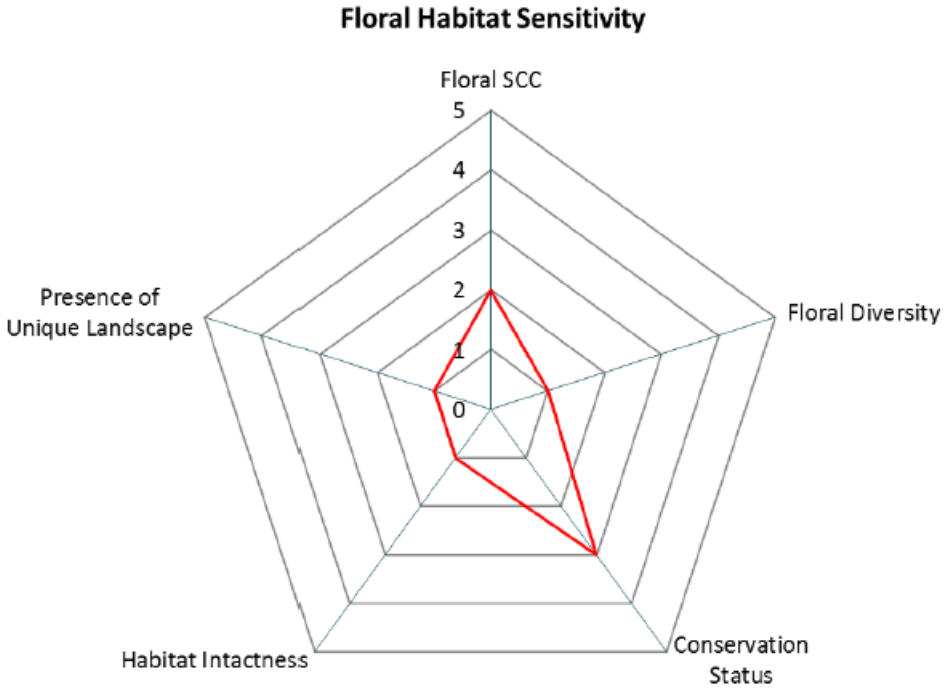

Figure 24: Floral habitat sensitivity graph

- Floral diversity was considered to be low for both habitat units. Although numerous floral species were encountered during the field assessment, alien and invasive species were dominant within the transformed habitat unit, due to historic agricultural activities and current anthropogenic activities such as edge effects from roads and power station infrastructure, vegetation clearing and encroachment by *Datura ferox* and *D. stramonium*. Transformation has occurred within the transformed habitat unit to the degree that secondary grassland conditions prevail and alien and invader species abundance is high. The floral diversity within the wetland habitat unit is low and limited to species such as *Juncus effusus, Cyperus rupestris, Eragrostis plana,* and *Hyparrhenia tamba.*
- Except for the anthropogenic wetland, no other unique landscapes were present, however the transformed habitat unit provided suitable habitat for the floral SCC *B. disticha*.
- One *Boophane disticha*, which is considered a medicinal floral Species of Conservation Concern (SCC) with a declining threat status (IUCN 2016), was encountered within the transformed habitat unit. Furthermore, this species is also protected under the Mpumalanga Nature Conservation Act (MNCA) of 1998.
- The faunal diversity within the study area was intermediate and comprised mainly of common avifaunal, invertebrate and mammal species. A number of common faunal species encountered during the field assessment include *Damaliscus pygargus phillipsi* (Blesbok), *Equus quagga* (Plains zebra), *Cynictis penicillata* (Yellow mongoose), *Orthetrum* species (Skimmer), *Musca domestica* (House fly), *Danaus chrysippus* (African Monarch), *Junonia hierta* (Yellow pansy), *Apis mellifera* (Honey bee) as well as avifaunal species such as *Streptopelia capicola (Cape turtle dove), Passer domestics (House sparrow),* and *Acridotheres tristis (Indian myna).*

The description of the aquatic ecosystem is provided in **Section B: 5** of this report.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Witbank News	
Date published	8 April 2016	
Site notice position	**Latitude**	**Longitude**
	25°57'47.4687"S	29°19'57.2881"E
	25°57'55.8558"S	29°19'50.1901"E
	25°28'06.858"S	29°18'30.254"E
Date placed	11 April 2016	

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

2. DETERMINATION OF APPROPRIATE MEASURES

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

Notification letters were sent via electronic mail (e mail) to property owners and occupiers of properties around the Duvha Power Station who were part of the recent Duvha Power Station Solar PV Plant EIA process. The objective was to inform the stakeholders of the project and application process as well as to provide a description of the Public Participation Process (PPP). The notification letters included the following information:

- Project name;
- Description of the applicable listed activities;
- Project description;
- A layout/locality map; and
- The date on which the PPP registration will close.

In addition to the notification letters, on-site notices were also placed around the Duvha Power Station as shown in **Figure 25** on 8 April 2016.

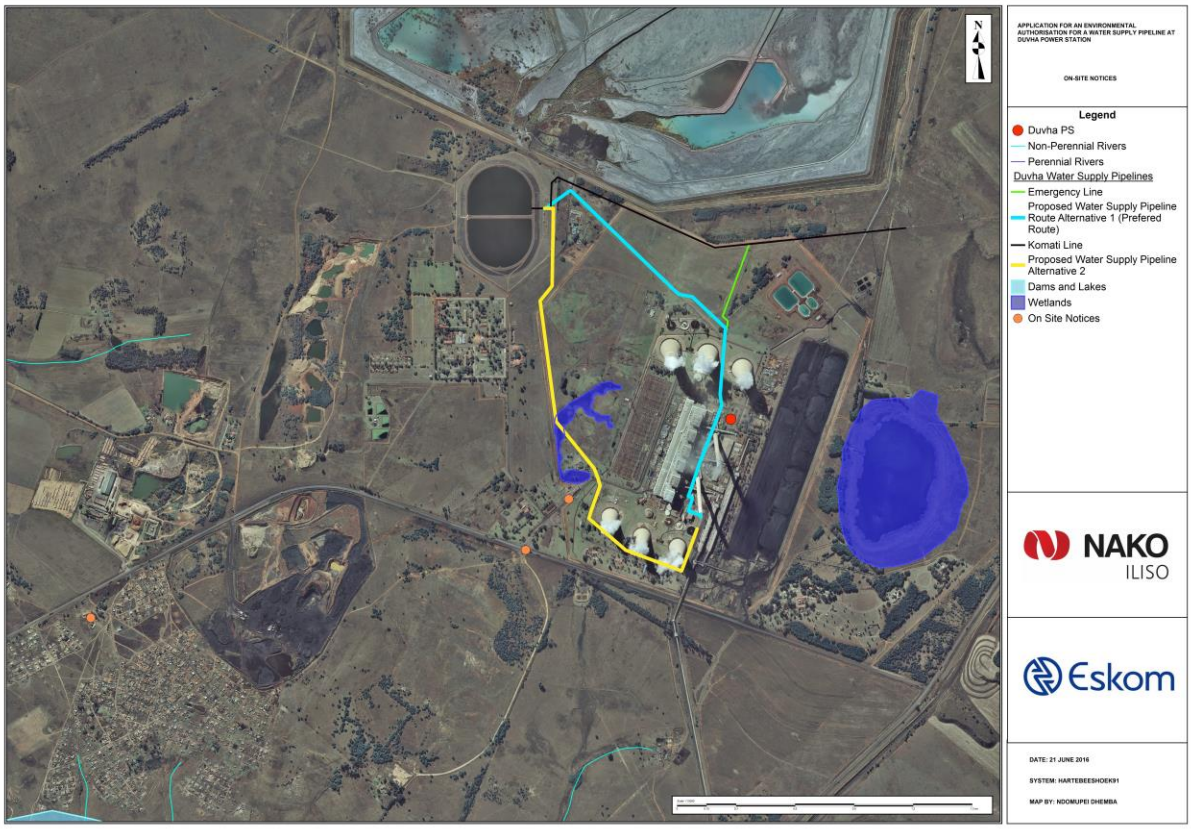

Figure 25: Positions of On-site Notices

A newspaper advertisement was also published in the Witbank News on 8 April 2016.

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

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (Tel number or e-mail address)
Ms Robyn Hugo	Centre for Environmental Rights (CER)- Interested Party	Mobile: 082 389 4357 Tel: 028 312 2746 Fax: 086 730 9098 E mail: rhugo@cer.org.za
Ms Melita Steele	Greenpeace Arica	Mobile: 072 560 8703 Tel: 011 482 4696 Fax: 086 585 5209 E mail: melita.steele@greenpeace.org
Mr Robert Davel	Mpumalanga Landbou	Mobile: 082 220 9024 Tel:017 819 1295 Fax: 017 819 1297 Email: robert.mpl@mweb.co.za
Baarta Tsatsi	Telkom	Email: TsatsiVA@telkom.co.za
Ms Chinga Mazhetese	South African Civil Aviation Authority	Mobile: 071 473 5129: Tel: 011 545 1365 Fax: 086 762 6245 Email: mazhetesec@caa.co.za

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (Tel number or e-mail address)
Mr Nhlahla Ncube	Birdlife SA	Email: nhlanhla.ncube@birdlife.org.za
Ms Samantha Ralston	Birdlife SA	Email: energy@birdlife.org.za
Dr Hannaline Smit-Robinson	Birdlife SA	Tel: 011 789 1122 Email: conservation@birdlife.org.za
Mr Bradley Gibbons	Endangered Wildlife Trust	Email: bradleyg@ewt.org.za
Mr Constant Hoogstad	Endangered Wildlife Trust	Email: constanth@ewt.org.za
Mr Lourens Leeuwner	Endangered Wildlife Trust	Email: lourensl@ewt.org.za
Mr Matt Pretorius	Endangered Wildlife Trust	Email: mattp@ewt.org.za
Ms Wendy Collinson	The Endangered Wildlife Trust	Tel: 011 372 4682 Fax: 011 608 4682 Email: wendyc@ewt.org.za
Dr Ian Little	The Endangered Wildlife Trust	Tel: 011 372 3600 Fax: 077 608 4682 Email: ianl@ewt.org.za
Ms Glenn Ramke	The Endangered Wildlife Trust	Tel: 011 372 3600 Fax: 011 608 4682 Email: glennr@ewt.org.za
Ms Tanya Smith	The Endangered Wildlife Trust	Tel: 011 372 3600 Fax: 011 608 4682 Email: tanyas@ewt.org.za

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

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

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
It is mentioned that alternative route 2 will cross an artificial wetland The application may not develop within 500m of a wetland or 1:100 year floodline, whichever is greater. If these activities are within these regulated area, the applicant must apply for a water use licence in terms section 21 (C) and (i) of the National Water Act, 1998 (Act No.36 of 1998). In light of the above, the Applicant is requested to liaise with the DWS for guidance on the	Alternative 1 which does not impact on any water resources has been recommended for authorisation.

Summary of main issues raised by I&APs	Summary of response from EAP
requirements for water use authorisation applications. Furthermore the Applicant shall conduct a public participation process in terms of section 41 (4) of the Nation Water Act, 1998 (Act 36 of 1998).	
It is mentioned that adequate stormwater management must be incorporated into the design of the project to prevent erosion. The applicant shall ensure that stormwater management plan is implemented to prevent pollution of run-off. Furthermore the applicant must ensure that stormwater is diverted away from all the working areas and the stormwater leaving the construction areas must not be contaminated by any substance, whether that substance is a solid, liquid vapour or any combination thereof. The soil must be stabilised in order to prevent the resulting wash downs into any water resource and where possible rehabilitation of the disturbed areas must be done concurrently with the construction activity.	These stormwater management measures will be incorporated into the stormwater management plan (Refer to Section 5.8.2 of the EMPr)
It is mentioned that the concrete and PVC waste from the dismantling of the emergency pipeline will be disposed of at a suitable licensed site. The applicant shall ensure that the general and hazardous waste generated on site is separated and disposed of at the permitted waste disposal site in such a manner as not to cause any nuisance conditions or secondary pollution.	General and Hazardous waste will be separated on site and disposed of at licenced waste disposal facilities as stipulated in Section 5.1.5 of the EMPr.
Sanitation: It is indicated in the report that e.g. chemical toilet will be used Reasonable measures shall have to be taken to prevent the potential pollution of the ground and surface water resources due to the proposed onsite sanitation facilities. A letter of agreement between the applicant and the permit holder of the sewage disposal facility should be submitted to this Department.	A letter of agreement between the applicant and sewage disposal company for chemical toilets will be submitted to the DWS before commencement of construction activities.
It is mentioned that approximately 100m^3 of water will be required for concrete mixing and for pipe supports. The water required for construction will be transported to the construction site are via tanker trucks. In light of the above, the applicant must note that the Department of Water and Sanitation must be	The water for construction will be sourced from Water Treatment Plant (WTP) at Duvha Power Station and delivered to the construction site using tanker trucks.

Summary of main issues raised by I&APs	Summary of response from EAP
provided with the source of water in order to make an informed decision.	
Storage of oil, diesel, hydraulic fluids and grease: It is recommended that the storage areas for these fluids be bunded with cement and in such a manner that any spillages can be contained and reclaimed without causing any pollution to the ground and surface water resources.	Facilities for the storage of oil, diesel, hydraulic fluids and grease will be bunded with cement and in such a manner that any spillages can be contained and reclaimed without causing any pollution to the ground and surface water resources (see EMPr section 5.1.5)
It is mentioned that clean and dirty water shall be separated and dirty water shall be contained and reused where practical possible. The Department supports the re-use of dirty water and clean water to be release to the environment.	Clean and dirty water will be separated and dirty water will be re-used as far as possible.
The applicant shall ensure that no stock piling of any material shall take place within 100m from the watercourse owing to high sedimentation.	No stockpiling of any material will take place within 100 m of a watercourse (see EMPr Section 5.2.2).
The applicant is advised to not commence with any water uses activities before obtaining a Water Use Authorisation.	No water use activities will commence without a water use licence.
The applicant is referred to Section 19(1) of the National Water Act, 1998 (Act No. 36 of 1998), and to report any pollution incidents originating from the proposed project to the Provincial Office of the Department of Water and Sanitation within 24 Hours.	Any pollution events will be reported to the Provincial Office of the DWS within 24 hours as required by Section 19 (1) of the NWA.
Undertaking of an oath by the EAP as per Appendix 1 (3) (r) of the EIA Regulations, 2014. which states that the BAR must include:	Please refer to Appendix H of the FBAR.
Information on the required Public Participation documentation to be submitted to the DEA.	Please refer to Appendix E1 and E4 of the FBAR for the proof of submission of the DBAR to registered interested and affected parties and organs of state respectively. Please refer to Appendix A and B of this Comments and Responses Register for copies of the comments received during the draft BAR comment period. Please refer to Appendix E3 of the FBAR for a copy of the comments and responses report, addressing all issues raised and comments received during the draft BAR commenting period
Ensure that the BAR includes the period for which the environmental authorisation is required and the date on which the activity will be concluded as per Regulation 3 (1) (q) of Appendix 3 of GN R982.	Please refer to Section 1: Project Description and Section E: Recommendation of the EAP of the FBAR.
Information on complying with Regulation 19 (1) (a) of the EIA Regulations (2014'	Noted. The FBAR will be submitted to the DEA within 90 days.
Procedure in terms of Regulation 19 where there have been significant changes or new	Noted. The EAP will inform the DEA of any significant changes made to the BAR and/or

Summary of main issues raised by I&APs	Summary of response from EAP
information that has been added to the BAR or EMPr.	EMPr.

4. COMMENTS AND RESPONSE REPORT

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

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Water and Sanitation	Ms Mandisa Matiso	013 759 7330		MatisoM@dwa.gov.za	Private Bag X11259 Nelspruit 1200
Department of Environmental Affairs	Ms Fiona Grimett	012 399 9393		FGrimett@environment.gov.za	Private Bag X447 Pretoria 0001
Nkangala District Municipality	Mr Vusi Mahlangu	013 249 2000		mahlangumv@nkangaladm.gov.za	P O Box 437 Middleburg 1050
Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA)	Dr. L.B Cele Ms SP Xulu	(013) 947 2551 (013) 766 6040		lcele@mpg.gov.za nyathikazibw@mpg.gov.za	Private Bag x 11219 Nelspruit 1200
Mpumalanga DEDET	Dr Vufani Dlamini			jmarakala@mpg.gov.za	
SAHRA: Mpumalanga Branch	Mr B Moduka	013 766 5196		bmoduka@mpg.gov.za	
Eskom Holdings	Mr Conradie Thomas Mr Livhuwani	017 615 2300		conradta@eskom.co.za TshilaL@eskom.co.za	Private Bag X5012 Kriel 2271

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
	Tshilate				
Ward Councillor: Ward 25	Mr Johannes Mdluli	083 472 1707			4067 Ext 4 Thubelihle 2271
Ward Councillor: Ward 26	Mr Petrus Mahlangu	078 001 8923		elmward026@gmail.com; jmahlangu@gmail.com	
Ward Councillor: Ward 27	Mr Zingisi Mbuku	076 652 1282			15 Hibiscus Street Kriel 2271
Department of Water and Sanitation	Ms Betty Mnguni	013 932 2061/ 082 884 1854	013 932 2071	MnguniB@dwa.gov.za	
Emalahleni Local Municipality	Cllr Zingisi Mbuku	076 652 1282			15 Hibiscus Street Kriel 2271
Emalahleni Local Municipality	Mr Elrard J Nkabinde			NkabindeEJ@Emalahleni.gov.za	
Emalahleni Local Municipality	Cllr Bongane Nkosi	072 656 2202		motloungelisabethkb@gmail.com	
Emalahleni Local Municipality	Mr Lindela Tshwete	013 690 6706/6716 082 377 9025	013 690 6293	tshwetele@emalahleni.co.za	
Emalahleni Local Municipality	Mr Theo van Vuuren	013 690 6208	013 690 6207	mbethefak@emalahleni.gov.za	
Nkangala District Municipality	Mr Vusi Mahlangu	013 249 2000		mahlangumv@nkangaladm.gov.za	P O Box 437 Middleburg 1050
Nkangala District Municipality	Ms Maggie Skasana	013 249 2006		skosanamm@nkangaladm.gov.za	P O Box 437 Middleburg 1050
DAFF	Ms Thoko Buthelezi	012 319 7634		ThokoB@daff.gov.za	
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DRDLR	Mr Sam Nkosi	013 755 8100		sam.nkosi@drdlr.gov.za	

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

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

6. CONSULTATION WITH OTHER STAKEHOLDERS

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

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

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

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

SECTION D: IMPACT ASSESSMENT

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

The main positive impact of the proposed pipeline will be the assurance of supply of water to the Duvha Power Station, which is directly connected to the supply of electricity from the power station. Other benefits, although short term (during construction) include creation of employment. The socio-economic impact assessment conducted for the project showed that although the impact in terms of employment will diminish once the construction phase concludes, skills transfer will enable the individuals to seek other construction related employment.

During the construction phase, the project has the potential to have a positive impact on economic activity in the local area, region, province, and possibly nationally (depending on the location of the contractors). Estimates indicate that a total of approximately R5.9 million will be spent on the entire construction phase representing a low investment. Nonetheless, over and above the originally invested money during the construction phase, additional revenue would be generated due to the multiplier effect in the different sectors of the economy. The local area and its activities (businesses and shops, etc.) are also expected to be stimulated economically, due to the increased spending expected from the increased salaries and wages paid to employees during construction. All of this will have a positive impact due to the increased direct employment by construction contractors, as well as stimulation of local businesses and informal traders.

Most of the identified potential negative impacts on both the wetlands and the terrestrial ecology were classified as being of *low* and *very low* significance. After mitigation, the significance of all impacts can be reduced to *very low* significance.

The mitigation measures listed in the accompanying EMPr are deemed adequate to avoid further degradation of the environment.

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

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.
The significance of potential environmental impacts identified was determined using the significance rating as described below. Activities and aspects were identified based on the ISO 14001 standards which can have an impact on the receiving environment. The terminology has been taken from the Guideline Documentation on EIA Regulations guidelines as follows:

Determining environmental significance:

Significance of environmental impact = Consequence X Probability

The consequence of an impact can be derived from the following factors:

- Severity / magnitude;
- Reversibility;
- Duration of impact; and
- Spatial extent.

The **severity** of an impact relates to how severe the impact will be. The **reversibility** of the impact refers to the ability of the site to recover after an impact has occurred. **Duration** is defined by how long the impact may be prevalent and **spatial scale** is the physical area, which could be affected by an impact. The severity, duration and spatial scale was ranked using the criteria indicated in the table below, and then the overall **consequence** was determined by adding the individual scores. The overall **probability** of the impact can then be determined, and relates to the likelihood of such an impact occurring.

The maximum value which can be obtained is 100 significance points. Environmental impacts are rated as High, Moderate or Low significance by combining the consequence of the impact and the probability of occurrence:

Consequence (severity + reversibility + duration + spatial scale) X Probability = Significance

- More than 60 significance points indicate ***HIGH*** environmental significance;
- Between 30 and 60 significance points indicate ***MODERATE*** environmental significance; and
- Less than 30 significance points indicate ***LOW*** environmental significance.

Table 7: Consequence and probability ranking

Severity / magnitude	Reversibility	Duration	Spatial extent	Probability
5 – Severe – Impact is highly uncertain and may impact on public health	5 – Irreversible	5 – Permanent but Irreversible	5 – International	5 – Definite / don't know
4 – High Loss of irreplaceable resource resulting in and impact that renders the resource as not fit for use. Mitigation will be difficult, expensive and time consuming		4 – Permanent but reversible	4 – National	4 – High probability – most likely
3 – Moderate impacts will reduce functionality of the receiving environment but will still continue in a modified way.	3 – Recoverable (needs human input)	3 – Medium term Operations period	3 – Regional	3 – Medium probability – possible but unlikely
2 – Low Impact will not affect the physical or biophysical nature of the receiving environment.		2 – Short term Construction or decommissioning period	2 – Local Immediate vicinity (10 km radius of the source)	2 – Low probability - negligible

Severity / magnitude	Reversibility	Duration	Spatial extent	Probability
1 – Minor - The changes to the environment is slight and often not noticeable.	1 – Reversible (regenerates naturally)	1 – Immediate (several months)	1 – Site only	1 – Improbable
0 - None				0 - None

The impact assessment considered potential impacts on the receiving environment for each phase of the project including the planning, construction, operational, closure and decommissioning phases. The possible cumulative impacts will also be considered. The identified mitigation measures for significant issues are incorporated into the EMPr (**Appendix G**).

IMPACT ASSESSMENT FOR THE PLANNING PHASE

The potential impacts associated with the planning stage (pre-construction phase) of the project included:

- Infrastructure placement and design leading to overall loss of floral SCC; and
- Poor planning leading to an increased construction footprint.

The results from the quantification of the identified potential impacts associated with the planning phase of the project are summarised in the **Table 8**.

Table 8: Summary of Impacts and Mitigation Measures for the Planning Phase

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred Option)			
Planning of infrastructure placement and design within sensitive habitat	***Direct impacts:*** • Infrastructure placement and design leading to overall loss of floral SCC; and • Poor planning leading to an increased footprint.	Very Low (-) Very Low (-)	• The proposed development footprint shall be kept to a minimum.
	Indirect impacts: • No indirect impacts are anticipated during the planning stage.		
	Cumulative impacts: • No cumulative impacts are anticipated during the planning stage.		
Alternative 2			
Planning of infrastructure placement and design within sensitive habitat	***Direct impacts:*** • Infrastructure placement and design leading to overall loss of floral SCC and wetland feature; and • Poor planning leading to an increased footprint.	Low (-) Low (-)	• The proposed development footprint shall be kept to a minimum. • The proposed development should be planned in a way that will keep impacts on the artificial wetland to a minimum.
	Indirect impacts: • No indirect impacts are anticipated during the planning stage.		
	Cumulative impacts:		

Activity	Impact summary	Significance	Proposed mitigation
	• No cumulative impacts are anticipated during the planning stage.		
No Go Option			
Planning of infrastructure placement and design within sensitive habitat	***Direct impacts:*** • No direct impacts anticipated during the planning stage	N/A	N/A
	Indirect impacts: • No indirect impacts are anticipated during the planning stage.	N/A	
	Cumulative impacts: • No cumulative impacts are anticipated during the planning stage.	N/A	

IMPACT ASSESSMENT FOR THE CONSTRUCTION PHASE

Activities associated with the construction phase of the project are expected to:

- Impact on flora and fauna, in particular the floral SCC that were identified in the study area;
- Increase the number of alien plants;
- Result in the deterioration in air quality, and
- Increase in ambient noise levels.

The clearing of vegetation for construction and during the dismantling of the emergency pipeline may lead to the loss of SCC *Boophane disticha* that were identified during the terrestrial ecological assessment. Considering that the majority of the linear development footprint has been significantly transformed (transformed habitat unit) and the impact associated with the loss of habitat for this species is considered to be ***low***. With the implementation of mitigation measures, the impact significance of the loss of important species may further be reduced to ***very low***.

Since the wetland traversed by alternative 2 provides potential habitat and migratory connectivity for faunal species as well as the potential to host a higher diversity of floral species, it is considered to be of importance in the maintenance of biodiversity and habitat provision. Development activities expected to most likely be the cause of loss of wetland habitat and ecological structure include digging of the trench through the wetland to lay the water pipeline underground, or dumping of construction waste materials into the wetland area. Since the wetland affected by alternative 2 is an artificial wetland, it is expected that without the implementation of mitigation measures the impact will be of ***low*** significance. Implementation of mitigation measures will reduce the significance to ***very low***. However, the preferred alternative (alternative 1) does not affect any wetlands and therefore, any impacts on wetlands will be avoided.

Construction activities, including the dismantling of the existing emergency pipeline will also likely result in an increase in nuisance dust. The impact will occur for the duration of the construction phase but will be localised and have a moderate severity. The impact will thus have a ***low*** significance but will be mitigated to an impact with a ***very low*** significance.

Earth moving equipment and construction vehicles may potentially increase ambient noise levels. The duration of the impact will be throughout the construction phase while construction activities are underway. Once the construction activities stop the ambient noise levels will return to what they were prior to the construction activities. Since the project will be located inside the already noisy Power Station, the impact is expected to have an overall ***low*** significance which can be reduced to ***very low*** significance when the mitigation measures are implemented.

Due to the nature of construction activities hydrocarbon spillages are likely to occur. Laydown areas will be provided for the construction equipment in agreement with the landowners. This will result in the deterioration of the groundwater quality and contamination of soils. Should there be runoff from these areas, there is potential to impact the water quality of water resources in the vicinity of the project area. The impact may occur throughout the construction phase but will be of local importance since the water may not be contained to the immediate site. It is expected that the impact will have a ***moderate*** significance prior to the implementation of any mitigation measures. The implementation of mitigation measures will reduce the probability that an incident may occur and should the necessary materials be available the impact will be contained to the immediate site thus reducing the significance of the impact to ***low***.

The clearing of vegetation for construction may result in soil erosion. This impact will be localised, but will have a high severity due to the loss of soils which cannot be recovered without difficulty. The impact

will have a ***moderate*** significance prior to the implementation of mitigation measures. With the implementation of mitigation measures the impact will be mitigated to a ***low*** significance.

Vegetation material removed from the construction area will be stockpiled. Uncontrolled runoff from the stockpiles will result in erosion of the stockpiles. It is expected that the impact will have a ***moderate*** significance prior to the implementation of any mitigation measures which will be reduced to a ***low*** significance with the implementation of mitigation measures.

Construction waste generation including the concrete and PVC from the dismantled emergency pipeline could result in an increase in general and hazardous waste to be managed and disposed of. This will have a high severity should it occur but will have a short duration limited to the construction phase. Without the implementation of mitigation measures the impact will have a ***low*** significance. The implementation of mitigation measures set out in the EMPr will reduce the significance of the impact to ***low***.

Inadequate sanitation and poor housekeeping during the construction phase could result in the contamination of the environment and downstream water resources. The impact will be for the duration of the construction phase. It is expected that the impact will be of ***low*** significance, which could be mitigated to ***very low*** significance.

The probability that proliferation of alien and weed species in any of the disturbed areas will lead to the altered vegetation communities within the terrestrial ecosystems is likely. Active rehabilitation will be required to address the impact and will continue throughout the medium term if rehabilitation during construction phase was not successful. The impact will be of ***moderate*** significance, which could be mitigated to ***low*** significance.

The results from the quantification of the identified potential impacts associated with the construction phase of the project are summarised in the **Table 9**.

Table 9: Summary of Impacts and Mitigation Measures for the Construction Phase

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred Option)			
Clearing of construction sites	***Direct impacts:*** • Loss of Species of Conservation Concern • Proliferation and increase of alien invasive species.	Low (-) Moderate (-)	• Floral species of conservation concern, if encountered within the development footprint, are to be handled with care and the relocation of sensitive plant species to suitable similar habitat is to be overseen by a botanist; • The proposed development footprint shall be kept to a minimum; • No collection of any plant material for firewood or medicinal purposes shall be permitted; • Removal of the alien and weed species encountered on the property must take place in order to comply with existing legislation NEMBA and Alien and Invasive Species Regulations, 2014. • An alien vegetation control plan must be compiled by the Contractor and implemented within areas associated with the project, the following minimum requirements must be implemented: ○ Weed control must be administered every three months; ○ Classify weeds to determine the eradication measures to be implemented; ○ Appropriate PPE (gloves) should be used when removing weeds; ○ Weeds must be uprooted, bagged and disposed of. The correct disposal procedure is to be determined in consultation with the ECO. • Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used. • Removal of species should take place throughout the
	Indirect impacts: • No indirect impacts are anticipated during the construction stage.		
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage.		

Activity	Impact summary	Significance	Proposed mitigation
			construction and operational phases. • The existing integrity of flora surrounding the study area should be upheld and no activities to be carried out outside the footprint of the construction areas; • No trapping or hunting of fauna shall be permitted; • All informal fires in the vicinity of construction areas shall be prohibited; • A speed limit of 40km/h shall be implemented on all roads running through the study area during the construction phase in order to minimise risk to fauna from vehicles; • All edge effects of construction activities (proliferation of alien vegetation, disturbances of soils, dumping of construction waste) are to be carefully controlled and appropriately managed; • The contractor laydown areas shall be demarcated for clearing in order to minimise vegetation loss and resultant erosion; • Construction vehicles shall remain on demarcated roads; • Areas to be cleared are to be clearly demarcated and it must be ensured that vegetation clearing only occurs within the demarcated areas; • Measures such as hessian curtains must be implemented on topsoil stockpiles to prevent erosion and sedimentation; and • Erosion management and sediment controls must be strictly implemented from the beginning of site clearing activities.
Transportation of materials (construction vehicles)	***Direct impacts:*** • dust/particulate emissions, gaseous emissions (from vehicle exhaust)	Low (-) Low (-)	• Dust suppression measures shall be implemented on dry weather days and periods of high wind velocities and may include reducing the frequency of disturbance and spraying with water; • All construction equipment must be scheduled for

Activity	Impact summary	Significance	Proposed mitigation
	• Loss of fauna species due to collision of vehicles with faunal species.		preventative maintenance to ensure the functioning of the exhaust systems to reduce excessive emissions and limit air pollution; and • A speed limit of 40 km/h shall apply to limit collision of construction vehicles with fauna species as well as limit vehicle entrained dust from the unpaved roads.
	Indirect impacts: • No indirect impacts are anticipated during the construction stage		
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage.		
Site clearing and excavation	***Direct impacts:*** • Potential destruction of heritage sites.	Very Low (-)	• If archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
	Indirect impacts: • No indirect impacts are anticipated during the construction stage.		
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage.		
• Stockpiling of material • Storage and transportation of hazardous material • Provision and maintenance of toilets	***Direct impacts:*** • Contamination of water resources through storm water runoff, spills and leaks. • Pollution due to improper waste handling, storage	Low (-)	• Sufficient areas shall be provided for the washing of vehicles; • No washing of vehicles shall be allowed outside demarcated areas. Washing bays for vehicles and other equipment shall be provided with appropriate soak away, will be clearly demarcated and will not be allowed to contaminate any surface runoff;

Activity	Impact summary	Significance	Proposed mitigation
• Vehicle maintenance	and disposal		• Re-fuelling must take place outside the project area, on a sealed surface area to prevent ingress of hydrocarbons into topsoil; • All construction equipment shall be parked in a demarcated area. Drip trays shall be used when equipment is not used for some time; • All vehicles shall be regularly inspected for leaks; • All earthmoving vehicles and equipment shall be on a preventative maintenance schedule to ensure that the equipment is in a good working order to prevent the leakages of oil and diesel; • An inspection programme shall be implemented to ensure that all the mechanical equipment is inspected on a daily basis to ensure the optimal functioning of the equipment; • Vehicle maintenance areas shall be isolated from any clean storm water systems. Drainage from these area will pass through an oil separator before it is discharged to the storm water; • Oil removed from the oil separators shall be stored in suitable containers for recycling. An approved service provider shall be used to remove the used oil from site; • Refuelling of equipment shall occur in designated areas by trained people; • Fuel amount to be stored onsite shall on any given day be kept below 80 cubic meters in order not to trigger a listed activity in terms of the EIA regulations 2014; • Bunding areas shall be provided for bulk storage of diesel, fuel, and oils which shall contain 110% of the volumes stored; • Spill kits shall be readily available to clean up spillages; • Drivers and operators shall be trained to use spill kits and
	Indirect impacts: • No indirect impacts are anticipated during the construction stage		
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage.	Low (-)	

Activity	Impact summary	Significance	Proposed mitigation
			contain spillages to the smallest possible areas and the training records shall be made available on request; • Contaminated soil shall be removed and disposed of to an appropriate licensed landfill site in terms of NEMWA, or can be removed by a service provider that is qualified to clean the soil; • Excavated material removed from the construction area will be stockpiled in appropriate area for reuse as rehabilitation material once all excavation work has been completed. Excavated material may not be stockpiled within the identified wetland; • Runoff from the stockpiles shall be suitably managed to ensure that the runoff volumes and velocities are similar to pre disturbed levels; • Vegetation shall be used to promote infiltration of water into the stockpile instead of increasing runoff; • Stockpiles shall be maintained until the topsoil is required for rehabilitation purposes; • Topsoil stockpiles shall be monitored regularly to identify alien vegetation, which shall be removed as soon as possible to prevent further distribution of any alien vegetation; • Sufficient ablution facilities shall be provided to service the construction site (this must not exceed 20 users per one toilet); • The maximum walking distance from a work site to a toilet shall not exceed 200 metres, and • Contents from the chemical toilets shall not be discharged into the environment but shall be removed by an approved service provider to the nearest Waste Water Treatment Works (WWTW). Proof of this must be provided to the Engineer.

Activity	Impact summary	Significance	Proposed mitigation
Waste management	***Direct impacts:*** • Poor waste management will result in the contamination of water resources through storm water runoff, spills and leaks.	Low (-)	**Separation of waste** • Waste shall be stored in demarcated areas according to type of waste; • Hazardous waste shall not be mixed with general waste as doing so will increase the quantities of hazardous waste to be managed; • Runoff from any area demarcated for waste will be contained, treated and reused; • Hazardous waste will be removed and managed by an approved service provider; • A safe disposal certificate must be provided by the approved service provider as proof of responsible disposal of hazardous waste and kept on record; • All waste management facilities will be maintained in good working order; • No littering shall be allowed in and around the site, a sufficient number of bins shall be provided for the disposal of waste; • Flammable substances must be kept away from sources of ignition and from oxidizing agents; and • The maximum retention time for temporary storage of waste generated shall not exceed 30 days, provided the waste does not present a health hazard or risk of odour. **Disposal of waste** • General waste will be collected in adequate number of litter bins located throughout the construction site; • Bins must be provided with lids in order to keep rain water out; • Bins shall be cleaned regularly to prevent the bins from
	Indirect impacts: • No indirect impacts are anticipated during the construction stage		
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage.		

Activity	Impact summary	Significance	Proposed mitigation
			overflowing; • All work areas shall be kept clean and tidy at all times; • All general waste and construction rubble shall be disposed of to the nearest licensed landfill site; • Where necessary dedicate a storage area on site for collection of construction waste; • No construction rubble shall be disposed of at the riparian area; • If construction rubble is not removed immediately it shall be stockpiled outside any drainage areas; • Concrete shall only be mixed in a dedicated area and surplus concrete shall be dispose of responsibly; and • Waste shall not be buried or burned on site.
Operation of construction equipment and vehicles	***Direct impacts:*** • Nuisance to neighbouring residents and businesses due to noise from construction activities.	Low (-)	• The contractor must be familiar with and adhere to any regulations (including SANS 10103 provisions) and local by-laws regarding the generation of noise and hours of operation; • All construction activity will take place during normal working hours (between 6am and 5pm) as far as possible. Adjacent landowners must be advised of any work that will take place outside of normal working hours, that may be disruptive (e.g. noise) in advance; • Transport vehicle tailgates will be kept closed where possible; • Surrounding communities must be notified in advance of noisy construction activities; • All equipment should be provided with standard silencers. Silencer units on vehicles and equipment must be kept in good working order; and • Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dB(A) should wear ear protection
	Indirect impacts: • No indirect impacts are anticipated during the construction stage		
	Cumulative impacts: • increase in ambient noise	Low (-)	

Activity	Impact summary	Significance	Proposed mitigation
			equipment.
Transportation of construction material	***Direct impacts:*** • Increase in traffic in the area and in the region due to the transport of building materials, and construction workers from surrounding areas.	Moderate (-)	• All contractors should commit to following road safety rules; • Traffic to and from the construction site should be limited to daylight hours; • The contractor shall ensure that all vehicles must be road worthy and drivers are qualified and made aware of the potential road safety issues and follow the speed limits; • Adequate signage along the Old Bethal road needs to be provided to warn motorists of the construction activities taking place; • Appropriate signage must be placed around the site; and • Contractor must ensure that trucks are not overloaded.
	Indirect impacts: • Additional vehicles, notably trucks and construction vehicles, pose potential risks to the safety of pedestrians and road users.	Moderate (-)	
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage.		
General construction procurement	***Direct impacts:*** • Employment. • In-migration. • Noise, disruptions and change in quality of the living environment. • Health, safety and security (safety: risks to the health and safety of workers on site as well as members of the local communities walking past	Moderate (+) Low (-) Moderate (-) Moderate (-)	• Favour local spending and local job creation (e.g. local materials and employees should be utilised as far as possible); • Opportunities for training of workers should be maximised; • Labour based construction methods should be used whenever practically possible; • Accommodation for non-local members of the workforce, should as far as practically possible be arranged so that unskilled labourers are not left to their own devices in which case non-local labourers are likely to accommodate

Activity	Impact summary	Significance	Proposed mitigation
	the construction site) and unacceptable social behaviour. • Capacity building, knowledge and skills transferral.	Moderate (+)	themselves in Speekfontein; • Safety at and around the construction site should be ensured by limiting any risks, barricading off the construction area to avoid unauthorised access and use of security personnel; • No unauthorised entry to the site is to be allowed; access control and a method of identification of site personnel are required at all times; • Adequate signage along the Old Bethal road needs to be provided to warn motorists of the construction activities taking place; • All construction activities will take place during normal working hours (between 6am and 5pm) as far as possible. Adjacent landowners must be advised of any work that will take place outside of normal working hours, that may be disruptive (e.g. noise) in advance; • Ensure noise and other disruption is minimal and contained as far as possible to the construction site; and • Ensure proper safety gear and safety precautions are administered during construction.
	Indirect impacts: • New business sales (especially for local small scale traders). • Effect of temporary workers on social dynamics. • Family and community social network capital changes. • Impacts on gender and equity.	Moderate (+) Low (-) Moderate(+) Low (+)	
	Cumulative impacts: • Temporary Increased stimulation of the economy of the area.	Moderate (+)	
General house-keeping	***Direct impacts:*** • Downstream water contamination and health hazards due to inadequate sanitation.	Low (-)	• Sufficient ablution facilities shall be provided to service the construction site. • Ablution facilities shall be serviced on a regular basis by an approved service provider. • Contents of ablution facilities (e.g. chemical toilets) shall be disposed of to a permitted/ licensed waste water treatment works and the necessary measures shall be taken to ensure that it will not impact on the operations of the waste water
	Indirect impacts: • No indirect impacts are anticipated during the construction stage.		

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: • Water quality of downstream water resources may deteriorate.	Low (-)	treatment works. • The designated service provider will make details of inspection reports available to the contractor. • Clean and dirty water shall be separated and dirty water shall be contained and reused where practically possible.
Alternative 2: Same as for the preferred option			
Clearing of construction sites	***Direct impacts:*** • Loss of Species of Conservation Concern • Loss of important/ indigenous vegetation within wetland habitat • Proliferation and increase of alien invasive species. • Loss of wetland habitat and ecological structure including digging of the trench through the wetland	Low (-) Low (-) Moderate (-) Low (-)	• Floral species of conservation concern, if encountered within the development footprint, are to be handled with care and the relocation of sensitive plant species to suitable similar habitat is to be overseen by a botanist. • Should any species protected under the Mpumalanga Nature Conservation Act (No 10 of 1998), be located within the development footprint, permits are to be obtained from relevant departments for their removal or relocation. • A speed limit of 40km/h shall be implemented on all roads running through the study area during the construction phase in order to minimise risk to fauna from vehicles. • The proposed development footprint shall be kept to a minimum. • No collection of any plant material for firewood or medicinal purposes shall be permitted. • Removal of the alien and weed species encountered on the property must take place in order to comply with existing legislation NEMBA and Alien and Invasive Species Regulations, 2014. • An alien vegetation control plan must be compiled by the Contractor and implemented within areas associated with the project, the following minimum requirements must be implemented: ○ Weed control must be administered every three months; ○ Classify weeds to determine the eradication measures to
	Indirect impacts: • No indirect impacts are anticipated during the construction stage.		
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage.		

Activity	Impact summary	Significance	Proposed mitigation
			be implemented; ○ Appropriate PPE (gloves) should be used when removing weeds; ○ Weeds must be uprooted, bagged and disposed of. The correct disposal procedure is to be determined in consultation with the ECO. • Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used. • Removal of species should take place throughout the construction and operational phases. • The existing integrity of flora surrounding the study area should be upheld and no activities be carried out outside the footprint of the construction areas. • The wetland sensitivity map for the pipelines shall be considered during all phases of the development to aid in the conservation of ecologically sensitive aquatic resources within the area;

Activity	Impact summary	Significance	Proposed mitigation
			 • The pipeline extent within wetland areas shall be minimised and as far as possible to reduce the extent of wetland areas impacted; • No trapping or hunting of fauna shall be permitted. • Edge effects of all construction activities, such as erosion and alien plant species proliferation, which may affect faunal habitat shall be strictly managed. • All informal fires in the vicinity of construction areas shall be prohibited. • All edge effects of construction activities (proliferation of alien vegetation, disturbances of soils, dumping of construction waste) are to be carefully controlled and appropriately managed; • The contractor laydown areas shall be located outside of wetland areas and included in the initial areas demarcated for

Activity	Impact summary	Significance	Proposed mitigation
			clearing in order to minimise vegetation loss and resultant erosion and sedimentation if required; • Construction vehicles shall remain on demarcated roads; • Areas to be cleared are to be clearly demarcated and it must be ensured that vegetation clearing only occurs within the demarcated areas; • Topsoil stockpiles shall not be placed directly adjacent to wetland areas and measures such as hessian curtains must be implemented to prevent erosion and sedimentation; and • Erosion management and sediment controls must be strictly implemented from the beginning of site clearing activities.
Transportation of materials (construction vehicles)	***Direct impacts:*** • Same as the Alternative 1 ***Indirect impacts:*** • No indirect impacts are anticipated during the construction stage ***Cumulative impacts:*** • No cumulative impacts are anticipated during the construction stage.	Same as the Alternative 1	Same as Alternative 1
Site clearing and excavation	***Direct impacts:*** • Potential destruction of heritage sites. ***Indirect impacts:*** • No indirect impacts are anticipated during the construction stage. ***Cumulative impacts:***	Same as the Alternative 1	Same as the Alternative 1

Activity	Impact summary	Significance	Proposed mitigation
	• No cumulative impacts are anticipated during the construction stage.		
• Stockpiling of material • Storage and transportation of hazardous material • Provision and maintenance of toilets • Vehicle maintenance	***Direct impacts:*** • Same as the Alternative 1 ***Indirect impacts:*** • No indirect impacts are anticipated during the construction stage ***Cumulative impacts:*** • Same as the Alternative 1.	Same as the Alternative 1	Same as the Alternative 1
Waste management	***Direct impacts:*** • Same as the Alternative 1 ***Indirect impacts:*** • No indirect impacts are anticipated during the construction stage ***Cumulative impacts:*** • No cumulative impacts are anticipated during the construction stage.	Same as the Alternative 1	Same as the Alternative 1
Operation of construction equipment and vehicles	***Direct impacts:*** • Same as the Alternative 1 ***Indirect impacts:*** • No indirect impacts are anticipated during the construction stage	Same as the Alternative 1	Same as the Alternative 1

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: • Same as the Alternative 1		
Transportation of construction material	***Direct impacts:*** • Same as the Alternative 1	Same as the Alternative 1	Same as the Alternative 1
	Indirect impacts: • Same as the Alternative 1		
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage.		
General construction procurement	***Direct impacts:*** • Same as the Alternative 1	Same as the Alternative 1	Same as the Alternative 1
	Indirect impacts: • Same as the Alternative 1		
	Cumulative impacts: • Same as the Alternative 1		
Waste Management and house keeping	***Direct impacts:*** • Same as the Alternative 1	Same as the Alternative 1	Same as the Alternative 1
	Indirect impacts: • No indirect impacts are anticipated during the construction stage.		
	Cumulative impacts: • Same as the Alternative 1		
No Go Option			
	Direct impacts: • No direct impacts are anticipated during the construction stage		

Activity	Impact summary	Significance	Proposed mitigation
	Indirect impacts: • No indirect impacts are anticipated during the construction stage		
	Cumulative impacts: • No cumulative impacts are anticipated during the construction stage		

IMPACT ASSESSMENT FOR THE OPERATION PHASE

The operational phase of the project may result in the following potential impacts:

- Continued loss of biodiversity and SCC; and
- Continuous introduction and proliferation of alien invasive plant species and further transformation of natural habitat.

If disturbed areas are not properly rehabilitated, then they will result in the proliferation of alien and invasive species in the disturbed areas, which will result in loss of floral SCC. Ongoing disturbances of soils during maintenance will result in alteration of vegetation community structures. This impact will be of ***low*** significance that can be mitigated to an impact with a ***very low*** significance.

Any leakages from the pipeline will result in seepage. The impact will be of ***low*** significance and with regular maintenance, the significance of the impact can be reduced to ***very low***.

The ineffective rehabilitation of the area disturbed by Alternative 2 will likely result in the transformation of aquatic habitat and biota due to erosion and sedimentation of the identified artificial wetland leading to reduced ability to support wetland vegetation and faunal species occurring within the system. The transformation of the habitat will result in the loss of biodiversity and the inability to support biodiversity. This impact will have a ***low*** severity and will be contained to the project site until such time that the rehabilitation is undertaken and is sustainable. The impact will thus have a ***low*** significance that can be mitigated to ***very low*** significance.

The results from the quantitative assessment of potential impacts associated with the operational phase are presented in the **Table 10**.

Table 10: Summary of Impacts and Mitigation Measures for the Operation Phase

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred option)			
Maintenance of the pipeline	***Direct impacts:*** • Continued loss of biodiversity and SCC • Continuous introduction and proliferation of alien invasive plant species and further transformation of natural habitat. • Leakages from the pipeline will result in seepage	Low (-)	• Maintenance vehicles shall be restricted to travelling only on designated roadways to limit the ecological footprint of the operational activities. • An alien vegetation control plan shall be implemented in order to manage alien plant species occurring within the study area, and to prevent further habitat loss of faunal species. • Monitoring of relocation success shall continue into the operational phase. • Ensure that maintenance related activities are kept strictly within the development footprint. • Restrict maintenance vehicles to travelling only on designated roadways to limit the ecological footprint of the proposed development activities. • The pipeline must be regularly maintained to ensure that their integrity has not be compromised
	Indirect impacts: • No indirect impacts are anticipated during the operation stage.		
	Cumulative impacts: • No cumulative impacts are anticipated during the operation stage.		
Alternative 2:			
Maintenance of the pipeline.	***Direct impacts:*** • Continued impact on SCC • Continuous introduction and proliferation of alien invasive plant species and further transformation of natural habitat • Loss of wetland habitat and ecological structure and changes to wetland ecological and sociocultural service provision • Leakages from the pipeline will	Low (-) Low (-) Low (-)	• Maintenance vehicles shall be restricted to travelling only on designated roadways to limit the ecological footprint of the operational activities. • An alien vegetation control plan shall be implemented in order to manage alien plant species occurring within the study area, and to prevent further habitat loss of faunal species. • Monitoring of relocation success shall continue into the operational phase. • Ensure that maintenance related activities are kept strictly within the development footprint.

Activity	Impact summary	Significance	Proposed mitigation
	result in seepage		• Restrict maintenance vehicles to travelling only on designated roadways to limit the ecological footprint of the proposed development activities. • The pipeline must be regularly maintained to ensure that their integrity has not been compromised.
	Indirect impacts: • No indirect impacts are anticipated during the operation stage.		
	Cumulative impacts: • No cumulative impacts are anticipated during the operation stage.		
No Go Option			
	Direct impacts: • The no-go option means that Duvha Power Station will continue to make use of Komati Water via the existing Komati pipeline until the scheduled outage. This would put the supply of the Komati Water to the Duvha Power Station at risk.	Moderate (-)	
	Indirect impacts: • No indirect impacts are anticipated during the operation stage.		
	Cumulative impacts: • No cumulative impacts are anticipated during the operation stage.		

IMPACT ASSESSMENT FOR THE DECOMMISSIONING PHASE

At this point of the project planning process, the necessity for and timing of the decommissioning of the proposed project is unknown. Like construction phase impacts, decommissioning impacts are inherently temporary in duration. The DEA will be appropriately notified and consulted prior to decommissioning taking place. An application in terms of the prevailing EIA Regulations at the time when decommissioning will be required for the relevant Environmental Authorisation will be lodged if applicable.

Like the construction phase, it is expected that the decommissioning phase may result in:

- Impacts on flora and fauna, in particular the floral SCC that were identified in the study area;
- Increase in alien plant species;
- Deterioration in air quality, and
- Increase in ambient noise levels.

Although the impacts during the decommissioning phase are expected to be the same as for the construction phase, the significance of the impacts is expected to be lower than for the construction phase.

CUMULATIVE IMPACTS

Vegetation associated with the study area has been significantly transformed and is no longer considered a true representative of the Eastern Highveld and the Rand Highveld Grassland vegetation types. The vegetation in this area is therefore not likely to add to the conservation target of these vegetation types in the region in its present state and its loss from the study area is therefore not considered to contribute to any cumulative impacts. The development footprint of the proposed pipeline for both alternatives is considered small in relation to the surrounding areas. The removal of a limited number of floral SCC encountered within the study area from the development footprint will not have a significant cumulative impact on the loss of the species from the region and is not likely to increase the species threat status. The cumulative impact associated with the development of both the preferred alignment and the alternative alignment is therefore considered to be *very low (-)*.

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

2. ENVIRONMENTAL IMPACT STATEMENT

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

Alternative 1 (Preferred Alternative)

Most of the impacts identified i.e. impacts of particulate mobilisation, visibility due to dust plumes, potential soil and groundwater pollution with oil and diesel will take place during construction and again during eventual demolition and rehabilitation. It is also expected that noise impact will also occur during the construction and rehabilitation phases of the project, however the impacts are expected to be of low significance since the construction and rehabilitation activities will take place inside the already noisy power station. The periods of these impacts will be of short duration. Particulate mobilisation is easily and effectively controlled by wet suppression and the potential for soil and groundwater pollution will be mitigated by taking due care to prevent spillages of oil and diesel and to clean up any spillages that might occur.

This project will not result in any significant adverse environmental or social impacts. The loss of floral SCC *B disticha* can easily be controlled with the relocation of the plant species to a similar suitable habitat. The removal of a limited number of floral SCC encountered within the study area from the development footprint will not have a significant cumulative impact on the loss of the species from the region and is not likely to increase the species threat status. The possible proliferation of alien invasive plant species can be mitigated by clearing vegetation in phases to minimise exposed soils, and also by reducing the corridor being cleared to only the required width.

The main positive impact of the project will be the increased assurance of supply of water to the Duvha Power Station. Alternative Route A is the ideal alternative to prevent unnecessary impacts to the wetland habitat unit, pipeline alternative 1 is preferred from an ecological perspective. The mitigation measures listed in the EMPr (Appendix G) are deemed adequate to avoid and/or minimise further degradation of the environment. In the long term, effective implementation of mitigation measures (as recommended in the EMPr) may also result in positive impacts in terms of control of alien vegetation.

Alternative 2

The expected impacts on biodiversity (loss of vegetation, floral SCC, possible proliferation of alien invasive species and loss of habitats) for Alternative Route 2 are expected to be the same as for Alternative Route 1. The most suitable habitat for faunal SCC is associated with alternative 2 (artificial wetland), and as such is considered to be of increased importance in terms of faunal SCC. The wetland traversed by alternative 2 provides potential habitat and migratory connectivity for faunal species as well as the potential to host a higher diversity of floral species, it is considered to be of importance in the maintenance of biodiversity and habitat provision. Development activities expected to most likely be the cause of loss to the wetland habitat and ecological structure include digging of the trench through the wetland to lay the water pipeline underground, or dumping of construction waste materials into the wetland area. Ineffective rehabilitation may lead to excessive erosion and the loss of wetland soils which in turn will lead to reduced wetland habitat availability and suitability for both faunal and floral species.

Alternative 3

N/A

No-go alternative (compulsory)

The status quo (no-go) option is not recommended as it will limit the supply of Komati water during the DWS outage. Duvha Power Station will also not be able to increase the percentage of Vaal water, for cooling water use, with the current water supply system.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES X	NO

The construction of the pipeline must be conducted under duty of care and must be in accordance with the mitigation measures that were included in the EMPr to ensure that impacts are prevented and if they do occur they are kept to the minimum.

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.

The EAP recommends that route alternative 1 be authorised for a period of 35 years and the following recommendations should be adhered to:

- Adequate storm water management must be incorporated into the design of the project in order to prevent erosion;
- The proposed development footprint shall be kept to a minimal.
- All hazardous storage containers, storage areas and bunding areas for hazardous substances must comply with the relevant SANS standards to prevent leakage;
- Bulk storage of hydrocarbons must be stored in a dedicated area outside the project site and must include a bund or a drain where necessary to contain any spillages during the use, loading and off-loading of the substances;
- The time in which soils are exposed during construction activities should remain as short as possible;
- Stockpiles shall be maintained until the topsoil is required for rehabilitation purposes;
- All construction materials shall be kept out of the artificial wetland and riparian areas;
- Exotic or invasive plants shall be controlled as they emerge;
- An alien vegetation control program must be developed and implemented within the riparian and all disturbed areas. After removal of alien vegetation, the affected areas must be re-assessed to determine the success of the program and any follow up measures that may be required.;
- All soils compacted as a result of construction activities falling outside of the project footprint areas should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas. Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat;
- To prevent the erosion of top soils, management measures may include berms, soil traps, hessian curtains and storm water diversion away from areas susceptible to erosion. It must be ensured that topsoil stockpiles are located outside of any drainage lines and areas susceptible to erosion. Stockpiles should be placed away from areas known to contain hazardous substances such as fuel and if any soils are contaminated, it should be stripped and disposed of at a registered hazardous waste dumping site;
- All areas of disturbed and compacted soils need to be ripped and reprofiled;
- No dumping of waste shall be permitted. If any spills occur, they should be immediately cleaned up;
- All vehicles shall be inspected for leaks on a regular basis. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into topsoil;

- The following applies to all individuals of *B disticha* encountered during the field assessment, as well as any other floral or faunal SCC that could be encountered during the construction phase of the development within the study area:
  - Relocation of the SCC to a suitable similar habitat in the vicinity of the study area must be ensured; and
  - Should a rescue and relocation plan be implemented, then all rescue and relocation activities should be overseen by a suitably qualified specialist.
- Site clearing must be conducted in a phased and width-restricted manner (where possible) to allow for any faunal species present to move away from the study area to the surrounding open space areas;
- No trapping or hunting of any faunal species are to take place during the construction phase within the study area or within the surrounding area;
- Upon completion of construction activities, it must be ensured that no bare areas remain and that indigenous grassland species are reintroduced (where possible);
- Informal fires by construction personnel within the study area shall be prohibited;
- It must be ensured that soil disturbance does not occur outside of the development footprint, as to ensure that further alien proliferation does not occur within the vicinity of the development footprint, which would further reduce the present ecological state of the surrounding area;
- The eradicated plant material must be disposed of at an approved solid waste disposal site.

Is an EMPr attached?	YES X	NO

The EMPr must be attached as Appendix G.

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

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

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

Ndomupei Dhemba
NAME OF EAP

SIGNATURE OF EAP

2016/06/21
DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information