August 2011
Final Basic Assessment Phase

BASIC ASSESSMENT

PROPOSED RETROFIT OF THE UNIT 4 ELECTRO-STATIC PRECIPITATOR AT DUVHA POWER STATION WITH A FABRIC FILTER PLANT

DEA REF NO: 12/12/20/2346
NEAS REf NO: DEA/EIA/0000384/2011

Proponent: Eskom Holdings SOC Ltd

FINAL BASIC ASSESSMENT REPORT

Project 12725

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:	
Application Number:	12/12/20/2346
Date Received:	

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

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.

2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

3. Where applicable **tick** the boxes that are applicable in the report.

4. An incomplete report may be returned to the applicant for revision.

5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.

6. This report must be handed in at offices of the relevant competent authority as determined by each authority.

7. No faxed or e-mailed reports will be accepted.

8. The report must be compiled by an independent environmental assessment practitioner.

9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

11. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

SECTION A: ACTIVITY INFORMATION

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

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

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail[1]:

New legislation (National Environmental Management – Air Quality Act, 2004 [Act 39/2004], Notice 248; 31 March 2010: Minimum Emission Standards) requires that all existing power stations should conform to a standard of 100mg/Nm^3 (N = Normalized cubic meter, 101,325 kPa, 0°C, normalised to 10% reference O2, on a dry basis) by 2015 and further conform to the standard for new plant of 50mg/Nm^3 by 2020. The current design of the Electrostatic Precipitators (electrostatic precipitators – ESPs) will not be able to meet the more stringent new plant particulate emission limits, and a need to replace the installed particulate capturing technology (ESPs) was identified.

The purpose of this project is to install air quality abatement technology that will allow the station to consistently meet the particulate emission license limit as set out by the Department of Environmental Affairs (DEA) of South Africa, for Duvha Power Station Unit 4, by retrofitting the existing Electrostatic Precipitators (ESP) with a Fabric Filter Plant (FFP) utilizing pulse jet cleaning technology that will fit into the existing casings occupied by the ESPs.

During construction the existing ESP technology will be removed from the casing and the material either recycled or disposed at a licensed waste disposal facility. The refurbishment will be done by removing the roof of the casing and entering from above, via cranes placed adjacent to the ESP casing at unit 4). The FFP technology will be installed inside the existing casing and upgrades will be included around the casing. These upgrades include the installation of new larger ID fans in the same location as the existing fans, however the existing foundations will be strengthened/reinforced. In addition a compressor house will be constructed at a vacant piece of land (only existing concrete slab exists) and for the duration of construction the contractor will have a construction and contractor's yard (more or less 5000 square meters) at his disposal.

In the long-term planned changes at the Duvha Power Station it is planned to upgrade all the units to FFPs. Units 1 – 3 have already been retrofitted with the FFP technology in 1994 with the planned upgrade/retrofit of the remaining units planned

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

for 2017. Currently Unit 4 is off-line and the maintenance down-time is an ideal opportunity to complete the retrofit of this unit. It is anticipated that Units 5 – 6 will be retrofitted in 2017 – 2018.

In terms of the potential alternatives that have to be mentioned below the following applies. Due to the existing power station infrastructure location there are no siting alternatives that can be considered as the location of this air quality abatement technology is fitted behind the boiler, where ESPs currently exist.

In terms of technology alternatives there are only two alternatives available. The first is the proposed technology which is to install a Fabric Filter Plant in order to reduce particulate emissions. The second is the "no-go" alternative where the status quo remains in place i.e. the ESP technology remains in use. In view of continuous improvement of its operations, Duvha Power Station is motivating the change from ESP to FFP technology.

Due to the constraints with existing structures on site, the technology chosen has to fit within the existing casing (metal shell) of the existing plant. Therefore no design layout alternatives are feasible and the FFP will be installed inside the existing ESP casing.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

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

3. ACTIVITY POSITION

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

Alternative:	**Latitude (S):**		**Longitude (E):**	
Alternative S1[2] (preferred or only site alternative)	25°	57'38.206"	29°	20'21.442"
~~Alternative S2 (if any)~~	~~0~~	~~'~~	~~0~~	~~'~~
~~Alternative S3 (if any)~~	~~0~~	~~'~~	~~0~~	~~'~~

~~**In the case of linear activities:**~~

~~**Alternative:**~~	~~**Latitude (S):**~~		~~**Longitude (E):**~~	
~~Alternative S1 (preferred or only route alternative)~~				
~~• Starting point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~
~~• Middle/Additional point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~
~~• End point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~
~~Alternative S2 (if any)~~				
~~• Starting point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~
~~• Middle/Additional point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~
~~• End point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~
~~Alternative S3 (if any)~~				
~~• Starting point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~
~~• Middle/Additional point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~
~~• End point of the activity~~	~~0~~	~~'~~	~~0~~	~~'~~

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

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	**Size of the activity:**
Alternative A1[3] (preferred activity alternative)	5 015 m² (FFP)+ 375 m² (blower house)
Alternative A2 (if any)	5 015 m²
~~Alternative A3 (if any)~~	~~m²~~

~~or, for linear activities:~~

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

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

Alternative:	**Size of the site/servitude:**
Alternative A1 and A2 ()	3 500 m²
~~Alternative A2 (if any)~~	~~m²~~

[2] "Alternative S.." refer to site alternatives.
[3] "Alternative A.." refer to activity, process, technology or other alternatives.

~~Alternative A3 (if any)~~	~~m^2~~

5. SITE ACCESS

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

Describe the type of access road planned:

Existing internal Duvha Power Station Roads to be used to access the rear of the station. Unit 4 ESPs are situated behind unit 4 boiler house. Existing roadways can adequately serve the unit. . A short new road for the compressor house will be established (single lane, no more than 50m long).

The no-go alternative uses existing roads

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

6. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

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

6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
6.11 the positions from where photographs of the site were taken.

7. SITE PHOTOGRAPHS

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

8. FACILITY ILLUSTRATION

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

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

	FFP	No-go
What is the expected capital value of the activity on completion?	R 400 mil.	R 0
What is the expected yearly income that will be generated by or as a result of the activity?	R 0	R 0
Will the activity contribute to service infrastructure?	YES ~~NO~~	YES ~~NO~~
Is the activity a public amenity?	YES ~~NO~~	YES ~~NO~~
How many new employment opportunities will be created in the development phase of the activity?	30	0 new
What is the expected value of the employment opportunities during the development phase?	R 900 000	R 0
What percentage of this will accrue to previously disadvantaged individuals?	90 %	0
How many permanent new employment opportunities will be created during the operational phase of the activity?	100 short term every 4 years	0 new
What is the expected current value of the employment opportunities during the first 10 years?	R 900 000	R 0
What percentage of this will accrue to previously disadvantaged individuals?	100 %	0

9(b) Need and desirability of the activity

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

NEED:			
1.	Was the relevant provincial planning department involved in the application?	YES	~~NO~~
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES	~~NO~~
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		
	N/A		

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES	~~NO~~
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES	~~NO~~
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	~~NO~~
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
	N/A		
5.	Will the proposed land use / development impact on the sense of place?	~~YES~~	NO
6.	Will the proposed land use / development set a precedent?	~~YES~~	NO
7.	Will any person's rights be affected by the proposed land use / development?	~~YES~~	NO
8.	Will the proposed land use / development compromise the "urban edge"?	~~YES~~	NO
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		
	N/A		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES	~~NO~~
2.	Explain: **The proposed development will reduce the PM emissions from the**		
	Duvha power station due to the installation of a better pollution abatement		
	technology. This betterment of air quality will make a positive contribution to the management initiatives and strategies for the Highveld Priority Area.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES	~~NO~~
4.	Explain: **The installation of the FFP will reduce PM emissions from**		
	the power station, reducing the potential for health impacts to the local		
	Community. There will be employment opportunities during construction.		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (107)	**DEA**	**1998**
National Environmental Management: Air Quality Act (39)	**DEA**	**2004**
National Environmental Management: Waste Act (59)	**DEA**	**2008**

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES / ~~NO~~
If yes, what estimated quantity will be produced per month?	1250 tons over 4 months

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

Non recyclable waste will be disposed of by landfill. The recyclable waste (steel) will not be disposed of but rather recycled at licensed recyclers. Waste will be managed in line with station's waste management procedures. According to the procedures, hazardous waste will be disposed off at a registered hazardous waste site, and general waste will be disposed at a registered general landfill site

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

The recyclable waste (steel) licensed recyclers, non recyclable waste will be sent to the licensed Duvha landfill site or any other licensed facility as per the Duvha waste management policy. Any hazardous waste from the construction/refurbishment will be transported to a licensed hazardous waste landfill site like Holfontein.

Will the activity produce solid waste during its operational phase?	YES / ~~NO~~
If yes, what estimated quantity will be produced per month?	40 bags per month and 27 000 bags once every 4 years. The ash removed by the facility amounts to 46.875 Kt/month

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

The main solid waste from the proposed FFP will be the replacement of the filter bags every 4 years. These bags are removed from the FFP, collected and transported to a licensed hazardous waste site.

The facility under consideration is an emission reduction activity. The PM (mostly ash) that is captured in the FFP bags is collected via hoppers at the bottom of the FFP and transported via pneumatic pumps to a holding silo. From here the material is mixed with water to form a slurry which is then pumped to the licensed ash disposal facility at the power station.

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

The waste bags are classified as hazardous waste and will therefore the disposed of at the closest licensed hazardous waste disposal site (like Holfontein) as well as being disposed in line with the Duvha waste management policy and procedures.

As mentioned above the ash dust captured in the FFP will be disposed of at the licensed ash disposal facility at the Duvha Power Station.

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES / ~~NO~~

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

The disposal of the FFP bags is an existing authorised activity at Duvha Power Station and no further authorisation is required.

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

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

11(b) Liquid effluent

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

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

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

If yes, provide the particulars of the facility:

Facility name:	n/a		
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:

The disposal facility is a dry facility and does not utilise water.

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	~~NO~~
If yes, is it controlled by any legislation of any sphere of government?	YES	~~NO~~

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

Not required as the activity is already licensed (application is triggered by the amendment of the existing permit/license). Furthermore, the air quality authorities are being consulted for amendment of the existing permit.

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

n/a as this proposed retrofit activity will reduce emissions of Particulate Matter. The activity is Eskom's response strategy to ensuring plant/unit compliance with the Minimum authorised Emission Standards published in April 2010 and coming into effect in 2020.

11(d) Generation of noise

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

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

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

The activity includes 2 ID fans that suck the air through the FFP and these fans generate noise. However this property is zoned for industrial use and the existing facility also generates noise due to the existing fans. The area is zoned as a noisy area and Duvha safety procedures indicate that PPE including hearing protection must be worn in this area as per the OHS Act.

12. WATER USE

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

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

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:	litres	
Does the activity require a water use permit from the Department of Water Affairs?	~~YES~~	NO

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

13. ENERGY EFFICIENCY

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

Works Information stated that Electric motors shall comply with GGS0802 rev 4.1 - MV Motor Requirements

- MV Motors are to be designed for output ratings that result in driven load duty point, at M.C.R, at best energy efficiency region. MV Motors are to be designed for highest possible efficiency and power factor that shall, respectively, not be less than 96% and 0.85 from 75-to-100% loading.

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

No alternative energy sources are available for this activity.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

Section C Copy No. (e.g. A):	**A-C (All three alternative technologies will be placed in exactly the same location)**

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

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

~~YES~~	NO

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

Property description/physical address:	**Duvha Power Station (337 JS), between R544 and R575, Emalahleni.**

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

Duvha Power Station (337 JS)

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

Current land-use zoning:	**Industrial**

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

Is a change of land-use or a consent use application required?	~~YES~~	NO
Must a building plan be submitted to the local authority?	~~YES~~	NO

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

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

~~Alternative S2 (if any):~~

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

~~Alternative S3 (if any):~~

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

2. LOCATION IN LANDSCAPE

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

~~Ridge line~~	~~Plateau~~	~~Side slope of hill / mountain~~	~~Closed valley~~	~~Open valley~~	Plain	~~Undulating plain / low hills~~	~~Dune~~	~~Seafront~~

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		**~~Alternative S2 (if any):~~**		**~~Alternative S3 (if any):~~**	
Shallow water table (less than 1.5m deep)	~~YES~~	NO	~~YES~~	~~NO~~	~~YES~~	~~NO~~

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

~~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	~~Office/consulting room~~	~~Military or police base/station/~~	~~Spoil heap or slimes dam~~[A]	~~Quarry, sand or borrow pit~~

				compound		
~~Dam or reservoir~~	~~Hospital/medical centre~~	~~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~~	~~Plantation~~	~~Agriculture~~	~~River, stream or wetland~~	~~Nature conservation area~~
~~Mountain, koppie or ridge~~	~~Museum~~	~~Historical building~~	~~Protected Area~~	~~Graveyard~~	~~Archaeological site~~	~~Other land uses (describe)~~

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

n/a

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

YES	NO

n/a

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

YES	NO

n/a

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site?	~~YES~~ Uncertain	NO
If YES, explain:	**n/a**	
If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.		
Briefly explain the findings of the specialist:	**n/a**	
Will any building or structure older than 60 years be affected in any way?	~~YES~~	NO

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	~~YES~~	NO

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

SECTION C: PUBLIC PARTICIPATION

This Final Basic Assessment Report (FBAR) is hereby submitted for approval along with all the announcement documentation required as part of the BAR and listed below.

1. ADVERTISEMENT

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

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;

(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  (vii) any other party as required by the competent authority;

(c) placing an advertisement in—
  (i) one local newspaper; or
  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and
(b) state—
  (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
  (ii) whether basic assessment or scoping procedures are beingapplied to the application, in the case of an application for environmental authorisation;
  (iii) the nature and location of the activity to which the application relates;
  (iv) where further information on the application or activity can be obtained; and
  (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

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

5. COMMENTS AND RESPONSE REPORT

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

6. AUTHORITY PARTICIPATION

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

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

List of authorities informed:

National Department of Environmental Affairs - EIA and Air quality unit*
MDEDET – Air Quality, EIA*
Emalahleni Local Municipality*
Nkangala District Municipality*
* Please refer to the attached stakeholder database for the contact details.

List of authorities from whom comments have been received:

The main commenting authority was the Mpumalanga Provincial Government and their comments were:

The Draft Basic Assessment Report for the Environmental Impact Assessment dated August 2011 and received by the Department on 15 August 2011 refers.

The department has reviewed the submitted Draft Basic Assessment Report and is satisfied that the report complies with the Minimum Requirements of the Environmental Impact Assessment Regulations, 2010. The Draft Basic Assessment Report is hereby accepted by the Department, you may therefore proceed with the compilation of the Final Basic Assessment Report. Please ensure that the proposed new road for the compressor house to be established is not more than 50m long.

In terms of air quality aspects, it must be ensured that the particulate emission license limits are not exceeded.

The Department is of the view that, environmental impacts associated with the proposed activity are of minimal significance as the installation of fabric filter plant would result in reduced emissions.

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority. Proof of any such agreement must be provided, where applicable.

YES	~~NO~~

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

During stakeholder distribution of BID's and site notices the following comments were received verbally:

- **Will the current air quality be improved by the development?**
- **Are there any jobs available as part of the development?**

Two service providers in the area also contacted Zitholele during the stakeholder review period, merely offering their bed and breakfast services.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

1. **Air quality**
2. **Job creation**

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

1. **Air quality – the proposed development will reduce the existing emissions from Duvha Unit 4 a limit of 75 mg/Nm^3 to a limit of 50 mg/Nm^3**
2. **Job creation – as indicated in the socio economic section 30 jobs will be created during the construction phase of this project, where 90% will be for the HDIs, and the 10% will be for skilled personnel. During operation, temporary (5 week duration) jobs will be created every 4 years during the replacement of the filter bags. It is anticipated that local labour will be sourced.**

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

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

To ensure uniformity, the assessment of impacts is addressed in a standard manner so that a wide range of impacts can be compared with each other. For this reason a clearly defined significance rating scale is provided to assess the significance (importance) of the associated impacts. The scale embraces the notion of extent and magnitude, but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e. the size) of area affected by atmospheric pollution may be extremely large (1000 km²) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration were great, the significance of the impact would be HIGH or VERY HIGH, but if it were dilute it would be LOW or VERY LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type was known. The impact would be VERY LOW if the grassland type were common.

The potential significance of every environmental impact identified is determined by using a ranking scale, based on the following (the terminology is extracted from the DEA guideline document on EIA Regulations, April 1998):

Occurrence

- Probability of occurrence (how likely is it that the impact may occur?), and
- Duration of occurrence (how long may it last?)

Severity

- Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
- Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?)

In order to assess each of these factors for each impact, the following ranking scales were used:

Probability:
5 – Definite/don't know
4 – Highly probable
3 – Medium probability
2 – Low probability
1 – Improbable
0 – None

Duration:
5 – Permanent
4 - Long-term (ceases with the operational life)
3 - Medium-term (5-15 years)
2 - Short-term (0-5 years)
1 – Immediate

Scale:
5 – International
4 – National
3 – Regional (>5km)
2 – Local (<5km)
1 – Site only
0 – None

Magnitude:
10 - Very high/don't know
8 – High
6 – Moderate
4 – Low
2 – Minor

Once the above factors had been ranked for each impact, the environmental significance of each was assessed using the following formula:

SP = (magnitude + duration + scale) x probability

The maximum value is 100 significance points (SP). Environmental effects were rated as either of high, moderate or low significance on the following basis:

- More than 60 significance points indicated high environmental significance.
- Between 30 and 60 significance points indicated moderate environmental significance.
- Less than 30 significance points indicated low environmental significance.

High = H	Moderate = M	Low = L	Positive

Please note that **negative and positive impact will be ranked.**

The degree of certainty of the assessment was judged on the following criteria:

Definite: More than 90% sure of a particular fact.
Probable: Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.
Possible: Between 40 and 70% sure of a particular fact or of the likelihood of an impact occurring.
Unsure: Less than 40% sure of a particular fact or the likelihood of an impact occurring.

Preferred Alternative: **Fabric Filter Plant**			
Potential impacts:	**Significance rating of impacts:**	**Proposed mitigation:**	**Significance rating after mitigation:**
PLANNING AND DESIGN PHASE Planning and design activities will be limited to meetings and site visits. The site is already accessible from existing roads and infrastructure. The proposed FFP will replace the existing ESP, and the same infrastructure will be used wherever possible. The plant metal casing will be retained and the new technology inserted in the existing plant casing. Therefore non-invasive site visits, based on visual observation will be undertaken wherever required. In addition the existing ESP emissions license has to be amended, which triggered this BA.			
Direct Impact Indirect Impact Cumulative Impact	There will therefore be no impacts generated during this phase of the project.		
CONSTRUCTION PHASE The retrofit of the FFP technology will include the opening on the existing ESP casing via the roof, removing the ESP technology and installing the FFP technology within the existing casing. External changes will include the removal of the existing ID fans, breaking up of the existing fan foundation, re-enforcing the structure by installing a stronger foundation for the new slightly larger fans. Also a small (35m x 14m) compressor house will be constructed on an existing concrete slab and a material lay down area will also be allocated to the contractor. The activity will generate building rubble and the impacts associated with construction related activities. It should however be noted that the entire site is a brownfields operation and that the entire casing and its supporting structure are existing structures on existing concrete slabs. This largely limits the impacts that could occur as a result of the activity to the following:			
Direct Impact	**<u>Construction Noise</u>** Construction noise (i.e. grinding, welding, jack hammering, and materials handling) will impact on workers.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Mitigate by wearing appropriate PPE as per the Duvha safety procedure and regulations as well as the OHS Act. • Demarcate the working area as a noisy area.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 3 (medium) **Significance (SP): 15 (LOW)**
	<u>Construction Dust</u> Localised dust will be generated at the construction site that may affect workers.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 5 (will occur) **Significance (SP): 25 (LOW)**	• Mitigate by wearing appropriate PPE as per the Duvha safety procedure and regulations as well as the OHS Act. • Demarcate the working area as a dusty area. • Undertake dust suppression measures.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 2 (low) **Significance (SP): 10 (LOW)**
	<u>Loss of generation capacity</u> One of the generators will have to be shut down for the installation of the FFP, removing 600 MW of power from the national grid.	Scale: 4 (nationally) Duration: 2 (short term) Magnitude: 8 (High) Probability: 5 (will occur) **Significance (SP): 70 (HIGH)**	• Undertake the installation of the FFP during this immediate period of scheduled maintenance downtime, thus avoiding shut down of the power generation unit.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 2 (low) **Significance (SP): 14 (LOW)**

	Employment Upwards of 30 employment opportunities will be created as a result of this project.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low positive) Probability: 3 (medium) **Significance (SP): 21 (LOW)**	• Maximise positive impact by ensuring that local contractors are used wherever possible.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low positive) Probability: 4 (high) **Significance (SP): 28 (LOW)**
	Construction Waste Construction waste such as paints and thinners, metal off cuts, concrete spillage will be generated during the installation of the FFP.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Implement the Duvha Power Station Waste Policy and procedures	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 3 (moderate) **Significance (SP): 21 (LOW)**
Indirect Impact	There are not expected to be any indirect impacts generated during the construction phase of the FFP.			
Cumulative Impact	There are not expected to be any cumulative impacts generated during the construction phase of the FFP.			
OPERATIONAL PHASE During the operational phase the FFP plant will filter the air coming from the Unit 4 boiler and remove the ash from the flue gas, prior to the filtered air being emitted from the stack. The ash captured is collected in hoppers under the FFP and transported to a silo, from where it is mixed with water to form a slurry and then pumped to the licensed Ash disposal site at the Duvha Power Station. The waste handling and management system is existing and operational. Once every 4 years the bags need to be replaced and the old bags disposed of. This largely limits the impacts that could occur as a result of the activity to the following:				
Direct Impact	**Ambient Noise** Ambient noise levels will be affected by ID fans. Although proposed fans are larger than the current fans the noise level is not expected to increase from the current baseline noise levels.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 1 (improbable) **Significance (SP): 5 (LOW)**	• Ensure that all machinery is in good working order and operating within the allowable limits for noise generation. • Ensure appropriate PPE is worn in all noisy areas.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 1 (improbable) **Significance (SP): 5 (LOW)**
	Waste Generation Every 4 years the fabric filter bags must be replaced. The spent bags are considered to be hazardous waste. *Dust captured by the FFP is also a hazardous waste stream. This is discussed under cumulative impacts below.*	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Ensure that filter bag removal, replacement, handling and disposal comply with the Duvha waste management policy and existing waste and FFP related procedures. • Ensure that the bags are disposed of at a licensed hazardous waste disposal site like Holfontein. • Ensure that the ash is transported via the existing waste management system.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 5 (will occur) **Significance (SP): 25 (LOW)**

	Waste Spillage Spillage could occur during the handling of waste (either tear in filter bags / or dust extracted by the plant).	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Adhere to the FFP dusting procedures as well as the bag inspection and replacement procedure.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 5 (will occur) **Significance (SP): 25 (LOW)**
	Air Quality The operation of the FFP will reduce the particulate emissions from the Unit 4 boiler by up to 99.99% compared to the 99.6% - 99.8% from the ESP. This will ensure that particulate emissions emitted from the stack are less than 50mg/Nm^3 during normal operation, which is the minimum emission standard for new plant. This will eliminate the visible plume of dust currently visible from the stack (refer photographs).	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (minor positive) Probability: 5 (will occur) **Significance (SP): 40 (MODERATE)**	• In terms of mitigation ensure that the FFP is operated according to the FFP operating procedure and ensure that all maintenance is conducted in line with the existing procedures for maintenance. • Ensure that the minimum emission standards are met.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (minor positive) Probability: 5 (will occur) **Significance (SP): 40 (MODERATE)**
	Employment This project will no create any additional permanent positions, however it is anticipated that every four years 100 general labourers will be employed for an estimated 5 weeks to assist with the replacement of the fabric filter bags in the FFP. There is also potential job creation at the bag production plant due to the extra bags required for this FFP.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor positive) Probability: 4 (High) **Significance (SP): 20 (LOW)**	• Enhance the positive impact by allowing for HDI individuals to be employed.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor positive) Probability: 5 (will occur) **Significance (SP): 25(LOW)**
Indirect Impact	**Impacts to Human, Plant and Animal Health** The reduction of emissions from Unit 4 by 50% - >60% by using the FFP compared to ESP technology will improve the ambient air quality around the power station, and indirectly reduce the potential impact to human, animal and plant health by the emissions.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (minor positive) Probability: 4 (high) **Significance (SP): 40 (MODERATE)**	• No mitigation measures required.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (minor positive) Probability: 4 (high) **Significance (SP): 40 (MODERATE)**
	Legal Compliance Upgrading Unit 4 with the FFP technology will allow the plant to operate within the current 75 mg/Nm^3 limit and also the future 50 mg/Nm^3 limit. Thus ensuring long term legal compliance to air quality legislation.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (minor positive) Probability: 4 (high) **Significance (SP): 40 (MODERATE)**	• Ensure that the emissions from Duvha Power Station are within the allowable limit as per national legislation and site specific license conditions.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (minor positive) Probability: 4 (high) **Significance (SP): 40 (MODERATE)**
Cumulative Impact	**Air Quality** Systematic improvements have occurred over the years as Duvha power station has been replacing the existing ESP technology with FFP technology. The positive cumulative impact is noticeable. In time (estimated in the year 2017-8) the remaining two Units 5 and 6 will also be replaced.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (low positive) Probability: 4 (high) **Significance (SP): 40 (MODERATE)**	• Ensure that the current vision of continual improvement at the station is reached by keeping the retrofit of Units 5 and 6 in the long term planning of the station.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (low positive) Probability: 4 (high) **Significance (SP): 40 (MODERATE)**

	Waste Dust captured by the filter plant will be added to the ash slurry and disposed of in the Duvha ash dam. The additional volumes are nominal by comparison to the overall waste stream. The dust has the same characteristics as the ash and will not result in cumulative impacts at the ash disposal site.	No additional cumulative impact	• No mitigation measures required.	No additional cumulative impact
DECOMMISIONING PHASE During the decommissioning phase of the development the unit will be stripped, the materials, associated buildings and structures and the concrete slab removed. Impact will be very similar to the construction phase although more waste will be generated.				
Direct Impact	**Construction Noise** Construction noise (i.e. grinding, welding, jack hammering, and materials handling) will impact on workers.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Mitigate by wearing appropriate PPE as per the Duvha safety procedure and regulations as well as the OHS Act. • Demarcate the working area as a noisy area.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 3 (medium) **Significance (SP): 15 (LOW)**
	Construction Dust Localised dust will be generated at the decommissioning site that may affect workers.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 5 (will occur) **Significance (SP): 25 (LOW)**	• Mitigate by wearing appropriate PPE as per the Duvha safety procedure and regulations as well as the OHS Act. • Demarcate the working area as a dusty area. • Undertake dust suppression measures.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 2 (low) **Significance (SP): 10 (LOW)**
	Employment Upwards of 30 employment opportunities will be created as a result of the decommissioning of this project.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low positive) Probability: 3 (medium) **Significance (SP): 21 (LOW)**	• Maximise positive impact by ensuring that local contractors are used wherever possible.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low positive) Probability: 4 (high) **Significance (SP): 28 (LOW)**
	Construction Waste Construction waste such as paints and thinners, metal off cuts, concrete spillage will be generated during the decommissioning of the FFP.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Implement the Duvha Power Station Waste Policy and procedures	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 3 (moderate) **Significance (SP): 21 (LOW)**
Indirect Impact	There are not expected to be any indirect impacts generated during the decommissioning phase of the FFP.			
Cumulative Impact	There are not expected to be any cumulative impacts generated during the decommissioning phase of the FFP.			

Alternative 2 (also No-Go Alternative): **Electro-Static Precipitator**				
	Potential impacts:	**Significance rating of impacts:**	**Proposed mitigation:**	**Significance rating after mitigation:**
PLANNING AND DESIGN PHASE As this is the no-go alternative with all of the structures already in place on site, no planning or design will be required.				
Direct Impact Indirect Impact Cumulative Impact	There will therefore be no impacts generated during this phase of the project.			
CONSTRUCTION PHASE All the infrastructure is already constructed on site and hence no impact will arise from this phase.				
Direct Impact Indirect Impact Cumulative Impact	There will therefore be no impacts generated during this phase of the project.			
OPERATIONAL PHASE The operational phase of the ESP plant represents the current operating conditions at Duvha Power Station. The ESP has an existing emissions limit of 75mg/Nm^3 for particulate emissions. In recent time reduction in coal quality and variation in the supply caused the ESP to struggle to comply with this emissions limit. In order for the plant to reach this limit there was a very real risk of Unit 4 having to take load losses in order to stay within the limits.				
Direct Impact	**Ambient Noise** Ambient noise levels will be affected by ID fans. Noise is also generated by the other Units (1-3, 5-6).	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 1 (improbable) **Significance (SP): 5 (LOW)**	• Ensure that all machinery is in good working order and operating within the allowable limits for noise generation. • Ensure appropriate PPE is worn in all noisy areas. • Adhere to any plant specific procedures that govern noise.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 1 (improbable) **Significance (SP): 5 (LOW)**
	Waste Generation No waste is directly generated by this activity *Ash captured by the FFP is a hazardous waste stream. This is discussed under cumulative impacts below.*	No impact	• Ensure that the ash is transported via the existing waste management system. • Ensure that any procedure relevant to the ash and waste management system is adhered to.	No impact

	Waste Spillage Spillage could occur during the handling of waste (either ash transport system / or ash extracted by the plant).	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Adhere to the ESP dusting procedures as well as the ESP inspection procedure.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 5 (will occur) **Significance (SP): 25 (LOW)**
	Air Quality The operation of the ESP currently struggles to continually comply with the 75 mg/Nm^3 particulate emissions limit contained in the air permit for the Unit due to various reasons. In addition DEA have a long term emissions reduction strategy in place that Eskom has to adhere to where the current non-site specific emissions limits are 100 mg/Nm^3 (target limit for 2015), these will be reduced to 50 mg/Nm^3 in 2020. The risk is that the plant will have to start taking load losses to try and comply with the 75 mg/Nm^3 limit, and it is anticipated that the future limits could not be complied with.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 8 (Moderate) Probability: 4 (high) **Significance (SP): 48 (MODERATE)**	• In terms of mitigation ensure that the ESP is operated according to the ESP operating procedure and ensure that all maintenance is conducted in line with the existing procedures for maintenance. • Ensure that the minimum emission standards are met. • If the current and future emission standards cannot be met install alternative technology that can meet the emission standards.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 6 (Moderate) Probability: 4 (high) **Significance (SP): 48 (MODERATE)**
Indirect Impact	**Impacts to Human, Plant and Animal Health** The emission limits in the Unit emissions license has been established to ensure that the air quality is not impacted on. If these limits are exceeded there is a potential that these could affect ambient air quality. It should be noted that Duvha's contribution to the ambient air quality is very low.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (minor) Probability: 2 (low) **Significance (SP): 16 (LOW)**	• Refer air quality mitigation measures.	Scale: 2 (local) Duration: 4 (long term) Magnitude: 2 (minor) Probability: 2 (low) **Significance (SP): 16 (LOW)**
	Impacts to Eskom's legal compliance Emissions from Unit 4 at Duvha Power Station have averaged 104 mg/Nm^3 prior to the shutdown. This is higher than the allowable limit of 75 mg/Nm^3 stipulated in the emissions license. Hence if Unit 4 continues to operate with ESP technology, Eskom will not be compliant to their emissions license. In addition the more stringent limits (50 mg/Nm^3) will be enforced from 2020.	Scale: 1 (Site) Duration: 2 (short term) Magnitude: 8 (high) Probability: 4 (high) **Significance (SP): 44 (MODERATE)**	• Ensure that the minimum emission standards are met. • If the current and future emission standards cannot be met install alternative technology that can meet the emission standards.	Scale: 1 (Site) Duration: 2 (short term) Magnitude: 8 (high) Probability: 4 (high) **Significance (SP): 44 (MODERATE)**
Cumulative Impact	**Impact to Eskom's operations/power generation** As indicated in the air quality section above, the present ESP plant is struggling to reach the required emission levels that is contained in the plant permit. In order to achieve these limits the plant will endure load losses, hence impacting on the existing Eskom operations at the station and also interrupting power generation.	Scale: 3 (Regional) Duration: 2 (short term) Magnitude: 8 (high) Probability: 4 (high) **Significance (SP): 52 (MODERATE)**	• If the current and future emission standards cannot be met install alternative technology that can meet the emission standards.	Scale: 3 (Regional) Duration: 2 (short term) Magnitude: 8 (high) Probability: 4 (high) **Significance (SP): 52 (MODERATE)**
DECOMMISIONING PHASE During the decommissioning phase of the development the unit will be stripped, the materials, associated buildings and structures and the concrete slab removed. Impact will be very similar to the construction phase although more waste will be generated.				

Direct Impact	**Construction Noise** Construction noise (i.e. grinding, welding, jack hammering, and materials handling) will impact on workers.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Mitigate by wearing appropriate PPE as per the Duvha safety procedure and regulations as well as the OHS Act. • Demarcate the working area as a noisy area.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 3 (medium) **Significance (SP): 15 (LOW)**
	Construction Dust Localised dust will be generated at the decommissioning site that may affect workers.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 5 (will occur) **Significance (SP): 25 (LOW)**	• Mitigate by wearing appropriate PPE as per the Duvha safety procedure and regulations as well as the OHS Act. • Demarcate the working area as a dusty area. • Undertake dust suppression measures.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 2 (minor) Probability: 2 (low) **Significance (SP): 10 (LOW)**
	Employment Upwards of 30 employment opportunities will be created as a result of the decommissioning of this project.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low positive) Probability: 3 (medium) **Significance (SP): 21 (LOW)**	• Maximise positive impact by ensuring that local contractors are used wherever possible.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low positive) Probability: 4 (high) **Significance (SP): 28 (LOW)**
	Construction Waste Construction waste such as paints and thinners, metal off cuts, concrete spillage will be generated during the decommissioning of the FFP.	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 5 (will occur) **Significance (SP): 35 (MODERATE)**	• Implement the Duvha Power Station Waste Policy and procedures	Scale: 1 (site only) Duration: 2 (short term) Magnitude: 4 (low) Probability: 3 (moderate) **Significance (SP): 21 (LOW)**
Indirect Impact	There are not expected to be any indirect impacts generated during the decommissioning phase of the FFP.			
Cumulative Impact	There are not expected to be any cumulative impacts generated during the decommissioning phase of the FFP.			

3. ENVIRONMENTAL IMPACT STATEMENT

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

Alternative A (preferred alternative)

After considering the proposed project (FFP retrofit at Unit 4) and the associated impacts (construction noise, improved air quality, short term job opportunities, compliance with 2020 Minimum Emission Standards) it is the view of this Environmental Assessment Practitioner that the positive impacts of this project outweigh the potential negative impacts that this project can have.

The existing site is a brownfields operation with existing buildings and infrastructure and paving covering the whole site. There are no environmental sensitivities near the site and there are procedures in place to ensure that any potential impact is avoided or prevented. The station currently operates 3 highly successful FFP's and retrofitting Unit 4 will further improve their operations.

If the retrofit is approved during this unplanned downtime period, the planned retrofit of 2017 will be brought forward 6 years, ensuring the that current operations are operating within the emission limits of 2020 as early as 2012.

It is recommended that the preferred technology (FFP) be approved for the proposed retrofit at Unit 4, using this ideal timeframe when the unit is not operational and no further stress will be placed on the power supply of the country.

No-go alternative (compulsory)

The existing technology is reducing the impacts from the raw emissions (30 000 – 50 000 mg/Nm^3 without ESP to 104 mg/Nm^3 with ESP) from the boilers, however this reduction is not efficient enough to allow the station to conform to the emission standards set by DEA in their emissions license (75 mg/Nm^3). In addition future standards (2012 – 50 mg/Nm^3) will be even more stringent. Efforts to conform to these standards without changing technology can negatively impact on operations as there is a risk of load loss.

As shown in the site photos and the air quality report, the FFP technology is the better technology to utilise for this purpose, especially when taking the long term air quality standards into consideration and hence the no-go alternative should not be considered.

SECTION E. RECOMMENDATION OF PRACTITIONER

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

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

n/a

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

It is recommended that the preferred technology (FFP) be approved for the proposed retrofit at Unit 4, using this ideal timeframe when the unit is not operational and no further stress will be placed on the power supply of the country.

It is further recommended that the retrofit and operation of the Unit 4 FFP conform to the EMP attached as well as any relevant existing Duvha Power Station procedures.

Is an EMPr attached?	YES	~~NO~~

The EMPr must be attached as Appendix F.

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

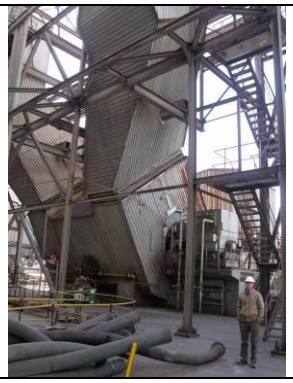
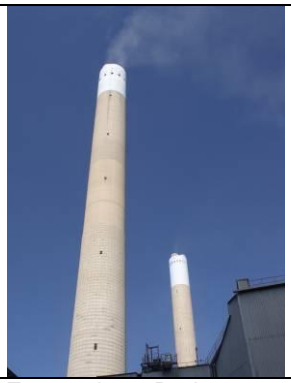
Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information

Appendix A: Site plan(s)

Appendix B: Photographs – Site and PP

			
View of the bottom part of Unit 4	Top part of Unit 4	View north of the site with Units 5-6 on the right and the boiler room on the left	View to the south with Units 1-4 on the left and the boiler room on the right
			
View east looking at a small workshop, concrete slab and Units 4 and 5 either side	View west onto the boiler room	View southwest also looking onto the Unit 4 boiler room.	View northwest looking onto the Unit 5 boiler room and fan
			
View northeast looking onto the Unit 5 hoppers	View southeast looking at Unit 3	View of the existing blower fans that will be upgraded as part of the retrofit – note existing concrete slab and infrastructure.	
			
View of the ash collection system under the hoppers	Area to be used for a boiler house as part of the retrofit – note existing concrete slab.	Two stacks at Duvha power station, stack in foreground has 2 operational units using ESP technology – note visible emissions. Second stack has 3 operational unit all using FFP technology – note lack of visible emissions	Area to be utilised for lay down area.

			
Site Notice on the R575	Local cafe (Mnandi cafe) were site notice was placed and BID's distributed	Site notice at the R575	Site notice at the main intersection between the power station road and the R575
			
Site notice at the dirt entrance road to the Eskom Village	Closest stakeholders to consider – Eskom Village	Stakeholders reading the site notice placed just outside the station entrance	Site notice placed at the entrance to Golden Mile Estate
			
Stakeholders reading the site notice placed at the entrance to the Golden Mile Estate	Closest stakeholders to consider – Corobrik	Closest stakeholders to consider – Eyethu Coal	Closest stakeholders to consider – Entrance to Golden Mile Estate

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Air Quality Impact Opinion: Scope

- Conduct an Air Quality Impact Opinion on the proposed retrofitting of the Unit 4 Electrostatic Precipitator with a Fabric Filter Plant (FFP), including the following:
  - Review the two technologies under discussion;
  - Indicate the relation of the chosen technology to world-wide best practise;
  - Comment on the effectiveness of PM emission reduction using the chosen technology; and
  - Rate the potential reduction in PM using the impact methodology described below.

The standard methodology for assessing the impacts must be utilised for uniformity purposes.

Air Quality Impact Opinion: Report

Appendix E: Comments and responses report

Due to the low number of comments received, the comments are presented in table form.

Comment	Response
Will the current air quality be improved by the development? Mr. Kozha	Air quality – the proposed development will reduce the existing emissions from Duvha Unit 4 a limit of 75 mg/Nm3 to a limit of 50 mg/Nm3
Are there any jobs available as part of the development? Mr. Ralapele	Job creation – as indicated in the socio economic section 30 jobs will be created during the construction phase of this project, where 90% will be for the HDIs, and the 10% will be for skilled personnel. During operation, temporary (5 week duration) jobs will be created every 4 years during the replacement of the filter bags. It is anticipated that local labour will be sourced.
Two service providers in the area telephonically offered their bed and breakfast services	Noted

In addition to the comments received this appendix contains the following:

- Background information document distributed to stakeholders;
- Advert and list of newspaper placements;
- Site notice and list of locations erected; and
- List of stakeholders contacted.

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information