

**ENVIRONMENTAL BASIC ASSESSMENT PROCESS
FINAL BASIC ASSESSMENT REPORT**

**NEW RAW WATER RESERVOIR & ASSOCIATED
WATER PIPELINES FOR MEDUPI POWER STATION**

**LIMPOPO PROVINCE
(DEAT Ref No. 12/12/20/1139)**

July 2008

Prepared for
Eskom Holdings Limited
PO Box 1091
Johannesburg
2000



Prepared by
Savannah

ENVIRONMENTAL (PTY) LTD
Unit G8 Pinewood Square, Pinewood Office Park
33 Riley Road, Woodmead, Gauteng
Tel: +27 (0)11 234 6621 • Fax: +27 (0)86 684 0547
E-mail: karen@savannahsa.com
www.savannahsa.com



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File Reference Number:

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Application Number:

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Date Received:

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**Basic Assessment Report in terms of the National Environmental
Management Act, 1998 (Act No. 107 of 1998), as amended, and the
Environmental Impact Assessment Regulations, 2006**

PROJECT DETAILS

DEAT Reference No.	:	12/12/20/1139
Title	:	Environmental Basic Assessment Process Final Basic Assessment report Report: Proposed Medupi Raw Water Reservoir and Pipelines Project, Limpopo Province
Authors	:	Savannah Environmental (Pty) Ltd Karen Jodas
Sub-consultants	:	Bathusi Environmental Consulting cc MetroGIS MasterQ Research Johnny van Schalkwyk
Client	:	Eskom Holdings Limited (Eskom Generation Division)
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APPENDICES

Appendix A: Site plan(s)

The following plans have been included and attached as Appendix A:

- » Appendix A1: Map of the proposed raw water reservoir and associated pipeline and pipeline alternatives 2 and 3.
- » Appendix A2: Map of GPS points taken on strategic points on the proposed development and two associated pipeline alternative routes (with an accompanying table providing the coordinates of each of the points marked).

Appendix B: Photo Record

Appendix C: Facility illustration(s)

Technical drawings illustrating the Raw Water Dam general arrangement

Appendix D: Specialist reports

The following specialist reports have been included and attached as Appendix D:

- » Appendix D1: Ecological impact assessment
- » Appendix D2: Heritage impact assessment
- » Appendix D3: Visual impact assessment
- » Appendix D4: Social impact assessment

Appendix E: Record of Public Involvement Process

The following documentation has been included and attached as Appendix E:

- » Appendix E1: Copies of adverts
- » Appendix E2: Example of letters to Organs of State and Stakeholders
- » Appendix E3: Background Information Document and reply form circulated
- » Appendix E4: Notes from the meeting with the Lephalale Local Municipality
- » Appendix E5: Comments and responses report
- » Appendix E6: Database
- » Appendix E7: Notes from the public meeting held on 26 June 2008 in Lephalale

Appendix F: Information in support of applications for exemption

None applicable

Appendix G: Other information

Appendix G1: Correspondence with DWAF regarding the Water Use License for Medupi Power Station

SUMMARY AND OVERVIEW OF THE PROJECT

In order to optimise operations at the Medupi Power Station complex (located near Lephalale in Limpopo Province), Eskom Holdings Limited is proposing the relocation of the planned new water reservoir from the Medupi Power Station complex to the adjacent farm Kuipersbult. The water reservoir is proposed to have a 400 000 m³ capacity. Pipelines from the water source to the new reservoir as well as from the new reservoir to Medupi Power Station are required to be constructed.

Overview of the proposed project

Eskom have, since the start of the construction of the Medupi Power Station, reassessed the location of the planned new water reservoir. The reservoir was proposed to lie to the east of the power station terrace. Space is, however, limited in this area and in order to optimise operations and layout within the power station complex, the relocation of the planned new water reservoir from the Medupi Power Station complex to the adjacent farm Kuipersbult is proposed.

The raw water reservoir is proposed to be located approximately 1600 m to the south west of the Medupi Power Station at an elevation of 915 m amsl. The reservoir is required to supply raw water to the Medupi Power Station, and will have a total capacity of 400 000 m³ which will provide storage capacity for a period of 19 days.

Raw water will be supplied to the new raw water reservoir from the existing pipeline from Wolvenfontein Reservoir which is supplied from the Mokolo dam. This pipeline currently supplies Matimba Power Station, the Grootegeluk Mine and the local Municipality. Provision for future supply of raw water from Crocodile West will also be made available. Therefore two pipelines are proposed to be constructed in parallel to the new raw water reservoir in a permanent ~12 m wide servitude.

The pipelines will be buried, and will cross under all railway line and/or road crossings. A pressure reducing station will be required at the start of this pipeline to reduce the water pressure to the required working pressure, and will be housed in a building. Each inlet pipeline to the reservoir will have an inline flow meter and valves, which will be housed in one building.

An outlet pipeline from the new water reservoir to the Medupi Power Station is proposed to closely follow the alignment of the pipelines feeding the reservoir. Where three pipelines are required to be constructed in parallel, a permanent ~15 m wide servitude is required.

All pipelines are to be constructed as underground pipelines. During construction, temporary disturbance to the surface will be restricted to a 45 m wide area for the length of the pipeline. The pipelines are proposed to run at a slope of not less than 5° to allow for free draining, and therefore pumping stations are not required.

Application for authorisation is being made for the following:

- » Construction of a 400 000 m³ capacity water reservoir (covering an area of ~106 000 m² in extent) on the Farm Kuipersbult.
- » Construction and operation of an underground pipeline from the water source to the new reservoir (<10 km in length).
- » Construction and operation of an underground pipeline from the new reservoir to the Medupi Power Station (<5 km in length).
- » All pipelines constructed within maximum of 15 m wide servitude and construction activities limited to a 45 m wide servitude.
- » Construction and operation of associated infrastructure such as a pressure-reducing station and a flow meter house.

Assessment of alternatives

The Basic Assessment process requires the consideration of feasible alternatives for the proposed development which should each be assessed in equal measure. The consideration of alternatives for this project included the following steps:

STEP 1: *No consideration of alternative sites for the placement of the raw water reservoir:* Exemption from assessing alternatives for the reservoir site is applied for on the basis that an alternative site has already been assessed and approved as part of the supporting infrastructure for the Medupi Power Station complex. This alternative is now not considered ideal by the Applicant due to the lack of sufficient space at the original proposed location and the need for a pumped system. An area in close proximity and adjacent to the Medupi Power Station is of sufficient elevation (slightly above 915 m amsl) in the otherwise relatively flat landscape to support a gravity fed water reservoir and pipeline system. This is significant as the original reservoir and pipeline system was planned to be a pumped system which required the operation of a pumping station. A gravity fed system is, however, considered to be more reliable than a pumped system.

STEP 2: *Three alternative alignments for the proposed of underground pipeline from the water source to the new reservoir:* Eskom initially proposed three possible alignments for the construction of the required pipeline between Matimba Power Station and the new proposed raw water reservoir. Each of these alignments followed existing linear infrastructure in the area (i.e. roads, railway lines, transmission power lines or conveyor belts). These three alternative routes were then assessed through the basic assessment process by the environmental

team, as well as Eskom's technical team. These routes were also presented to the public and stakeholders for comment.

Figure 1 below indicates the initial three alternative pipeline routing options between the proposed new reservoir and the water source.

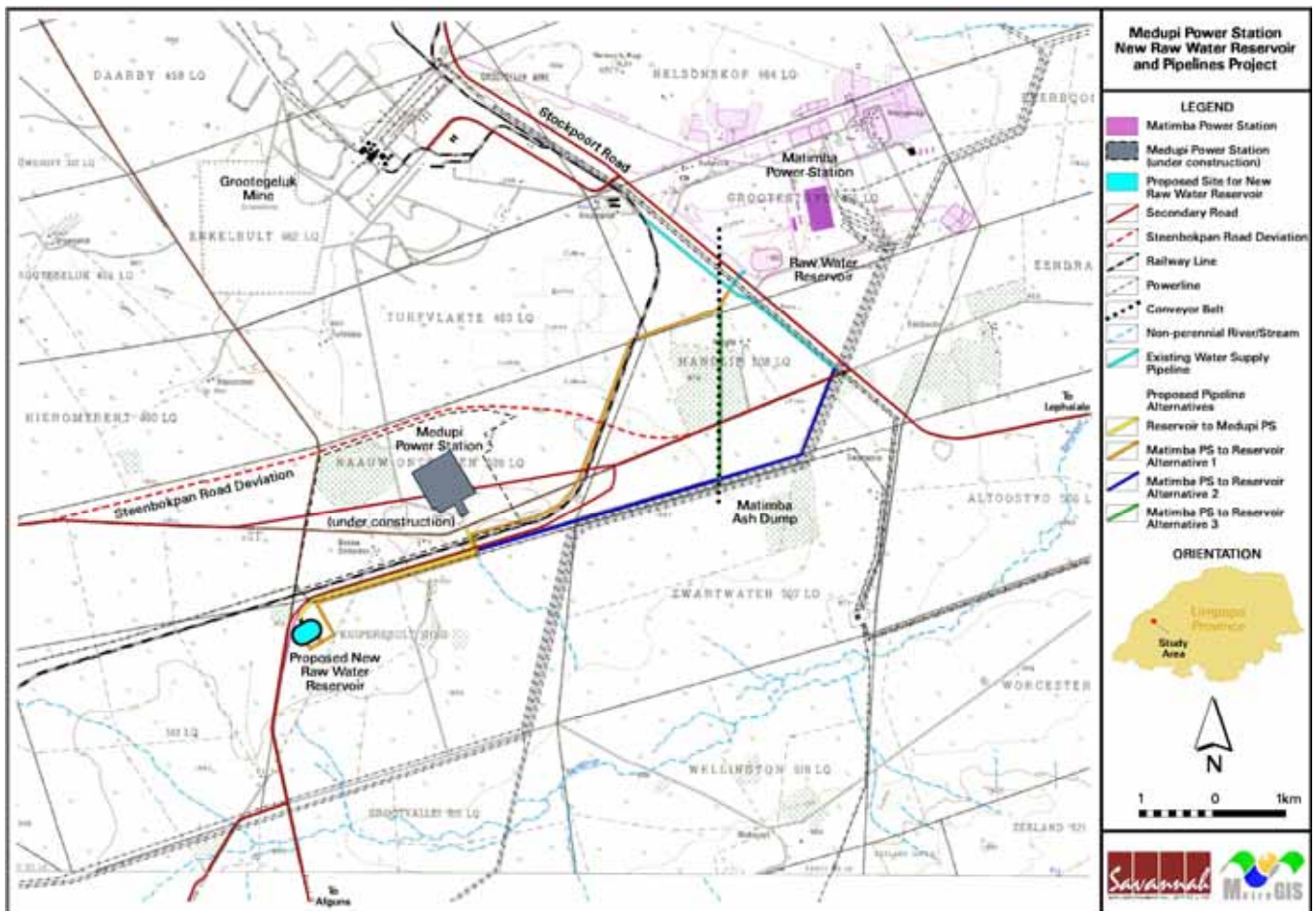


Figure 1: Map indicating the three alternative pipeline routing options between the proposed new raw water reservoir and the water source.

The following conclusions were drawn from the assessments undertaken by the environmental team:

1. Localised sensitive habitats/areas including a rocky outcrop area, non-perennial stream (linear feature) as well as a small non-perennial dam/pan feature were identified.
2. These areas were 'red flagged' as areas to be avoided by pipeline infrastructure. Alternatives 2 and 3 traversed these sensitive areas, and were therefore deemed unacceptable.
3. The result of this assessment was that only Alternative 1 of the three alignments as originally proposed would be nominated as environmentally suitable.

The following conclusions were drawn from the assessments undertaken by the Eskom technical team:

1. Alternative 1 crosses the railway line twice, which is considered to be unnecessary as well as costly. In addition, permission would be required to cross railway line.
2. There is still some uncertainty with regards to Exxaro's plans to mine in the vicinity of Alternative 1, and this could present a risk to the infrastructure should the area be mined in the future.
3. Exxaro expressed concern to Eskom regarding the proximity of the pipeline along Alternative 1 to the railway, and should there be a burst on the pipeline, this could potentially undermine the rail tracks. Exxaro expressed that they would not be in favour of a pipe parallel to their rail track for a significant distance due to the potential risk.
4. The result of this assessment was that only Alternatives 2 and 3 of the three alignments as originally proposed would be nominated as technically suitable.

STEP 3: In a re-evaluation of the alternatives considering the environmental and technical constraints presented above, it was evident that Alternative 1 was flawed from technical reasons. This alternative was no longer considered to be a feasible alternative. Therefore, in order to successfully implement the project, re-alignment of Alternatives 2 and 3 would be required to accommodate the environmental constraining factors. Re-aligned alignments for Alternatives 2 and 3 were then presented, considering the environmentally sensitive areas identified through the initial assessment.

Figure 2 overleaf indicates the revised two alternative pipeline routing options between the proposed new reservoir and the water source.

STEP 4: *Two revised alternative alignments for the proposed of underground pipeline from the water source to the new reservoir:* based on technical and environmental constraints, two feasible alternatives remain. These two alternative alignments do not affect the position of the raw water reservoir. These two alternative alignments (known as **Alternative 2** (S2 in this BAR) and **Alternative 3** (S3 in this BAR)) have been re-assessed by the environmental team, and a preferred alignment nominated (where feasible). Alternative S1 is no longer considered as a technically viable option, and is therefore not considered further in this Basic Assessment Report.

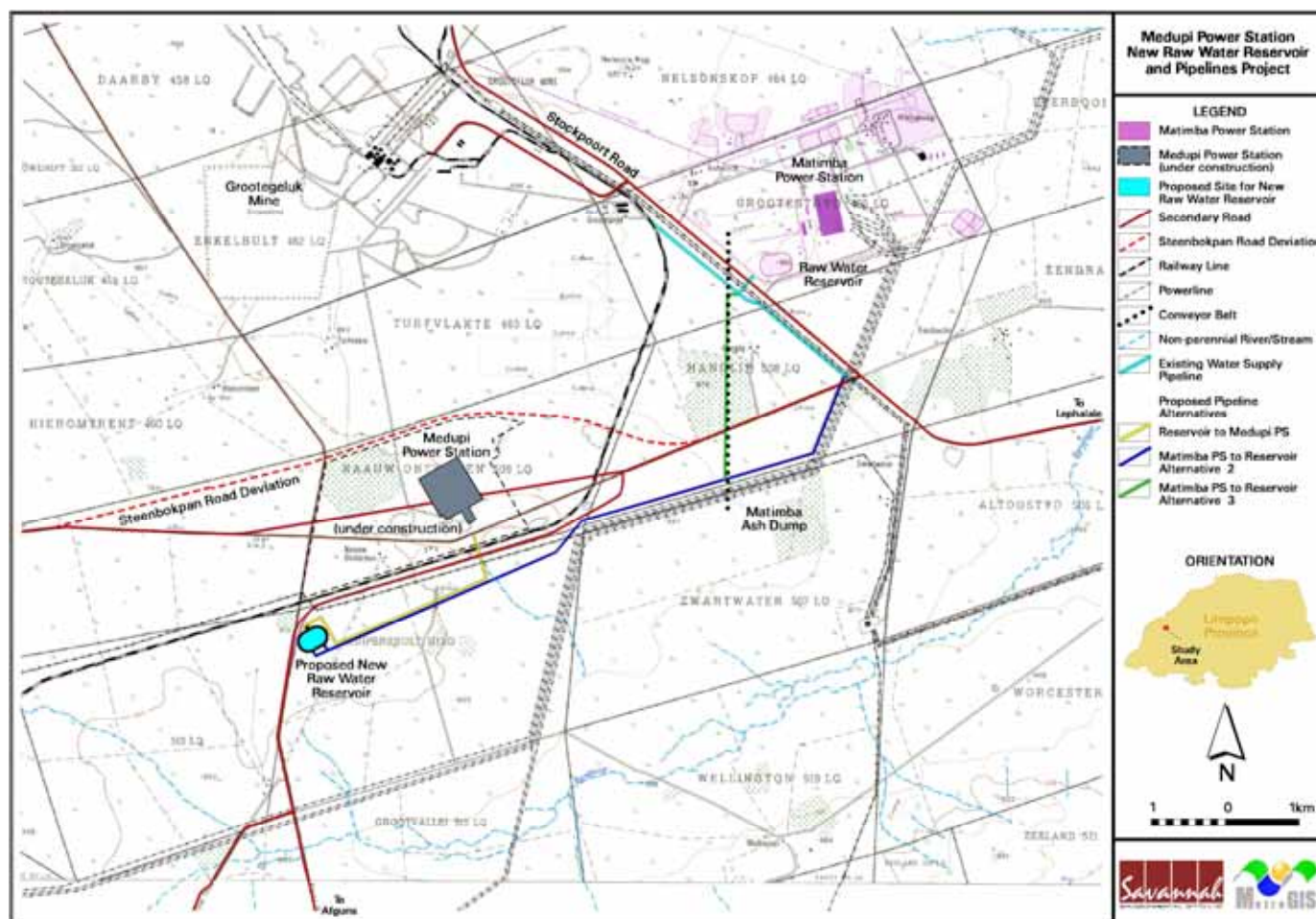


Figure 2: Map indicating the two alternative pipeline routing options between the proposed new raw water reservoir and the water source, as considered in this Basic Assessment Report as S2 and S3.

ENVIRONMENTAL BASIC ASSESSMENT PROCESS

In terms of sections 24 and 24D of the National Environmental Management Act (Act No 107 of 1998), as read with Government Notices R385 (Regulations 22–26) and R386, a Basic Assessment process is required to be undertaken for the construction of facilities or infrastructure, including associated structures or infrastructure for:

- Item 1(n):* the off-stream storage of water, including dams and reservoirs, with a capacity of 50 000 m³ or more
- Item 1(k):* the bulk transportation of water in pipelines with (i) an internal diameter of 0,36 metres or more; or (ii) a peak throughput of 120 litres per second or more
- Item 1(p):* the temporary storage of hazardous waste
- Item 15:* The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the

ambit of another listed activity or which are access roads of less than 30 metres long.

Eskom requires authorisation from the National Department of Environmental Affairs and Tourism (DEAT) (in consultation with the Limpopo DEDET) for the undertaking of the proposed project. This project has been registered with National DEAT under reference number 12/12/20/1139.

Eskom has appointed Savannah Environmental, as independent environmental consultants, to undertake an Environmental Assessment in the form of a Basic Assessment to identify and assess all potential environmental impacts associated with the proposed project. As part of these environmental studies, I&APs have been actively involved through a public involvement process undertaken by MasterQ Research.

SECTION A: APPLICATION FOR EXEMPTION

The relevant parts of this section must be completed if the environmental assessment practitioner (EAP) on behalf of the applicant wishes to apply for exemption from completing or complying with certain parts of this basic assessment report.

1. APPLICATION FOR EXEMPTION FROM ASSESSING ALTERNATIVES

At least two alternatives (site or activity) should be assessed. If that is not possible, the applicant should apply for exemption from having to assess alternatives. Such exemption will, however, not apply to the no-go alternative that must be assessed in all cases.

Provide a detailed motivation for not considering alternatives including an explanation of the reason for the application for exemption (supporting documents, if any, should be attached to this report):

The Environmental Impact Assessment process followed for the construction of the Medupi Power Station involved the consideration of an area for a raw water reservoir east of the power station terrace. The position of the reservoir in this application is considered as an alternative to this already approved area. Eskom has since receiving the authorisation for Medupi Power Station purchased the property Kuipersbult 511 LQ adjacent to the farm Naauwontkomen (on which the power station is currently being constructed (refer Figure 2 and Appendix A1)). An area in close proximity and adjacent to the Medupi Power Station on this newly acquired property is of sufficient elevation (slightly above 915 m amsl) in the otherwise relatively flat landscape to support a gravity fed water reservoir and pipeline system. This is significant as the original reservoir and pipeline system was planned to be a pumped system which required the operation of a pumping station. A gravity fed system is, however, considered to be more reliable than a pumped system.

Exemption from assessing alternatives for the reservoir site is applied for on the basis that an alternative site has already been assessed and approved as part of the supporting infrastructure for the Medupi Power Station. This alternative is now not considered ideal by the Applicant due to the lack of sufficient space at the original proposed location and the need for a pumped system. The alternative of constructing the reservoir and the associated pipelines on an alternative site will be assessed in this report.

I declare that the above motivation is accurate and, hereby apply for exemption in terms of regulation 51 of the Environmental Impact Assessment Regulations, 2006, from having to assess alternatives in this application as required in section 24(4)(b) in the National Environmental Management Act, 1998 (Act No. 107 of 1998).

Signature of the EAP:		Date:	21 July 2008
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**2. APPLICATION FOR EXEMPTION FROM COMPLYING WITH PARTS OF
 REGULATION 23(2) REGARDING THE CONTENT OF THIS BASIC
 ASSESSMENT REPORT**

Application for exemption from certain parts of regulation 23(2) regarding the completion of certain parts of this basic assessment report may be made by completing the relevant sections below.

Indicate the numbers of the sections of this report for which exemption is applied for:														
Section B:	7(a)	7(b)	7(c)	7(d)	8	9	10(c)	10(e)	10(f)	10(g)	10(h)	10(j)	10(k)	12
Section C:	1	2	3	4	5	6								
Section D:	1(a)	1(b)	1(c)	1(d)	1(f)	1(g)	3							
Provide a detailed motivation including an explanation of the reason for the application for exemption (supporting documents, if any, should be attached to this report):														
I declare that the above motivation is accurate and, hereby apply for exemption in terms of regulation 51 of the EIA Regulations, 2006, from having to complete the indicated sections of the Basic Assessment Report.														
Signature of the EAP:							Date:							

SECTION B: ACTIVITY INFORMATION

1. ACTIVITY DESCRIPTION

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

Eskom Holdings Limited intends to construct a new raw water reservoir on the farm Kuipersbult 511 LQ, approximately 1 600 m south west of the Medupi Power Station that is currently under construction. The purpose of the system is to supply raw water to Medupi Power Station and to provide water storage capacity for a period of 19 days. The dimensions of the proposed reservoir are approximately 250 m by 430 m and 5 m in height. The reservoir is proposed to be divided into two sections, designed to be kept filled with a minimum of 200 000 m³ raw water (known as the live capacity) and designed to have a total capacity of 400 000 m³. The proposed raw water reservoir site is at an elevation of 915 m amsl which will facilitate a gravity fed system. An associated underground pipeline is also required to supply water to the Medupi Power Station and to be constructed from the existing pipeline from the Wolvenfontein Reservoir which is supplied with raw water by the Mokolo dam. The existing water supply pipeline currently supplies the Matimba Power Station, the Grootegeluk mine and the local municipality with water also from Mokolo dam. This supply pipeline runs adjacent to the existing Matimba power station on the south western side. This pipeline lies approximately 5 km to the east of Medupi Power Station and currently supplies Matimba Power Station, the nearby Municipality and the Grootegeluk Mine.

Two feasible alternative Matimba-to-raw water reservoir pipeline routes are assessed in this report as alternatives S2 and S3 (refer Figure 2 and Appendix A1). Alternative S1 is no longer considered as a technically viable option, and is therefore not considered further in this Basic Assessment Report. The proposed pipeline alternative routes extend for approximate distances of 8 785 m and 8 465 m respectively, and would be designed to supply water to the proposed raw water reservoir from an existing water pipeline adjacent to Matimba Power Station to the north east of Medupi Power Station. The proposed Matimba to raw water reservoir pipeline alternatives share a common section/alignment, particularly the last 6 000 m of the supply pipeline before it enters the reservoir. The system includes supporting infrastructure including a pressure reducing station and a flow meter house. This pressure reducing station would be located at the start of the pipeline, and will be housed in a building. An inline flow meter and valves will be required for each of the two inlet pipes to the reservoir and will be housed together in one building.

Another pipeline (refer Figure 2 and Appendix A1, marked in yellow) running alongside the proposed Matimba-to-raw water reservoir supply line alternatives will be required to transport the raw water to the Medupi Power Station from the proposed raw water reservoir where it is stored. It is planned to exit the raw water reservoir on the north-western side and is proposed to be constructed within the same servitude as the pipeline to the reservoir before entering Medupi Power Station. This pipeline route is therefore covered through the assessment of the pipeline route to the reservoir.

2. ALTERNATIVES

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

2(a) Site alternatives:

i. Reservoir site:

Describe the **reservoir site** for the activity described above:

The raw water reservoir site (with a footprint area within the perimeter fence of 124 200 m²) is situated on the farm Kuipersbult 511 LQ (1 081 ha in extent), approximately 1 600 m south west of the Medupi Power Station that is currently under construction. The entire farm is currently being purchased by Eskom. A portion of the proposed area on the farm for the construction of the reservoir has been used in the past as grazing land and there is evidence of some removal of material and topsoil, with a large part of the area characterized by little vegetation cover. The area on which the proposed raw water reservoir is to be built has, therefore, been disturbed by historic activities and grazing, but also includes natural woodland on the fringes of the site.

Describe **pipeline site alternative 2 (S2)** for the activity described above:

The Medupi raw water pipeline would be connected to the existing Mokolo pipeline at the existing valve station. The Medupi pressure control station would be constructed adjacent to the existing one.

The proposed Matimba-to-raw water reservoir pipeline alternative 2 (refer Figure 2 and Appendix A1, marked blue) originates on the Hangklip 508 LQ property slightly to the west of the T-junction between the Stockpoort road and the Steenbokpan road where two power line alignments cross each other. From here it follows parallel to the group of transmission power lines out of Matimba Power Station a south-westerly direction for ~1 110 m. It crosses underneath the Steenbokpan road and at the boundary between the properties Hangklip 508 LQ and Zwartwater 507 LQ it turns to the west and follows this boundary and the power lines for ~3 260 m from where it turns to the south-west and runs for approximately 570 m avoiding a rocky outcrop and seasonal dam, after which it turns to the west again and continues for another 3 520 m to the raw water reservoir. The last 6 110 m of the supply pipeline route before it enters the reservoir is common to that of Alternative 3 as well as the Reservoir-Medupi pipeline.

Describe **pipeline site alternative 3 (S3)** for the activity described above:

The proposed Matimba-to-raw water reservoir pipeline alternative 3 (refer Figure 2 and Appendix A1, marked green) originates on the property Grootestryd 465 LQ adjacent to the Matimba Power Station. The pipes will be routed west from this point, enter the Matimba ash conveyor servitude, cross underneath the conveyor and turn south at the west side of the conveyor servitude. The servitude is 92 m wide, and the pipes would be buried within this registered servitude for a distance of ~2 510 m (crossing underneath the Steenbokpan road) until it reaches the existing transmission lines out of Matimba Power Station.

From here the pipeline follows an alignment parallel to the transmission lines for a distance of 2 010 m in a west-south-westerly direction, after which it turns to the south-west and continues for a distance of 570 m to avoid a rocky outcrop and a seasonal dam. From there it turns again to the west-south-west and runs for a distance of 3 520 m to enter the proposed reservoir. The last 6 110 m of the supply pipeline route before it enters the reservoir is common to that of Alternative 2 as well as the Reservoir-Medupi pipeline.

(2)(b) Activity alternatives:

This Basic Assessment process considers an alternative technical design/activity option for the raw water reservoir to that considered during the EIA phase of the Medupi Power Station. The alternative previously considered was located on the Medupi Power Station site and would have involved a pumped system. This alternative was already considered (and authorised) through the original EIA and is therefore not considered in this assessment. An area in close proximity and adjacent to the Medupi Power Station on this newly acquired property is of sufficient elevation (slightly above 915 m amsl) in the otherwise relatively flat landscape to support a gravity fed water reservoir and pipeline system. This is significant as the original reservoir and pipeline system was planned to be a pumped system which required the operation of a pumping station. A gravity fed system is, however, considered to be more reliable than a pumped system.

Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:
n/a
Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:
n/a
Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:
n/a

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

	Latitude (S):		Longitude (E):	
Reservoir site:	23 °	43' 16.204"	27 °	32' 43.574"

In the case of linear activities:

	Latitude (S):		Longitude (E):	
Pipeline Alternative S2				
• Starting point of the activity	23 °	41' 19.067"	27°	36' 55.548"
• Middle point of the activity	23 °	42' 23.511"	27°	34' 52.152"
• End point of the activity	23 °	43' 20.653"	27°	32' 42.227"
Pipeline Alternative S3				
• Starting point of the activity	23 °	40' 43.089"	27°	36' 05.759"
• Middle point of the activity	23 °	42' 23.511"	27°	34' 52.152"
• End point of the activity	23 °	43' 20.653"	27°	32' 42.227"

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.

As the route alternatives that are longer than 500 m, an addendum with co-ordinates for all bend points or approximately 1 km intervals (as this is a straight linear feature) for each alternative alignment is provided (refer Appendix A2).

4 PHYSICAL SIZE OF THE ACTIVITY

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

		Size of the activity:
Reservoir site:	Footprint of structure:	Raw water dam: 106 000m ² Fence line: 4 700m ² Access road: 8 700m ² Inlet pipeline: 1 200m ² m ²
	Construction footprint:	124 200 m ²
	Final Footprint (including fencing, access road, firebreak and/or maintenance road):	124 200 m ²

or, for linear activities:

Alternative:	Length of the activity:
Pipeline Alternative A2	Approx. 8 785 m
Pipeline Alternative A3	Approx. 8 465 m

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

Footprint of construction:	Size of the site/servitude:
Pipeline Alternative A2	395 325 m ²
Pipeline Alternative A3	380 925 m ²
Final Footprint:	Size of the site/servitude:
Pipeline Alternative A2	131 775 m ²

Pipeline Alternative A3		126 975 m ²
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5. SITE ACCESS

Does ready access to the site exist, or is access directly from an existing road?	<input checked="" type="checkbox"/>	NO ✓
If NO, what is the distance over which a new access road will be built		~ 40 m
Describe the type of access road planned:		
The access road will connect from an appropriate point on the Afguns road to the western side of the reservoir to tie in to the 5 m wide maintenance road around the perimeter of the proposed raw water reservoir (refer attached technical drawing in Appendix C). The access road will be an appropriately designed surface of 5 m in width. An access gate will be erected at the junction with the Afguns road.		

Include the position of the access road on the site plan.

6. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

6(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	<input checked="" type="checkbox"/>	YES
Solid waste generated during the construction phase of the proposed activity may be described as domestic solid waste and spoil material and construction rubble.		
If yes, what estimated quantity will be produced per month?		
Estimates of waste to be produced are not possible to determine at this stage.		
How will the construction solid waste be disposed of (describe)?		
<p>The construction of the proposed raw water reservoir and its associated pipelines is part of the infrastructure required for the Medupi Power Station that is currently under construction. The construction of the proposed raw water reservoir and its associated pipelines will coincide with the construction activities currently underway at Medupi Power Station and will use the same waste management systems.</p> <p>In order to comply with legal requirements, all waste materials from Medupi's construction must be disposed of at an appropriately licensed waste disposal site. The local landfill site in Lephalale is not licensed, and therefore cannot currently be utilised. As a result, Eskom is presently transporting all waste streams generated at the Medupi Power Station site to Gauteng for disposal at a licensed site. Eskom is in the process of investigating other options in this regard, such as the establishment of a new general waste disposal facility. All domestic solid waste generated by the construction activities related to the proposed activity will be disposed of in this manner.</p> <p>Spoil material from excavation activities at the proposed reservoir site and the pipeline trenches will be used where fill material may be required during construction of the proposed raw water reservoir. The spoil not used as fill material will be disposed of as part of the spoil material generated during the construction of the Medupi Power Station and disposed of or used as fill material according to the protocol of the construction activities currently underway at the Medupi Power Station.</p>		

Where will the construction solid waste be disposed of (describe)?			
<p>In order to comply with legal requirements, all waste materials from Medupi's construction must be disposed of at an appropriately licensed waste disposal site. The local landfill site in Lephalale is not licensed, and therefore cannot currently be utilised. As a result, Eskom is presently transporting all waste streams generated at the Medupi Power Station site to Gauteng for disposal at a licensed site. All domestic solid waste generated by the construction activities related to the proposed activity will be disposed of in this manner until provision has been made for permitted disposal at a closer/nearby facility.</p> <p>Spoil material excavated during the construction activities of the proposed raw water reservoir and its associated pipelines will be used as fill material where required or taken up in the spoil material generated during the construction activities of the Medupi Power Station and disposed of according to the accepted procedures.</p>			
Will the activity produce solid waste during its operational phase?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO ✓
If yes, what estimated quantity will be produced per month?			m ³
How will the solid waste be disposed of (describe)?			
Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?			
If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the application should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.			
Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO ✓
If yes, inform the competent authority and request a change to an application for scoping and EIA.			
Is the activity that is being applied for a solid waste handling or treatment facility?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO ✓
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.			
Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:			
On site waste management shall include the following: <ul style="list-style-type: none"> » Waste separation at source » Waste recycling » Provision of recommendations for waste re-use » Provision of recommendations regarding waste minimisation 			
Has a specialist been consulted to assist with the completion of this section?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO ✓
If YES, please complete:			
Name of the specialist:			
Qualification(s) of the specialist:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	
Are any further specialist studies recommended by the specialist?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

If YES, specify:			
If YES, is such a report(s) attached?	YES	NO	
Signature of specialist:		Date:	

6(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?		NO ✓
If yes, what estimated quantity will be produced per month?		m ³
Will the activity produce any effluent that will be treated and/or disposed of on site?		NO ✓
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		
Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	NO
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:		
<p>On site wastewater management shall include the following:</p> <ul style="list-style-type: none"> » Separation of dirty and clean water at source » Recycling of clean water for re-use » Provision of recommendations regarding water use minimisation 		
Has a specialist been consulted to assist with the completion of this section?		NO ✓
If YES, please complete:		
Name of the specialist:		
Qualification(s) of the specialist:		
Postal address:		
Postal code:		
Telephone:	Cell:	
E-mail:	Fax:	
Are any further specialist studies recommended by the specialist?	YES	NO
If YES, specify:		
If YES, is such a report(s) attached?	YES	NO
Signature of specialist:		Date:

6(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?		NO ✓
There will be no emissions generated as a result of the operation of the		

proposed activity. The construction activities associated with the proposed reservoir and pipelines will result in limited airborne dust.			
If yes, is it controlled by any legislation of any sphere of government?		YES	NO
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.			
If no, describe the emissions in terms of type and concentration:			
Has a specialist been consulted to assist with the completion of this section?			NO ✓
If YES, please complete:			
Name of the specialist:			
Qualification(s) of the specialist:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
Signature of specialist:		Date:	

6(d) Generation of noise

Will the activity generate noise?			
There will be no noise generated as a result of the operation of the proposed activity. Limited noise will be generated during the construction phase of the proposed development.			NO ✓
If yes, is it controlled by any legislation of any sphere of government?		YES	NO
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.			
The noise generated during the construction phase of the proposed development will fall below the maximum dB levels allowed as set out in the relevant legislation. The area around the proposed raw water reservoir and pipelines is very sparsely populated and is currently occupied by a Power Station and mining activities at Grootegeluk.			
If no, describe the noise in terms of type and level:			
Has a specialist been consulted to assist with the completion of this section?		YES	NO
If YES, please complete:			
Name of the specialist:			
Qualification(s) of the specialist:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	
Are any further specialist studies recommended by the specialist?		YES	NO

If YES, specify:				
If YES, is such a report(s) attached?			YES	NO
Signature of specialist:			Date:	

7. WATER USE

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

Municipal ✓	water board	groundwater	river, stream, dam or lake ✓	other	the activity will not use water
Water use in the construction phase of the proposed development would be from local municipal sources. Water use for the operational phase of the activity is being supplied from Mokolo Dam via an existing Exxaro pipeline running past the south western side Matimba Power Station.					
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:					~ 328 000 litres
Does the activity require a water use permit from the Department of Water Affairs and Forestry?					YES ✓
If yes, please submit the necessary application to the Department of Water Affairs and Forestry and attach proof thereof to this application if it has been submitted.					
Refer to Appendix G for correspondence received from Department of Water Affairs and Forestry regarding Eskom's application for a Water Use Licence.					

8. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:
The proposed site on farm Kuipersbult is higher than the surrounding area (at an elevation of 915 m amsl) to facilitate a gravity feed raw water supply system, whereas the alternative approved through the EIA for the Medupi Power Station would have required a pumping station. A gravity feed system is much more energy efficient than a pumped system, and also has increased reliability.
Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:
Construction of the raw water reservoir on an elevated position eliminates the need for a pumped system and pump station. The raw water system will be a gravity fed system which is energy efficient.

9. SITE OR ROUTE PLAN

A detailed site plan(s) has been included in Appendix A to this document. The site plan indicates the following:

- » The scale of the plan
- » The property boundaries and numbers of all the properties within 50 m of the site
- » The current land use of each of the properties adjoining the site or sites
- » The exact position of each element of the application
- » The position of services, including existing roads, roads under construction, Transmission and Distribution overhead power lines, other water supply pipelines, etc.
- » Sensitive environmental elements within 100 m of the site/s
- » Contours

The following plans have been included and attached as Appendix A:

- » Appendix A1: Map of the proposed raw water reservoir and associated pipeline and pipeline alternatives 2 and 3.
- » Appendix A2: Map of GPS points taken on strategic points on the proposed development and two associated pipeline alternative routes (with an accompanying table providing the co-ordinates of each of the points marked).

10. SITE PHOTOGRAPHS

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

Colour photographs taken from the centre of the site and/or logical points on linear pipeline alternatives/routes Alternatives S2 and S3 (taken in the major compass directions) are attached within Appendix B. All points where photographs are taken are indicated on a locality map, also attached in Appendix B.

11. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 under Appendix A 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.

A detailed illustration (to scale) of the proposed raw water reservoir is provided in Appendix C. This includes a technical drawing illustrating the Raw Water Dam general arrangement.

12. ACTIVITY MOTIVATION

12(a) Socio-economic value of the activity

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

Reservoir: ~R74 000 000 Pipeline: ~R27 000 000

What is the expected yearly income that will be generated by or as a result of the activity?

Not applicable

Will the activity contribute to service infrastructure or is it a public amenity?

YES ✓

How many new employment opportunities will be created in the development phase of the activity?

Approx 10

What is the expected value of the employment opportunities during the development phase?

Not determined compared to the overall Medupi Power Station development

What percentage of this will accrue to previously disadvantaged individuals?

45% ASGISA

How many permanent new employment opportunities will be created during the operational phase of the activity?

Unknown

What is the expected current value of the employment opportunities during the first 10 years?

Unknown

What percentage of this will accrue to previously disadvantaged individuals?

Unknown

12(b) Need and desirability of the activity

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

As a result of the increasing demand for electricity in South Africa, Eskom is increasing electricity generating capacity. Medupi Power Station is one of Eskom's latest capacity expansion projects to meet the growing demand for electricity. The purpose of the raw water reservoir system is to supply raw water to Medupi Power Station for use during operation and to provide water storage capacity for a period of 19 days.

Indicate any benefits that the activity will have for society in general:

The Raw Water Dam is support infrastructure to the Medupi Power Station Project. Eskom expects that the proposed power station shall provide cost effective electricity to the South African power grid while maintaining the Employer's environmental and social objectives. The reservoir will not supply water to the community. The benefits to society are through the uninterrupted supply of power to be generated by the Medupi Power Station.
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Indicate any benefits that the activity will have for the local communities where the activity will be located:

Eskom is supportive of the South African Governments growth, poverty eradication and job creation strategy. Employment opportunities (labour-intensive) exist for skilled and unskilled members of the local community.

13. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (Act No 107 of 1998)	DEAT/Provincial DEAT	1998
National Water Act (Act No 36 of 1998)	DWAF	1998
National Forests Act (Act No 84 of 1998)	DWAF	1998
Conservation of Agricultural Resources Act (Act No 43 of 1983)	Department of Agriculture	1983
Environment Conservation Act (Act No 73 of 1989)	DWAF/DEAT (waste management)	1989
National Heritage Resources Act (Act No 25 of 1999)	SAHRA	1999

SECTION C: SITE/AREA DESCRIPTION

1. GRADIENT OF THE SITE

Indicate the general gradient of the sites.

The area on which the proposed reservoir site is to be built is located on a low hill slightly elevated above the surrounding environment (at an elevation of 915 m amsl).

The proposed pipeline alternative routes being considered in this assessment traverse very gradual slopes, which provide sufficient difference in elevation to facilitate a gravity fed water transportation system.

Reservoir site:

Flat	1:50 – 1:20 ✓	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Pipeline Alternative S2:

Flat ✓	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Pipeline Alternative S3:

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

The landform for the proposed raw water reservoir may be described as a low hill that is slightly elevated above the immediate surroundings. The proposed pipeline alternative routes are all located on fairly flat plains or very slightly sloped hills.

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

Reservoir site

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hill ✓	Dune	Sea- front
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Pipeline Alternative S2:

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain ✓	Undulating plain/low hills	Dune	Sea- front
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Pipeline Alternative S3:

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain ✓	Undulating plain/low hills	Dune	Sea- front
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3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Based on (a) the 1:250 000 scale Land Type Survey, and (b) previous detailed survey work carried out by the Agricultural Research Council Institute for Soil, Climate and Water

on the farms Eenzaamheid and Naauw Ontkomen as part of the EIA process for the Medupi Power Station, almost 90% of the surrounding area comprises deep (usually >1 200 mm) red and yellow, sandy to sandy loam (5-15% clay), structureless, freely-drained soils of the Hutton and Clovelly forms (land type Ah86).

Despite the freely drained, friable nature of the soils, the prevailing climate (hot summer temperatures, coupled with a long-term annual average rainfall of 485 mm per annum) means that the area is most unsuitable for rain-fed agriculture. Rainfall is also erratic, both within the growing season as well as from year to year. Coupled with the sandy nature of the soils (which means that the little rainfall that occurs will rapidly move downwards through the soil profile), the prevailing agricultural potential of the area is for grazing or game farming (unless a reliable supply of irrigation water can be found for cultivation).

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

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

Pipelines	Alternative S2:		Alternative S3:	
Shallow water table (less than 1.5m deep)		NO ✓		NO ✓
Dolomite, sinkhole or doline areas		NO ✓		NO ✓
Seasonally wet soils (often close to water bodies)	YES ✓		YES ✓	
The proposed alternative routes for the pipelines cross in the close vicinity of a small seasonal water body and a non-perennial stream.				
Unstable rocky slopes or steep slopes with loose soil		NO ✓		NO ✓
The small rocky outcrop adjacent to the pipeline alternative alignments 2 and 3 has been avoided with the re-alignment.				
Dispersive soils (soils that dissolve in water)		NO ✓		NO ✓
Soils with high clay content (clay fraction more than 40%)		NO ✓		NO ✓
Any other unstable soil or geological feature		NO ✓		NO ✓
An area sensitive to erosion		NO ✓		NO ✓
The rocky outcrop adjacent to the proposed pipeline route alternatives 2 and 3 has been avoided with the re-alignment.				

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).

Has a specialist been consulted to assist with the completion of this section?				NO ✓
If YES, please complete:				
Name of the specialist:				
Qualification(s) of the specialist:				
Postal address:				
Postal code:				
Telephone:				
E-mail:				
Are any further specialist studies recommended by the specialist?				YES
				NO
If YES, specify:				
If YES, is such a report(s) attached?				YES
				NO
Signature of specialist:		Date:		

4. GROUNDCOVER

Only one major vegetation type is represented in the study area, namely the Limpopo Sweet Bushveld. This is not regarded as an endangered or threatened habitat type. SANBI records for the region indicate the presence of four Red Data flora species. No Threatened species were observed during the site investigation. A total of four protected tree species were observed within the study area. These species occur throughout the study area and is not restricted to a localised area.

Tick the types of groundcover present on the site.

Reservoir site

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 ✓

The majority of the site identified for the proposed raw water reservoir is characterised by degraded woodland, with natural vegetation occurring on the edges of the site.

The degraded woodland habitat type is represented by an area of historic surface disturbance (possibly an old borrow pit area where the gravely soil that occurs in the area was utilised for road construction purposes). In some instances it is evident that large trees were avoided during the excavation process, but shrubs and the lower stratum were completely decimated. The seral stage of the vegetation that characterises the area is therefore representative of the regional vegetation in terms of the woody layer. The shrub and herbaceous layer in these areas are low in density and poor in species diversity, characteristic of areas where topsoil has been removed. Vegetation in other areas was completely destroyed, similar to areas where agricultural practices took place. The woody layer in these particular areas has recovered to a fairly natural state, but the herbaceous layer is indicative of the degraded status with bare areas. The floristic status of this community is considered low as a result of the secondary vegetation that characterises this community. The likelihood of encountering Red Data species within these areas are regarded low. Due to the secondary nature, the ecological sensitivity of this habitat is considered low. No adverse impacts resulting from the proposed development is expected to occur in this habitat type.

The natural habitat of the edges of the study area is described as a mosaic of numerous habitat variations, which are repeated throughout the study area. In spite of the pristine appearance of the general vegetation of the study area, it is considered to be moderately degraded as a result of high grazing pressure. The over-utilised state of the herbaceous layer and encroached state of the woody layer in some places contribute to an estimated moderate floristic status.

The Ecological specialist refers to this area as an area of medium to low ecological sensitivity (refer to ecological report attached as Appendix D1).

Pipeline Alternative S2:


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 ✓

Pipeline Alternative S3:

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.

Has a specialist been consulted?	YES ✓
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If YES, please complete the following:			
Name of the specialist:	Riaan Robbeson of Bathusi Environmental Consulting		
Qualification(s) of the specialist:	MSc (Botany) (Pr Sci Nat)		
Postal address:	P.O. Box 7748 Eldoglen Centurion		
Postal code:	0171		
Telephone:	(012) 658 5579	Cell:	082 3756 933
E-mail:	riaan@bathusi.org	Fax:	
Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?		YES ✓	<input type="checkbox"/>
If YES, specify and explain:	Jameson's Red Rock Rabbit (<i>Pronolagus randensis</i>) was found on the rocky outcrop present on a section of the shared pipeline alternatives 2 (S2) and 3 (S3) during the site visit, and the likelihood of the presence of other endangered and red data flora and fauna species is rated as medium to high in this habitat type (Limpopo Sweet Bushveld). Similarly the presence of a non-perennial stream and a seasonal dam in the vicinity of the alternative pipeline routes are regarded as having a medium to high potential of harbouring endangered and red data species. The biodiversity specialist supports the realignment of the pipeline alternatives to bypass these sensitive habitat types. The likelihood of encountering red data species on the natural regional habitat is regarded as being medium to low. (Refer Appendix D1 for the ecological specialist report which provides a list of endangered and red listed fauna and flora species known to occur in the general area, as well as a map of sensitive areas on the reservoir and pipeline alignment sites).		
Are there any special or sensitive habitats or other natural features present on any of the alternative sites?		<input type="checkbox"/>	NO ✓
If YES, specify and explain:	The pipeline route alternatives have been re-aligned to avoid identified sensitive habitats or other natural features.		
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/>	NO ✓
If YES, specify:	The ecologist has, however, recommended a final walkthrough of the preferred alignment to ensure absence of other Red Data species in the appropriate season, and to identify and mark all protected tree species on the preferred alignment.		
If YES, is such a report(s) attached?		YES	NO
Signature of specialist:		Date:	21 July 2008

5. LAND USE CHARACTER OF SURROUNDING AREA

The area is sparsely populated and can be described as a rural area situated around large coal power stations and their related infrastructure. Infrastructure in the area is related to the nearby Matimba Power Station, such as the ash conveyor belt. A railway line is prominent in the area as well as a large number of transmission powerlines. The farms unaffected by the power station and the nearby mining of coal in the area practice cattle farming.

Black out land uses and/or prominent features that do not currently occur within a 500m radius of the site.

Reservoir site:

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

Pipeline Alternative S2 (linear):

Natural area ✓	Low density residential	Medium density residential	High density residential	Informal residential ^A
Retail	Commercial & warehousing	Light industrial	Medium industrial ^{AN}	Heavy industrial ^{AN}
Power station^A ✓	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam ^A	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant ^A	Train station or shunting yard ^N	Railway line^N ✓	Major road (4 lanes or more) ^N	Airport ^N
Harbour	Sport facilities	Golf course	Polo fields	Filling station ^H
Landfill or waste treatment site ^A	Plantation	Agriculture: Grazing ✓	River, stream or wetland ✓	Nature conservation area

Mountain, koppie or ridge ✓	Museum	Historical building	Graveyard	Archaeological site
Other land uses (describe):	Ash dump ✓; Transmission Power lines ✓ Provincial road ✓ Ash conveyor belt ✓; Transmission Power lines ✓			

Pipeline Alternative S3 (linear):

Natural area ✓	Low density residential	Medium density residential	High density residential	Informal residential ^A
Retail	Commercial & warehousing	Light industrial	Medium industrial ^{AN}	Heavy industrial ^{AN}
Power station ^A ✓	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam ^A	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant ^A	Train station or shunting yard ^N	Railway line ^N ✓	Major road (4 lanes or more) ^N	Airport ^N
Harbour	Sport facilities	Golf course	Polo fields	Filling station ^H
Landfill or waste treatment site ^A	Plantation	Agriculture: Grazing ✓	River, stream or wetland ✓	Nature conservation area
Mountain, koppie or ridge ✓	Museum	Historical building	Graveyard	Archaeological site
Other land uses (describe):	Ash dump ✓; Transmission Power lines ✓ Provincial road ✓ Ash conveyor belt ✓; Transmission Power lines ✓			

If any of the boxes marked with an "N" are ticked, please consult an appropriate noise specialist to assist in the completion of this section.

Has a specialist been consulted?				NO ✓	
If YES, please complete the following:					
Name of the specialist:					
Qualification(s) of the specialist:					
Postal address:					
Postal code:					
Telephone:				Cell:	
E-mail:				Fax:	
Will the ambient noise level have a negative impact on the proposed activity?				NO ✓	
If YES, specify and explain:					
Are any further specialist studies recommended by the specialist?				YES NO	
If YES, specify:					
If YES, is such a report(s) attached?				YES NO	
Signature of specialist:				Date:	

If any of the boxes marked with an "A" are ticked, please consult an appropriate air quality specialist to assist in the completion of this section.

Has a specialist been consulted?						NO ✓	
If YES, please complete the following:							
Name of the specialist:							
Qualification(s) of the specialist:							
Postal address:							
Postal code:							
Telephone:				Cell:			
E-mail:				Fax:			
Will the ambient air pollution level have a negative impact on the proposed activity?						NO ✓	
If YES, specify and explain:							
Are any further specialist studies recommended by the specialist?						YES	NO
If YES, specify:							
If YES, is such a report(s) attached?						YES	NO
Signature of specialist:				Date:			

If any of the boxes marked with an "H" are ticked, please consult an appropriate health assessment specialist to assist in the completion of this section.

Has a specialist been consulted?						NO ✓	
If YES, please complete the following:							
Name of the specialist:							
Qualification(s) of the specialist:							
Postal address:							
Postal code:							
Telephone:				Cell:			
E-mail:				Fax:			
Will the surrounding land use pose any unacceptable health risk on the proposed activity?						NO ✓	
If YES, specify and explain:							
Are any further specialist studies recommended by the specialist?						YES	NO
If YES, specify:							
If YES, is such a report(s) attached?							
Signature of specialist:				Date:			

6. CULTURAL/HISTORICAL FEATURES

Reservoir site and Pipeline alternative sites 2 and 3 (S2 & S3)

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?		NO ✓
		Uncertain

If YES, explain:		
If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.		
Briefly explain the findings of the specialist:	The Archaeologist did not find any significant cultural or historical features on any of the proposed alternatives/sites (refer attached heritage report in Appendix D2).	
Will any building or structure older than 60 years be affected in any way?		NO ✓
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act No 25 of 1999)?		NO ✓

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

SECTION D: PUBLIC PARTICIPATION

1. ADVERTISEMENT

Notices advertising the proposed project were placed/distributed as follows:

- A site notice erected on the property where it is intended to undertake the activity.
- A notice distributed informing landowners and occupiers of adjacent land of Eskom's intention to submit an application to DEAT.
- A notice distributed informing landowners and occupiers of land within 100 m of the boundary of the property where it is proposed to undertake the activity and whom may be directly affected by the proposed activity of Eskom's intention to submit an application to DEAT.
- A notice to inform the Lephalale Local Municipality (i.e. the municipality which has jurisdiction over the area in which the proposed activity will be undertaken) of Eskom's intention to submit an application to DEAT.
- A notice distributed to inform any organ of state that may have jurisdiction over any aspect of the activity of Eskom's intention to submit an application to DEAT. These included:
 - * National and Limpopo Department of Water Affairs and Forestry
 - * Limpopo Department of Economic Development, Environment and Tourism
 - * Limpopo Department of Land Affairs
 - * Limpopo Department of Agriculture
 - * Limpopo Department of Roads and Public Works
 - * National and Limpopo South African Heritage resources Agency (SAHRA)
 - * Limpopo Department of Safety, Security and Liaison
- A notice in one local newspaper to advertise the Basic Assessment process – Mogol Pos on 07 March 2008
- A notice in one local newspaper to advertise the availability of the draft Basic Assessment Report and the Public Meeting – Mogol Pos on 13 June 2008

2. CONTENT OF ADVERTISEMENTS AND NOTICES

Advertisements and notices must indicate that an application will be submitted to the competent authority in terms of the EIA regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made.

Advertisements and notices detailed the intent to undertake an EIA process, the nature and location of the proposed project, where further information on the proposed activity could be obtained and the manner in which representations on the application could be made. An advertisement was also placed to advertise the availability of the draft Basic Assessment Report and the Public Meeting.

Copies of these advertisements and notices are included within Appendix E.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

The activity is restricted to the Lephalale local Municipal area. Notice were placed in the local newspaper (the Mogol Post) on 07 March 2008 and 13 June 2008. A site notice was placed at the start of the Basic Assessment process. Copies of these advertisements and notices are included within Appendix E.

4. DETERMINATION OF APPROPRIATE MEASURES FOR PUBLIC PARTICIPATION

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

Consultation with stakeholders was undertaken telephonically, through one-on-one interviews and through a Focus Group Meeting with the Lephalale Local Municipality (refer to Appendix E for the minutes of this meeting). A public meeting was held during the Report comment period on 26 June 2008 in Lephalale to provide an opportunity for the public to receive feedback on the findings of the Basic Assessment for the proposed project. The minutes of this meeting are included in Appendix E.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

All issues, comments and/or concerns raised regarding the proposed project, as well as responses provided have been captured and are recorded within the Comments and Response Report attached within Appendix E.

6. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

The planning department of the Lephalale Local Municipality, within whose jurisdiction the proposed project falls, have been consulted regarding the proposed project. Minutes of meetings held are included within Appendix E. In addition, the Lephalale Local Municipality was represented at the public meeting held during the Report comment period on 26 June 2008 in Lephalale.

Has any comment been received from the local authority?	YES ✓	
If "YES", briefly describe the feedback below (also attach any correspondence to and from the local authority to this application):		
<p>A focus group meeting was held with the following representatives of the Lephalale Local Municipality (LLM).</p> <ul style="list-style-type: none"> » Mr Masindi Mapholi, Head of Division: Water » Mr April Shiko, Engineering Technician: Water » Mr Nditshemi Sikhauli, PMU Manager » Mr Leonard Sole, Manager: Development Planning and Acting Manager: Infrastructure Development Services. <p>A copy of the minutes of this meeting are attached in Appendix E. The representatives from the LLM stated that it would be their preference to enter into direct consultation with Eskom regarding their technical questions on the proposed project and queries regarding water availability and use. A meeting between all the relevant parties is being set up by Eskom in order to address any outstanding queries by the LLM.</p> <p>In addition, the LLM was represented at the Public Meeting held on 26 June 2008 in Lephalale. Minutes of this meeting are included in Appendix E.</p>		

7. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Potentially affected stakeholders have been identified and consulted regarding the proposed project, including, *inter alia*:

- » Affected and neighbouring landowners
- » National and Limpopo Department of Water Affairs and Forestry
- » Limpopo Department of Economic Development, Environment and Tourism
- » Limpopo Department of Land Affairs
- » Limpopo Department of Agriculture
- » Limpopo Department of Roads and Public Works
- » National and Limpopo South African Heritage Resources Agency (SAHRA)
- » Limpopo Department of Safety, Security and Liaison
- » Exaaro Grootegeluk Mine
- » Eskom - Matimba Power Station

A database of stakeholders and interested and affected parties is attached in Appendix E.

Has any comment been received from stakeholders?	YES ✓	
Copies of correspondence to and from the stakeholders to this application is included in Appendix E.		

Key issues raised include:

- » Job opportunities for companies and/or individuals associated with the proposed project
- » Future water users and future water needs
- » Water allocation to the local municipal area
- » Consideration of DWAF's requirements with regards to water storage and water use.

A Comments and Response report is attached with Appendix E.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2006, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

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

Issues raised by interested and affected parties are detailed in the Comments and Response Report attached within Appendix E. In summary, the issues raised include:

- » Job opportunities for companies and/or individuals associated with the proposed project
- » Future water users and future water needs
- » Water allocation to the local municipal area
- » Consideration of DWAF's requirements with regards to water storage and water use.

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, including impacts relating to the choice of site alternatives.

No impacts are anticipated as a result of the planning and design phase of the proposed development as no excavation/exploratory work which may impact on the environment is anticipated to be required to be undertaken on site. The process of refining pipeline routes taking environmental sensitive areas/constraints into account has formed part of this assessment process. Design has, therefore, considered identified constraining environmental factors.

3. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

Potential impacts associated with the construction of the proposed project are discussed below. Detailed specialist studies are included within Appendix D.

The following methodology was used in assessing impacts related to the proposed development, and the detail regarding the assessments and ratings is contained in the specialist reports included in Appendix D:

All impacts are assessed according to the following criteria:

- » The **nature**, a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of

- between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high).
- » The **duration**, wherein it is indicated whether:
 - * the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
 - * medium-term (5–15 years) – assigned a score of 3;
 - * long term (> 15 years) - assigned a score of 4; or
 - * permanent - assigned a score of 5.
 - » The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
 - * 0 is small and will have no effect on the environment;
 - * 2 is minor and will not result in an impact on processes;
 - * 4 is low and will cause a slight impact on processes;
 - * 6 is moderate and will result in processes continuing but in a modified way;
 - * 8 is high (processes are altered to the extent that they temporarily cease); and
 - * 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
 - » The **probability of occurrence**, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
 - * Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
 - * Assigned a score of 2 is improbable (some possibility, but low likelihood);
 - * Assigned a score of 3 is probable (distinct possibility);
 - * Assigned a score of 4 is highly probable (most likely); and
 - * Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
 - » the **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
 - » the **status**, which is described as either positive, negative or neutral.
 - » the degree to which the impact can be reversed.
 - » the degree to which the impact may cause irreplaceable loss of resources.
 - » the *degree* to which the impact can be *mitigated*.

The **significance** is determined by combining the criteria in the following formula:

$S=(E+D+M)P$; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < **30 points**: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » **30-60 points**: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),

- » > **60 points:** High (i.e. where the impact must have an influence on the decision process to develop in the area).

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the construction phase:

1. Potential impacts on flora, fauna and ecology (refer Appendix D1):

Loss of Biodiversity - Destruction of Threatened Species and Habitat:

The loss of threatened species or areas that are suitable for these species is a significant impact on the biodiversity of a region. Threatened species, in most cases, do not contribute significantly to the biodiversity of an area in terms of sheer numbers as there are generally few of them, but they are extremely important in terms of the biodiversity of an area and high ecological value is placed on the presence of such species in an area. Threatened species are particularly sensitive to changes in their environment, having adapted to specific habitat requirements. Habitat changes, mostly a result of human interferences and activities, are one of the greatest reasons for these species having a threatened status.

Surface impacts resulting from the proposed activity will lead to changes that will affect these habitats adversely. Effects of this impact will be permanent and recovery or mitigation is generally not perceived as possible.

- » The likelihood of Red Data flora or fauna species occurring within the study area is regarded moderate to low. Therefore the likelihood of this impact occurring is regarded low.
- » The highest probability is associated with atypical habitat types such as rocky outcrops and riparian environments.
- » The size of the area that will be affected is furthermore small and it is regarded possible that, in the event that a community of Threatened species are affected by the development, the affected area might be repopulated by the species within a period of time.
- » The most effective manner in which this impact can be prevented is to avoid areas where Red Data species might occur, i.e. rocky outcrops and riparian environments.

Loss of Biodiversity - Destruction of Protected Tree Species:

The National Forests Act (Act No 84 of 1998) lists certain tree species as being protected. The objective of this list is to provide strict protection to certain species while others require control of harvesting. In terms of the National Forests Act, these tree species may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold - except under licence granted by the Department of Water Affairs and Forestry (or a delegated authority).

The likelihood of this impact happening is regarded definite, particularly in the natural regional vegetation, as numerous protected tree species occur in the study area. It should be noted that all of these species occur extensively in the greater region and the populations are not under any threat as a result of the proposed development. Obtaining relevant permits are nonetheless required and transplanting of some individuals could be considered.

Habitat Degradation - Destruction of Sensitive and Pristine Habitat Types:

Sensitive habitat types include a rocky outcrop and a dam/non-perennial stream. These areas represent centres of atypical habitat and contain biological attributes that are not frequently encountered in the greater surrounds. A high conservation value is attributed to the floristic communities and faunal assemblages of these areas as they contribute significantly to the biodiversity of a region. Furthermore, these habitat types are generally isolated. Impact result in fragmentation and isolation of existing

ecological units, affecting the migration potential of some fauna species adversely, pollinator species in particular.

The revised alternative alignments for the pipeline have successfully avoided impacting on the dam as well as the rocky outcrop. The pipeline alignment has been shifted south from the original alignment in order to avoid these features.

Loss of Biodiversity - Changes in Local/Regional Biodiversity:

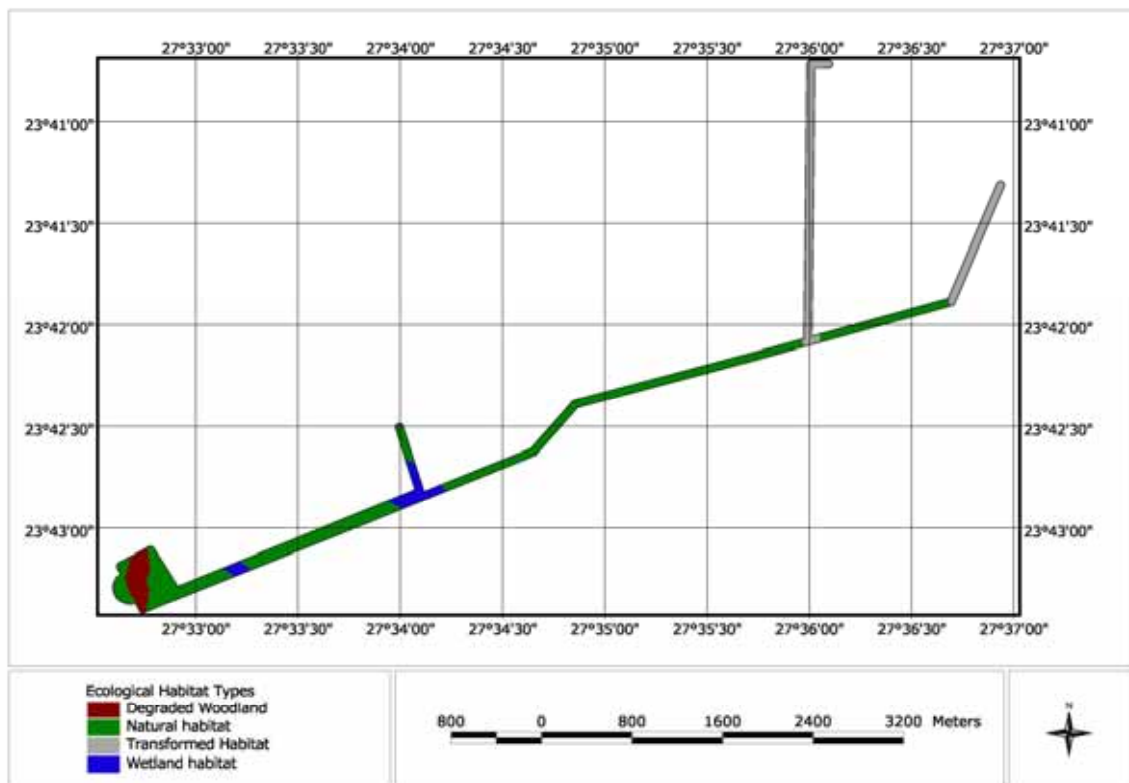
The transformation of pristine grassland and woodland habitat during the construction process will inevitably result in the establishment of habitat types that are not considered representative of the region. Surrounding areas are frequently invaded by shrubs, woody and weedy pioneer species, affecting the local biodiversity adversely.

Avoiding impacts in sensitive environments will curb this impact to a large extent, while the effective control of invasive species during maintenance operations in the servitude are regarded sufficient to prevent residual impacts in the natural regional habitat type. This impact should be closely monitored by means of an environmental monitoring programme.

Summary: Potential impacts on flora, fauna and ecology

The ecological habitat types for the project components are as follows (refer Figure 3):

- Reservoir Site:* Degraded woodland, with natural habitat intact only on the fringes of the site
- Pipeline Alternative S2:* Natural habitat and transformed habitat with isolated patches within the buffer of wetland habitat
- Pipeline Alternative S3:* Natural habitat and transformed habitat with isolated patches within the buffer of wetland habitat



The ecological sensitivity of the Degraded Woodland and Transformed Areas habitat types are regarded low and impacts resulting from the proposed development on the biological attributes in these parts are regarded negligent. No assessment is therefore required for these habitats. An assessment of the significance of impacts on the biological environment is compiled only for areas where a moderate or high ecological sensitivity was attributed. These areas include:

- Natural Regional Habitat Type (Reservoir site; Pipeline Alternatives S2 and S3)
- Wetland habitat and associated buffer areas of non-Perennial Stream and Dam (Pipeline Alternatives S2 and S3)
- Rocky Outcrop (none on S2 and S3 - avoided due to re-alignment of pipeline alternatives)

Impacts that are of relevance include:

- Loss of Biodiversity - Destruction of Threatened Species and Habitat
- Loss of Biodiversity - Destruction of Protected Tree Species
- Habitat Degradation - Destruction of Pristine/Sensitive Habitat Types

Natural Regional Habitat (Reservoir site; Pipeline Alternatives S2 and S3):

<i>Nature of Impact: Loss of biodiversity - Threatened species and associated habitat</i>		
	<i>Without mitigation</i>	<i>With mitigation</i>
<i>Significance</i>	Medium	Negligible-Low
<i>Status (positive or negative)</i>	Negative	Negative
<i>Mitigation: Ensure absence of Red Data species by means of final walkthrough, rescue operations where necessary</i>		
<i>Cumulative impacts: None</i>		
<i>Nature of Impact: Loss of biodiversity – Protected tree species</i>		
	<i>Without mitigation</i>	<i>With mitigation</i>
<i>Significance</i>	Medium	Low
<i>Status (positive or negative)</i>	Negative	Negative
<i>Mitigation: Obtain relevant permits for removal, transplant individuals to adjacent areas where possible</i>		
<i>Cumulative impacts: None</i>		
<i>Nature of Impact: Habitat degradation – pristine/ sensitive habitat type</i>		
	<i>Without mitigation</i>	<i>With mitigation</i>
<i>Significance</i>	<i>Low</i>	<i>Negligible-Low</i>
<i>Status (positive or negative)</i>	<i>Negative</i>	<i>Negative</i>
<i>Mitigation: Generic mitigation measures, removal and control of invasive species, implementation of monitoring programme</i>		
<i>Cumulative impacts: None</i>		

Non-Perennial Stream and Dam (Pipeline Alternatives S2 and S3):

Nature of Impact: Loss of biodiversity - Threatened species and associated habitat		
	Without mitigation	With mitigation
<i>Significance</i>	Medium	Negligible-Low
<i>Status (positive or negative)</i>	Negative	Negative
<i>Mitigation:</i> Minimise disturbance to natural areas, as identified through a final walkthrough of the alignment prior to construction activities commencing, and implementing rescue operations where necessary.		
<i>Cumulative impacts:</i> None		
Nature of Impact: Loss of biodiversity – Protected tree species		
	Without mitigation	With mitigation
<i>Significance</i>	Low	Low
<i>Status (positive or negative)</i>	Negative	Negative
<i>Mitigation:</i> Minimise disturbance to natural areas, as identified through a final walkthrough of the alignment prior to construction activities commencing, and implementing rescue operations where necessary.		
<i>Cumulative impacts:</i> None		
Nature of Impact: Habitat degradation – pristine/sensitive habitat type		
	Without mitigation	With mitigation
<i>Significance</i>	Low	Negligible-Low
<i>Status (positive or negative)</i>	Negative	Negative
<i>Mitigation:</i> Minimise disturbance to natural areas, as identified through a final walkthrough of the alignment prior to construction activities commencing, and implementing rescue operations where necessary. Ensure removal and control of invasive species, as well as implementation of a monitoring programme.		
<i>Cumulative impacts:</i> None		

2. Potential impacts on cultural, historical and archaeological sites (refer Appendix D2):

Destruction of heritage sites

The significance of a heritage site and artefacts is determined by its historical, social, aesthetic, technological and scientific value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

No sites, features or objects of significance were found in the study area. Impact from the development would therefore be judged to be low. Sites regarded as having low significance are viewed as been recorded in full after identification and would require no further mitigation.

The National Heritage Resources Act (Act No 25 of 1999) stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

Nature of Impact: Destruction of heritage sites		
	Without mitigation	With mitigation
<i>Significance</i>	Low	Low
<i>Status (positive or negative)</i>	Negative	Positive
<i>Mitigation:</i> Adequately document and record sites or artefacts during excavation of such sites by an appropriately qualified heritage specialist.		
<i>Cumulative impacts:</i> There are very few areas which have sites of significance in this area – the cumulative impacts are low/negligible, even with the larger development footprint of the Medupi power station in the area.		

3. Potential visual impacts (refer Appendix D3):

The visual impact index is a combined weighted index of the visual exposure, the observer proximity and the viewer incidence/perception of the proposed reservoir. The result of the combination of the above criteria gives an indication of the likely area of visual impact. This helps in focussing the attention to the critical areas of potential impact when evaluating the issues related to the visual impact.

Figure 4 shows the visual impact index should the vegetation cover surrounding the reservoir site be removed (i.e. a worst case scenario viewshed analysis). The area of highest potential visual impact is indicated along the Afguns road at a distance of 500 m or less from the reservoir. The visual impact rapidly subsides at a distance of a 1 000 m where the impact is expected to become low and very low beyond the 2 000 m mark.

The visual impact index (Figure 5) that includes the viewshed analysis where the vegetation cover was mapped for the area surrounding the reservoir site shows a dramatically reduced area of potential visual impact. The short distance visibility, where the highest visual impact would normally occur, is absent from this index. The highest visual impact value is indicated as "low" on the index and occurs along the Afguns road where observers travelling north could potentially view the reservoir from a distance of approximately 2 000 m. This visual impact index clearly illustrates that the visual impact of the reservoir could potentially be mitigated or even negated if proper pre-construction planning is undertaken in order to minimise disturbance to the natural vegetation.

Visual impact on users of the Afguns road associated with the Reservoir

As indicated the primary area of potential visual impact would occur along this section of road within a 500 m radius of the reservoir. It was also proven that the mitigation potential for this visual impact is very high if the visual absorption capacity of the natural vegetation along this road (refer Figure 6) is properly utilised. To this end, the visual impact table shown below indicates the visual impact should the natural vegetation cover be removed between the reservoir site and the road (i.e. no mitigation), as well as the second column that assumes the responsible "protection" of the vegetation cover as a visual barrier between the road and the reservoir (i.e. with mitigation).

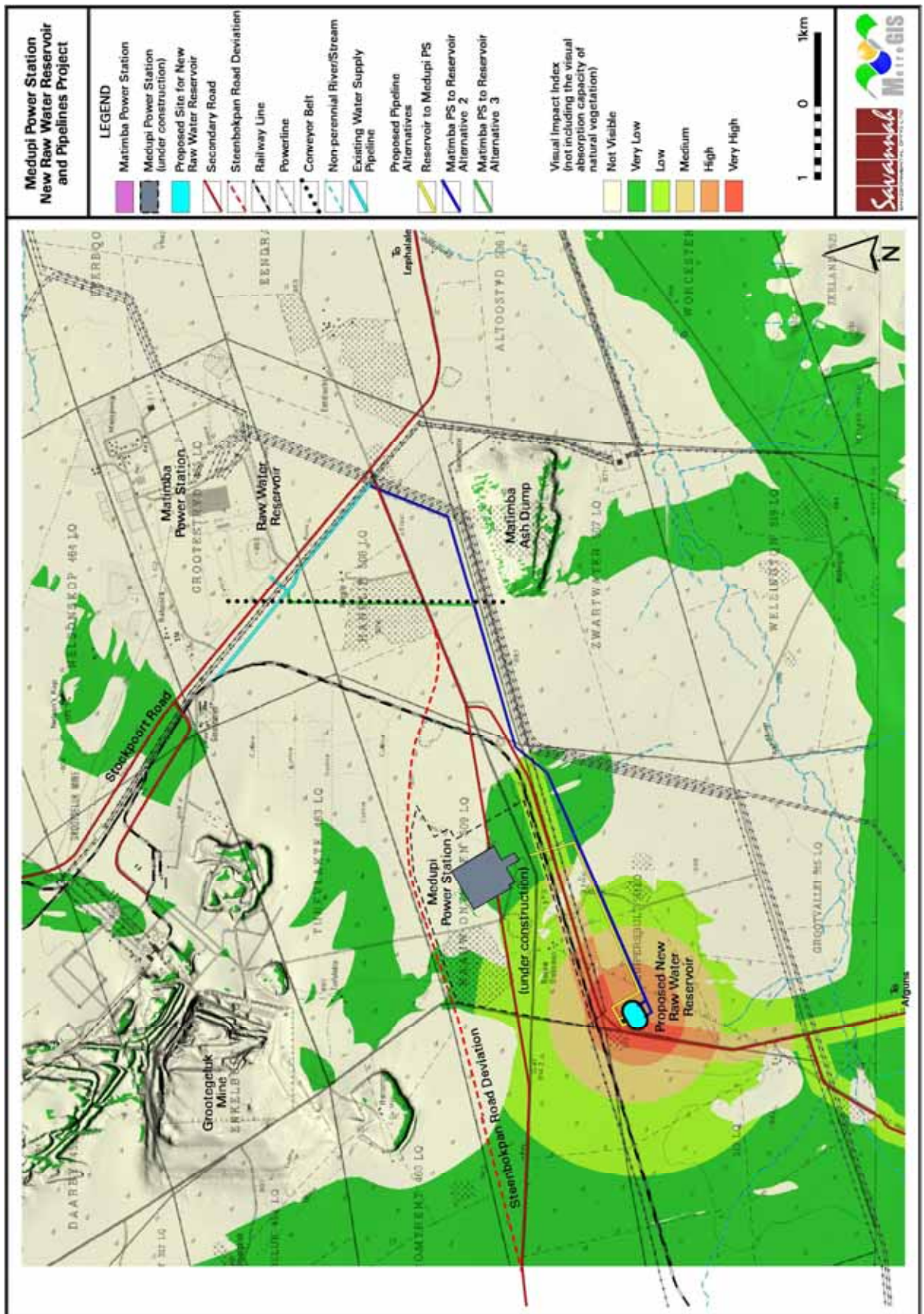


Figure 4: Potential visual impact (not incorporating vegetation cover).

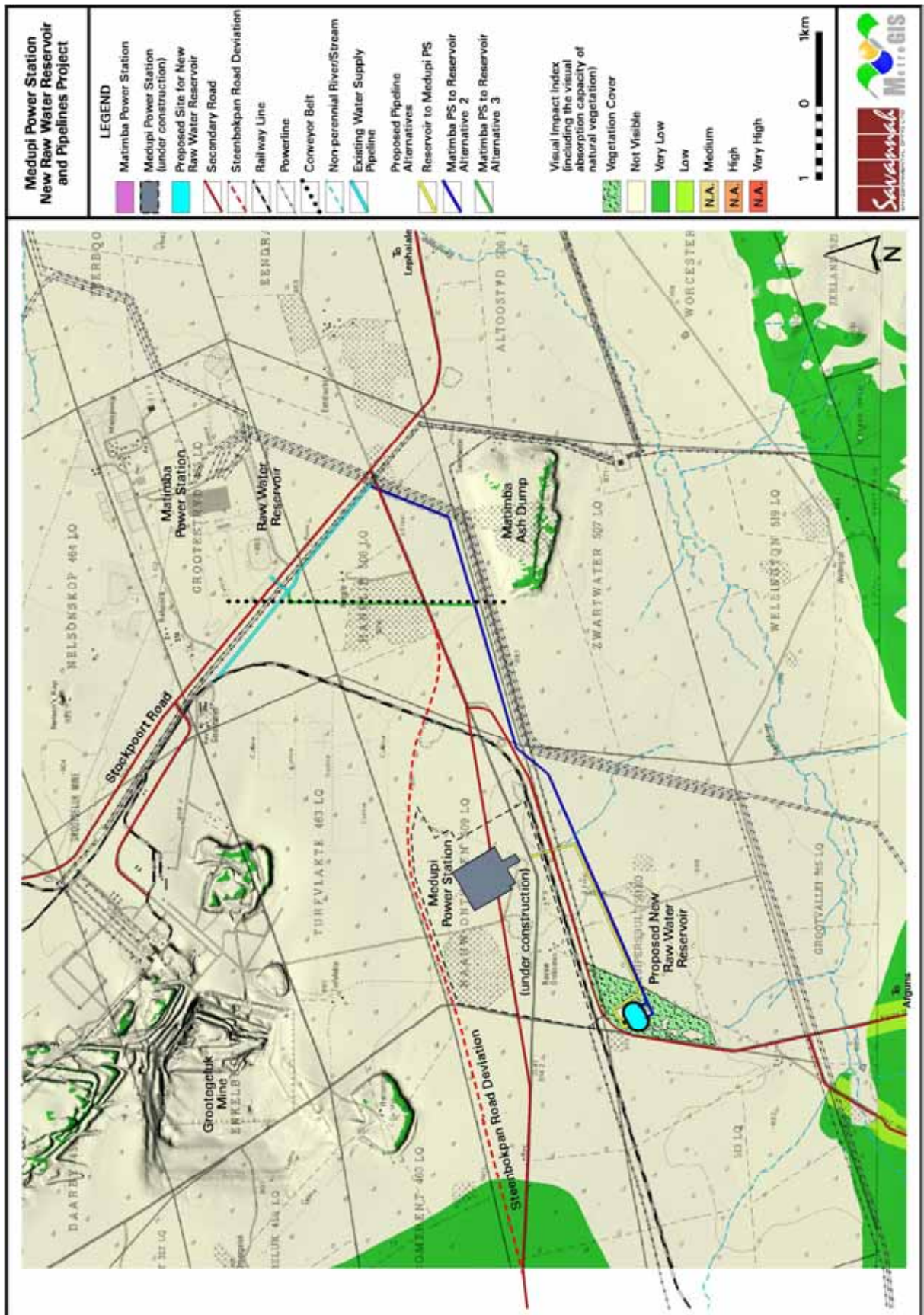


Figure 5: Potential visual impact (including the visual absorption capacity of vegetation).



Figure 6: Photograph taken travelling north on the Afguns road, with proposed reservoir site situated behind the vegetation cover on the right hand side of the road

Nature of Impact: Potential visual impact on users of the Afguns road associated with the Reservoir		
	Without mitigation	With mitigation
<i>Significance</i>	Medium	Low
<i>Status (positive or negative)</i>	Negative	Positive
<i>Mitigation:</i> Vegetation cover surrounding the reservoir must be protected in order to act as a visual barrier between the road and all components of the reservoir (including security fencing, lighting structures and access roads).		
<i>Cumulative impacts:</i> The study area is visually impacted on by an increasing number of mining and power generating activities. Structures and activities in relative close proximity of the proposed reservoir include; two power stations, assorted mining infrastructure, railway lines, power lines, substations, conveyor belts, slimes dams, ash dumps, coal stockpiles, mine dumps, etc.		

Potential visual impact of security fencing and lighting:

The landscaping of the outer walls of the reservoir effectively hides the functional concrete design and structures of the reservoir. Once re-vegetated the reservoir itself virtually disappears "underground". If enough natural vegetation shields the vegetated berms the structure is quite inconspicuous. However, the presence and prominence of security fencing and lighting structures associated with this structure creates a greater visual intrusion than the actual reservoir itself.

Should the fencing and lighting have been placed between the reservoir and the natural vegetation coverage the impact of these structures could also have been mitigated or even negated. It is recommended that the security barrier for the new raw water reservoir be offset away from the Afguns road and that a 30 m "green" buffer zone is kept in place to shield the observers along this road from both the reservoir and the security structures.

The need for lighting fixtures (flood lights) should be carefully planned and installed in order to avoid the potential visual impact of glare (the effect of staring into the light source) and light trespass (spill light that illuminates adjacent properties). A lighting engineer must be appointed to design the lighting layout for the reservoir and to oversee the placement and construction of these structures. A plan for periodic inspection and timely maintenance of light fixtures must also be implemented and adhered to.

Potential visual impact of pipeline alternatives

The clearing of vegetation and the resultant aboveground cleared servitude is the single most visible evidence of the presence of underground infrastructure and the only long-term visual impact of the proposed pipelines. It therefore stands to reason that the utilisation of existing servitudes (i.e. the power line servitudes, the conveyor belt servitude or the railway line servitude) would not cause additional visual impacts. The removal of natural vegetation where the alignments traverse "green fields" sections creates highly visible cut lines. Both pipeline alternatives are therefore preferable – that is Alternative 2 (along the transmission line servitudes) or Alternative 3 (adjacent to the conveyor belt).

A similar scenario (i.e. the removal of natural vegetation) as mentioned above, is likely to occur closer to the reservoir site. It is once again suggested that the pipeline servitudes are offset from the Afguns road and that a green buffer zone be retained adjacent to the road (south of the road). It is further recommended that the pipeline servitudes function as an access road to the reservoir site and that no additional access roads be constructed.

Additional long-term mitigation measures of the pipeline servitudes include the proper re-instatement of the backfilled pipeline trenches to its original soil stability condition, together with the re-vegetation of the topsoil. This will greatly reduce the potential occurrence of unsightly erosion scarring. The pipeline servitude must be periodically revisited in order to determine whether the integrity of the re-instatement/rehabilitated areas remain intact. Problem areas must be identified and proper maintenance should be undertaken on an ongoing basis.

4. Potential impacts on social environment (refer Appendix D4):

Demographic - Influx of construction workers:

Influx of construction workers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. However, since a reservoir has only changed location, it is believed that construction workers would be sourced from the power station construction teams to construct the reservoir and therefore an additional influx of construction workers is not expected.

Demographic - Influx of job seekers:

Influx of job seekers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. However, in view of the number of developments currently taking place in the area, it is expected that labourers would focus their attention on securing employment at one of these construction sites. It is therefore expected that labourers would remain in the area as opposed to moving out of the area in large numbers.

Economic - Direct formal employment opportunities to local individuals:

Direct formal job opportunities for local individuals and/or contractors that create income (economic impact) and enhance social well-being.

Economy: Labourers who secure employment on the project, also secures an income. Money therefore becomes available to the individual and his/her family that would enable families to take care of themselves as they are now, e.g. able to buy food and pay for services.

Social well-being: Families who become financially independent have a better sense of social well being as they are able to take care of themselves and are therefore less dependant on outside structures to take care of their needs.

Economic - Indirect formal and/or informal employment opportunities to local individuals:

Indirect formal and/or informal job opportunities for local individuals and/or contractors that creates income (economic impact). The impacts as a result of indirect formal and/or informal employment opportunities is expected to be of a similar nature to that of direct formal employment opportunities as outlined above.

Institutional and empowerment - Attitude formation against the project:

Attitude formation against the project could have economic impacts and could impact on social well-being. Due to all the developments in the area, it would appear as if stakeholders in the area have been "over participated" to such an extent that very little reaction has been received on the proposed Medupi water reservoir, which is most likely experienced as 'just another small project' in a line of projects. The risk for attitude formation against the project in the form of social mobilisation therefore seems unlikely in this instance.

Institutional and empowerment - Disaster Management Plan:

Disaster Management Plan to enhance safety on site, as well as the safety of the surrounding areas.

Socio-cultural - Integration of construction workers into local areas:

Socially acceptable integration, including the risk of spreading STIs and HIV/AIDS with an impact on health. Where integration is complicated as a result of different ethnical and/or cultural backgrounds, conflict may arise, impacting on social well-being.

Socio-cultural - Noise pollution:

Psycho-social impact of construction and operational activities and resultant noise pollution on surrounding landowners' quality of life. However, there are currently no densely populated areas around the reservoir site or along the pipeline routes.

Socio-cultural - Sense of place:

The location of the proposed reservoir and associated infrastructure (e.g. pipelines) might impact on sense of place of inhabitants.

Biophysical - Pollution and fire risk:

The impact of pollution and fire risk on construction workers and the surrounding community's health and safety.

Biophysical – Sanitation:

Lack of sanitation impacts on the environment, which could affect health of people.

Summary:

The impacts listed below are relevant to the project as a whole, and include the Reservoir site, as well as Pipeline Alternatives S2 and S3.

Nature of Impact: Demographic - Influx of construction workers:		
	Without mitigation	With mitigation
<i>Significance</i>	Low to medium	Low
<i>Status (positive or negative)</i>	Negative	Negative to neutral
<p><i>Mitigation:</i></p> <p>Economy:</p> <ul style="list-style-type: none"> Encourage construction workers to make use of local services. Inform local businesses of the presence of construction workers so that they are prepared for the additional demand on their services. <p>Health:</p> <ul style="list-style-type: none"> Conduct an HIV/STI awareness campaign through the use of talks, posters, etc. both within the local area as well as amongst construction workers. Make condoms available at a central and discreet point for use by both construction workers as well as community members. <p>Safety and Security:</p> <ul style="list-style-type: none"> Construction workers should be clearly identifiable through the use of overalls with the construction company logo, and/or ID tags. Inform neighbouring property owners when construction workers will be on site, during what times of the day and for how long they would be on site. <p>Social well-being:</p> <ul style="list-style-type: none"> Communicate local communities' expectations (cultural, social) to construction workers. 		
<p><i>Cumulative impacts:</i> The presence of construction workers on other developments in the area leads to an increase in numbers and therefore proportionally an increase in the likelihood of the impacts described above materialising.</p>		
Nature of Impact: Demographic - Influx of job seekers		
	Without mitigation	With mitigation
<i>Significance</i>	Low to medium	Low
<i>Status (positive or negative)</i>	Negative	Negative to neutral
<p><i>Mitigation:</i> Job seekers should be directed to the labour desk at the Medupi power station construction site.</p>		
<p><i>Cumulative impacts:</i> The presence of construction workers on other developments in the area leads to an increase in numbers and therefore proportionally an increase in the likelihood of the impacts described above materialising.</p>		
Nature of Impact: Economic - Direct formal employment opportunities to local individuals		
	Without mitigation	With mitigation
<i>Significance</i>	Low (economy and social well-being)	Low (economy) Medium (social well-being)
<i>Status (positive or negative)</i>	Positive	Positive
<p><i>Mitigation:</i></p> <p>Economy:</p> <ul style="list-style-type: none"> Payment should comply with applicable Labour Law legislation. <p>Social well-being:</p> <ul style="list-style-type: none"> Unskilled job opportunities should be afforded to local residents. Local trade unions could assist 		

<p>with the recruitment process to counteract the potential for social mobilisation.</p> <ul style="list-style-type: none"> Mechanisms should be developed to provide alternative solutions for creating job security upon completion of the project. This could include formal and/or informal training on how to look for alternative employment, information on career progression, etc. to ensure that people are equipped to seek other jobs with the skills that they have gained. 		
<p><i>Cumulative impacts:</i> None</p>		
<p><i>Nature of Impact: Institutional and empowerment - Attitude formation against the project</i></p>		
	<i>Without mitigation</i>	<i>With mitigation</i>
<i>Significance</i>	Low (economy and social well-being)	Low (economy) Medium (social well-being)
<i>Status (positive or negative)</i>	Positive	Positive
<p><i>Mitigation:</i></p> <p>Social well-being:</p> <ul style="list-style-type: none"> Employment opportunities should first be offered to the local community if the skills are available within the community. The undertakings in the EMP should also be implemented effectively and with due diligence. 		
<p><i>Cumulative impacts:</i> None</p>		
<p><i>Nature of Impact: Institutional and empowerment - Disaster Management Plan</i></p>		
	<i>Without mitigation</i>	<i>With mitigation</i>
<i>Significance</i>	Low	Medium
<i>Status (positive or negative)</i>	Negative	Positive
<p><i>Mitigation:</i></p> <ul style="list-style-type: none"> Develop and implement a disaster management plan for implementation during the construction phase. Identify suitable individuals that can be trained and used as first aid officers on site (levels 1 to 3). Training of these individuals should ideally take place during this phase of the project to ensure that qualified first aid officers are on site once construction commences. Consult with private ambulance services and/or hospitals so that they are aware of the project and would be able to provide emergency and/or medical services if needed. 		
<p><i>Cumulative impacts:</i> A reduction in the dependency ratio on local emergency services.</p>		
<p><i>Nature of Impact: Socio-cultural - Integration of construction workers into local areas</i></p>		
	<i>Without mitigation</i>	<i>With mitigation</i>
<i>Significance</i>	High (health) Medium (social well-being)	Medium (health) Low (social well-being)
<i>Status (positive or negative)</i>	Negative	Negative to neutral
<p><i>Mitigation:</i></p> <p>Health:</p> <ul style="list-style-type: none"> An aggressive STI and HIV/AIDS awareness campaign should be launched, which is not only directed at construction workers but also at the area as a whole. <p>Social well-being:</p> <ul style="list-style-type: none"> Local women should be empowered, where feasible. This could be achieved by employing them to work on the project, which in turn would decrease their (financial) vulnerability. 		

<ul style="list-style-type: none"> The community should be informed in advance of the influx of construction workers and the time they will spend in the community as well as the activities they will be involved in. This will enable the community to prepare for a possible (temporary) change in functioning. A code of conduct should be established for construction workers in their dealings with the local community. 		
<p><i>Cumulative impacts:</i> Construction workers present at other construction sites increase the number of 'foreigners' in the local areas, thereby increasing the risk of health impacts and conflict.</p>		
<p>Nature of Impact: Socio-cultural - Noise pollution</p>		
	Without mitigation	With mitigation
Significance	Low	Low - negligible
Status (positive or negative)	Negative	Negative
<p><i>Mitigation:</i></p> <ul style="list-style-type: none"> Construction activities should be restricted to daytime hours between 06:00 and 18:00. Adjacent property owners should be consulted and notified of any construction activities that could lead to excessive noise levels. Adjacent property owners should also be consulted if any night time construction activities were to take place. 		
<p><i>Cumulative impacts:</i> There are currently no densely populated areas around the reservoir site or along the pipeline routes. A single dwelling was identified along the Stockpoort Road to the northwest of the current conveyor belt (alternative 3).</p>		
<p>Nature of Impact: Socio-cultural - Sense of place</p>		
	Without mitigation	With mitigation
Significance	Medium	Low
Status (positive or negative)	Negative	Neutral
<p><i>Mitigation:</i> Sufficient and transparent information should be supplied to neighbouring properties to enhance their sense of safety and thereby reducing the negative impact on sense of place.</p>		
<p><i>Cumulative impacts:</i> The farm Hanglip already has a number of servitudes registered against the title deed as a result of the presence of a number of transmission power lines and the conveyor belt. However, Eskom's intention is to include the pipeline servitude within the 92 m wide conveyor servitude, which would minimise the cumulative impact.</p>		
<p>Nature of Impact: Biophysical - Pollution and fire risk</p>		
	Without mitigation	With mitigation
Significance	Medium	Low
Status (positive or negative)	Negative	Negative to neutral
<p><i>Mitigation:</i></p> <ul style="list-style-type: none"> Implementation of appropriate and approved waste management procedures. Construction workers should only be allowed to make fire in designated areas. Construction workers who do not keep within designated areas should be fined. 		
<p><i>Cumulative impacts:</i> None</p>		
<p>Nature of Impact: Biophysical – Sanitation</p>		
	Without mitigation	With mitigation
Significance	Medium	Low
Status (positive or negative)	Negative	Negative to neutral

<p><i>Mitigation:</i></p> <ul style="list-style-type: none"> • Adequate water facilities should be provided. • Sufficient portable chemical toilets on the construction site.
<p><i>Cumulative impacts: None</i></p>
<p>No-go alternative</p> <p>The no-go alternative is constructing the raw water reservoir on the site within the approved Medupi Power Station footprint (as part of the approved ancillary infrastructure). Direct impacts associated with the no-go alternative have been assessed through the EIA process undertaken for the Medupi Power Station complex (Record of Decision for project reference number 12/12/20/695). The no-go alternative for the reservoir would be reverting back to the status quo, and although no longer considered the ideal position for the facility, could be constructed within the allocated space within the power station complex.</p> <p>Indirect impacts would be associated with the required pumping station which would be required for the water system, as the original position of the reservoir did not allow for gravity feed. The power requirements for this system would be higher than for a gravity feed system. In addition, reliability of the system is considered to be less than that of a gravity feed system.</p>

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

<p>1. Flora, fauna and ecological impact mitigation measures:</p> <p>Mitigation of impacts are regarded possible and will control significant impacts to a large extent. Ecological impacts within the area of the rocky outcrop were regarded unacceptable, and this was considered in the re-alignment of the pipeline alternatives (as described). The following mitigation measures are recommended for potential impacts on flora, fauna and ecology, as indicated above:</p> <ul style="list-style-type: none"> » Ensure absence of Red Data species by means of a final walkthrough for the final alignment during the growing season (November – March) » Identify and mark all protected tree species during the final walkthrough » Obtain relevant permits for removal or cutting of protected tree species » Transplant selected trees to adjacent areas where possible » Implement rescue operation in areas where Red Data species/Protected trees are present » Remove and control the occurrence of invasive species during the operational phase » Implement a monitoring programme which aims to assess any significant and long-term impacts on the status of biological attributes, particularly in sensitive areas such as the drainage line and seasonal dam » Avoid impacts on the rocky outcrop area as well as the non-perennial stream and dam. <p>2. Cultural, historical and archaeological sites impact mitigation measures</p> <p>Mitigation of impacts are regarded possible. Although no known sites were identified within the study area, should any sites of cultural, historical and archaeological significance be unearthed during construction activities, an appropriate heritage specialist should be informed and advised to excavate and record the site.</p>
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3. Visual Impact mitigation measures:

The majority of the impacts are associated with the raw water reservoir structure. The pipelines are not considered to be visually intrusive structures. The following mitigation measures are recommended for potential impacts on visual, as indicated above:

- » The professional services of a landscape architect should be acquired in order to create a master plan for the detailed design of the reservoir.
- » Green buffer zones should be reserved or created and maintained at critical areas surrounding the reservoir.
- » The removal of natural vegetation should be limited to the bare minimum and should not be undertaken without proper planning and delineation.
- » Individual vegetation communities should be identified and earmarked as visual absorption buffer zones.
- » The activities and movement of construction vehicles and personnel during the construction phase should be restricted to help prevent the wanton destruction of natural vegetation that could play an important role in the long term mitigation of visual impacts.
- » The clearing of vegetation for servitudes should be restricted to the bare minimum required for the servicing and maintenance of infrastructure.
- » The general appearance of construction activities, construction camps (if required) and lay-down areas must be maintained by means of the timely removal of rubble and disused construction materials.

4. Social Impact mitigation measures:

The majority of the impacts on the social environment are not limited to a component of the project, but would be relevant to the project as a whole. Construction workers undertaking works at the Medupi Power Station would be used for the construction of this project. The following mitigation measures are recommended for potential impacts on the social environment, as indicated above:

- » Job seekers should be directed to the labour desk at the Medupi Power Station construction site.
- » Unskilled job opportunities should be afforded to local residents. Employment opportunities should first be offered to the local community if the skills are available within the community.
- » Encourage construction workers to make use of local services.
- » Inform local businesses of the presence of construction workers so that they are prepared for the additional demand on their services.
- » Conduct an HIV/STI awareness campaign through the use of talks, posters, etc. both within the local area as well as amongst construction workers.
- » Construction workers should be clearly identifiable through the use of overalls with the construction company logo, and/or ID tags.
- » Inform neighbouring property owners when construction workers will be on site, during what times of the day and for how long they would be on site.
- » Communicate local communities' expectations (cultural, social) to construction workers.
- » Develop a procurement policy that is easy to understand and ensure that local subcontractors also comply with the procurement policy and any other applicable policies.
- » Develop and implement a disaster management plan for implementation during the construction phase.
- » Identify suitable individuals that can be trained and used as first aid officers on site (levels 1 to 3). Training of these individuals should ideally take place during this phase of the project to ensure that qualified first aid officers are on site once construction commences.
- » Construction activities which will result in disturbance noise to neighbouring properties should be

- restricted to between 06:00 and 18:00 (as per the Environment Conservation Act), or an application for exemption be lodged with DEAT (and neighbouring landowners consulted) for work to be conducted outside of this period.
- » Adjacent property owners should be consulted and notified of any construction activities that could lead to excessive noise levels.
 - » Adjacent property owners should also be consulted if any night time construction activities were to take place.
 - » Sufficient and transparent information should be supplied to neighbouring properties to enhance their sense of safety and thereby reducing the negative impact on sense of place.
 - » Approved waste management procedures for the Medupi Power Station construction site should be implemented.
 - » Construction workers should only be allowed to make fire in designated areas. Construction workers who do not keep within designated areas should be fined.
 - » Adequate water and sanitation facilities should be provided.
 - » The undertakings in the EMP should be implemented effectively and with due diligence.

4. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the operational phase:

Reservoir Site:

Visual impact on users of the Afguns road associated with the Reservoir

As indicated the primary area of potential visual impact would occur along this section of road within a 500 m radius of the reservoir. It was also proven that the mitigation potential for this visual impact is very high if the visual absorption capacity of the natural vegetation along this road is properly utilised. To this end, the visual impact table shown below indicates the visual impact should the natural vegetation cover be removed between the reservoir site and the road (i.e. no mitigation), as well as the second column that assumes the responsible "protection" of the vegetation cover as a visual barrier between the road and the reservoir (i.e. with mitigation).

Nature of Impact: Potential visual impact on users of the Afguns road associated with the Reservoir		
	Without mitigation	With mitigation
<i>Significance</i>	Medium	Low
<i>Status (positive or negative)</i>	Negative	Positive
<i>Mitigation:</i> Vegetation cover surrounding the reservoir must be protected in order to act as a visual barrier between the road and all components of the reservoir (including security fencing, lighting structures and access roads).		
<i>Cumulative impacts:</i> The study area is visually impacted on by an increasing number of mining and power generating activities. Structures and activities in relative close proximity of the proposed reservoir include; two power stations, assorted mining infrastructure, railway lines, power lines, substations, conveyor belts, slimes dams, ash dumps, coal stockpiles, mine dumps, etc.		

Potential visual impact of security fencing and lighting:

The landscaping of the outer walls of the reservoir effectively hides the functional concrete design and

structures of the reservoir. Once re-vegetated the reservoir itself virtually disappears "underground". If enough natural vegetation shields the vegetated berms the structure is quite inconspicuous. However, the presence and prominence of security fencing and lighting structures associated with this structure creates a greater visual intrusion than the actual reservoir itself.

Should the fencing and lighting have been placed between the reservoir and the natural vegetation coverage the impact of these structures could also have been mitigated or even negated. It is recommended that the security barrier for the new raw water reservoir be offset away from the Afguns road and that a 30 m "green" buffer zone is kept in place to shield the observers along this road from both the reservoir and the security structures.

The need for lighting fixtures (flood lights) should be carefully planned and installed in order to avoid the potential visual impact of glare (the effect of staring into the light source) and light trespass (spill light that illuminates adjacent properties). A lighting engineer must be appointed to design the lighting layout for the reservoir and to oversee the placement and construction of these structures. A plan for periodic inspection and timely maintenance of light fixtures must also be implemented and adhered to.

Alternative S2 & S3

The pipelines are buried and will require minimal maintenance. No direct, indirect or cumulative impacts are anticipated to be associated with the operation phase.

No-go alternative (compulsory)

The no-go alternative is constructing the raw water reservoir on the site within the approved Medupi Power Station footprint (as part of the approved ancillary infrastructure). Direct impacts associated with the no-go alternative have been assessed through the EIA process undertaken for the Medupi Power Station complex (Record of Decision for project reference number 12/12/20/695). The no-go alternative for the reservoir would be reverting back to the status quo, and although no longer considered the ideal position for the facility, could be constructed within the allocated space within the power station complex.

Indirect impacts would be associated with the required pumping station which would be required for the water system, as the original position of the reservoir did not allow for gravity feed. The power requirements for this system would be higher than for a gravity feed system. In addition, reliability of the system is considered to be less than that of a gravity feed system.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Visual Impact mitigation measures:

The majority of the impacts are associated with the raw water reservoir structure. The pipelines are not considered to be visually intrusive structures. The following mitigation measures are recommended for potential impacts on visual, as indicated above:

- » Green buffer zones should be maintained at critical areas surrounding the reservoir.
- » Individual vegetation communities should be identified and earmarked as visual absorption buffer zones.
- » The clearing of vegetation for servitudes should be restricted to the bare minimum required for the servicing and maintenance of infrastructure.

List the potential activity/technology alternative related impacts (as appropriate) that are likely to occur as a result of the operational phase:

Not applicable.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Not applicable.

5. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

Not applicable.

6. PROPOSED MANAGEMENT OF IMPACTS AND MITIGATION

Indicate how identified impacts and mitigation will be monitored and/or audited.

Reservoir site and Alternative S2 & S3

- » Minimal impact on ecology and habitats in more sensitive areas, with successful recovery of vegetation in impacted areas post-construction phase.
- » Implementation of a monitoring programme for rehabilitation – to be implemented during construction, with regular reports to Eskom, and meaningful feedback to Contractor.
- » Monitoring programme- to be implemented post-construction, with reports to Eskom and contractor. The monitoring must cover all seasons.
- » Visual impacts from the Afguns road will be monitored/measured against the effective concealment of the reservoir and project infrastructure from observers travelling along (especially northwards) the Afguns road.
- » Visual impacts from pipeline servitudes will be monitored/measured according to their appearance post-rehabilitation – that is, they should appear unobtrusive and not be highly noticeable to observers.
- » A regular inspection of the integrity of the reservoir and pipelines to be undertaken in order to prevent failure which would result in degradation to the environment and potentially pose a safety risk to the social environment.

7. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up 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.

Reservoir site and Alternative S2 & S3

Based on the findings of the studies undertaken as well as the re-alignment of the pipeline

corridors in terms of environmental constraints identified through the Basic Assessment process, no environmental fatal flaws have been identified as a result of the construction of the proposed raw water reservoir and associated pipelines at the identified site and/or pipeline alternative alignments. However, a number of issues have been identified and evaluated for the reservoir site and the revised pipeline alternatives, including:

- » Potential impacts on flora, fauna and ecology
- » Potential impacts on cultural, heritage and archaeological sites
- » Potential visual impacts
- » Potential impacts on the social environment

Where identified issues are considered to be potentially significant, recommendations have been made with regards to the implementation of mitigation measures. Impacts identified are anticipated to have impacts of low to moderate significance. Potential impacts associated with the construction will definitely occur, and will be of short duration. Impacts associated with the operation phase are dependent on the design of the raw water reservoir and the potential for landscaping.

Potential impacts identified can be minimised through the implementation of practical and appropriate mitigation measures. Therefore, no additional environmental studies are required to be undertaken.

No-go alternative (compulsory)

The no-go alternative is constructing the raw water reservoir on the site within the approved Medupi Power Station footprint (as part of the approved ancillary infrastructure). Direct impacts associated with the no-go alternative have been assessed through the EIA process undertaken for the Medupi Power Station complex (Record of Decision for project reference number 12/12/20/695). The no-go alternative for the reservoir would be reverting back to the status quo, and although no longer considered the ideal position for the facility, could be constructed within the allocated space within the power station complex.

Indirect impacts would be associated with the required pumping station which would be required for the water system, as the original position of the reservoir did not allow for gravity feed. The power requirements for this system would be higher than for a gravity feed system. In addition, reliability of the system is considered to be less than that of a gravity feed system.

From a technical perspective, this option is not considered to be the most feasible option in terms of the operation of the Medupi Power Station.

8. 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 ✓

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:

There are no fatal flaws associated with the **raw water reservoir site**. The impacts associated with the proposed development on this site are considered acceptable from an environmental perspective, and potential impacts to the environment can be mitigated to acceptable levels.

With the re-alignment of the **pipeline alternatives** to avoid areas of potential environmental sensitivity (i.e. the rocky outcrop area and dam), there are no fatal flaws associated with the water pipeline alternatives S2 and/or S3. Both of these alternatives are acceptable from an environmental perspective, and potential impacts to the environment can be mitigated to acceptable levels. Pipeline Alternative S3 is, however, marginally preferred from an overall perspective as it is possible to implement the required pipeline servitude within the existing 93 m wide conveyer servitude.

The construction of the reservoir and its associated pipelines should be implemented according to a construction Environmental Management Plan (EMP) to adequately mitigate and manage the low to moderate impacts the construction activities will affect. Management measures and auditing procedures as detailed within Eskom's existing Environmental Management Plan (EMP) for the Medupi Power Station (as well as revisions to include the raw water reservoir and pipelines) must be implemented.

The construction activities and relevant rehabilitation of disturbed areas should be monitored against the approved Environmental Management Plan, Environmental Authorisation and all other relevant environmental legislation.

Relevant conditions to be adhered to include:

Design and Construction Phase:

The following mitigation and management measures should be implemented during the construction phase in order to minimise potential environmental impacts:

- » Keep the loss of vegetation cover to a minimum and revegetate impacted areas with suitable indigenous species as soon as possible. Suitable species would include those present on-site prior to any clearing activity.
- » A botanist should conduct a final walk-through survey of the outlet alignment prior to construction to ensure that wherever possible plant species of special concern potentially affected by the development are relocated for use in rehabilitation or relocated more permanently to another suitable area for use as a vegetative screen, or for their conservation.
- » Identify and mark all protected tree species during the final walkthrough.
- » Obtain relevant permits for removal or cutting of protected tree species.
- » Transplant selected trees to adjacent areas where possible.
- » Implement rescue operations in areas where Red Data species/Protected trees are present.

- » The sensitive rocky outcrop area should be fenced off/protected during the construction phase to avoid accidental and unnecessary damage to the area and the ecological habitat. Impacts on the rocky outcrop area as well as the non-perennial stream and dam should be avoided.
- » Topsoil to be set aside for rehabilitation on completion of the project.
- » Although no heritage sites were identified during the Basic Assessment process, it is recommended that a suitably qualified heritage specialist be advised should any sites of interest be unearthed during construction activities, and the site/s appropriately excavated and recorded. The results of any such survey/s must be forwarded to DEAT and SAHRA for their records.
- » Remove and control the occurrence of invasive species during the construction phase.
- » Construction activities should be limited to between 06:00 and 18:00 (in terms of the requirements of the Environment Conservation Act).
- » Soil must be exposed for the minimum time possible once cleared of vegetation to avoid prolonged exposure to wind and water erosion and to minimise dust generation.
- » Green buffer zones should be reserved or created and maintained at critical areas surrounding the reservoir.
- » The removal of natural vegetation should be limited to the bare minimum and should not be undertaken without proper planning and delineation.
- » Stockpiled material should be located away from potentially sensitive areas (such as the Afguns road and/or the rocky outcrop, watercourse and dam area).
- » Dust that may be generated from stockpiled material must be minimised through the implementation of appropriate dust suppression techniques, until such time that this material has been used during the rehabilitation process, or that it can be removed and disposed of.
- » The construction area should be adequately fenced and access limited, as is the current practice within the Medupi Power Station.
- » Any visitor to the site must report to the site office, as is the current practice within the Medupi Power Station.
- » After construction, affected areas should be revegetated with indigenous vegetation currently present in the study area. This should be undertaken in terms of Eskom's standard practices in this regard.

Operation Phase:

The following mitigation and management measures should be implemented during the operation phase in order to minimise potential environmental impacts:

- » Green buffer zones should be maintained within appropriate areas surrounding the reservoir in order to maintain a suitable vegetative screen of the facility to road users and other observers.
- » Remove and control the occurrence of invasive species during the operation phase.
- » A regular inspection of the integrity of the reservoir and pipelines to be undertaken in order to prevent failure which would result in degradation to the environment and potentially pose a safety risk to the social environment.
- » Management measures and auditing procedures as detailed within Eskom's existing Environmental Management Plan (EMP) for the Medupi Power Station (as well as revisions to include the raw water reservoir and pipelines) must be implemented.

SECTION F: APPENDICES

The following appendixes are attached:

Appendix A: Site plan(s)

The following plans have been included and attached as Appendix A:

- » Appendix A1: Map of the proposed raw water reservoir and associated pipeline and pipeline alternatives 2 and 3.
- » Appendix A2: Map of GPS points taken on strategic points on the proposed development and two associated pipeline alternative routes (with an accompanying table providing the coordinates of each of the points marked).

Appendix B: Photo Record

Appendix C: Facility illustration(s)

Technical drawings illustrating the Raw Water Dam general arrangement

Appendix D: Specialist reports

The following specialist reports have been included and attached as Appendix D:

- » Appendix D1: Ecological impact assessment
- » Appendix D2: Heritage impact assessment
- » Appendix D3: Visual impact assessment
- » Appendix D4: Social impact assessment

Appendix E: Record of Public Involvement Process

The following documentation has been included and attached as Appendix E:

- » Appendix E1: Copies of adverts
- » Appendix E2: Example of letters to Organs of State and Stakeholders
- » Appendix E3: Background Information Document and reply form circulated
- » Appendix E4: Notes from the meeting with the Lephalale Local Municipality
- » Appendix E5: Comments and responses report
- » Appendix E6: Database
- » Appendix E7: Notes from the public meeting held on 26 June 2008 in Lephalale

Appendix F: Information in support of applications for exemption

None applicable

Appendix G: Other information

Appendix G1: Correspondence with DWAF regarding the Water Use License for Medupi Power Station