10. WASTE MANAGEMENT LICENSE

10.1 Introduction

With the proclamation of the National Environmental Management, Waste Act (NEM:WA), No 59 of 2008, all waste related activities previously listed under the National Environmental Management Act (NEMA), No 107 of 1998 have been repealed and are now listed under the NEM:WA.

Schedule 1 of the Act outlines waste management activities that are deemed to have or are likely to have a detrimental effect on the environment and for which a waste management license is required. The schedule is divided into 2 categories where activities are equivalent to those either requiring a Basic Assessment (BA) or a full Environmental Impact Assessment (EIA).

Under the NEMWA, an applicant applies for a Waste Management License (WML) where the required basic assessment or full EIA process is followed in addition to any additional waste studies that may be requested by the Competent Authority (CA). If NEMA activities are triggered an integrated application is submitted for an integrated environmental authorisation

The activities associated with the establishment of the proposed continuous ash disposal facility and associated infrastructure at Majuba Power Station pertain more specifically to Category B activities.

As described in the Regulations "a person who wishes to commence, undertake or conduct an activity listed under this Category must conduct a Scoping and Environmental Impact Reporting process set out in the Environmental Impact Assessment Regulations made under Section 24(5) of the National Environmental Management Act (No.107 of 1998) as part of a waste management licence application contemplated in Section 45 read with Section 20(6) of this Act". Therefore the proposed development requires the submission of a waste management license application as well as a Scoping and Environmental Impact Report (S&EIR) to the Department of Environmental Affairs.

The intention of this chapter is to provide all the relevant and required information to the Department (DEA) in support of the waste licence application in order for them to take an informed decision with regard to this application and to ensure that the Environmental impacts are minimised through the assessment of feasible alternatives and through the implementation of all the relevant mitigation measures.

As the DWA Minimum Requirements were still in place during the time of most of the specialist studies, an additional classification has been conducted based on this. The results of this classification has been included just as background and for the sake of completeness. The classification in terms of the Government Gazette Notice 634 of 2013 – 23 August 2013 (Waste Classification and Management Regulations) are the only legitimate classification at the moment. The liner determination were therefor based on this classification.

10.2 Type of Application and Facility:

Type Of Activity	Mark
Recycling and/or recovery Facility	
Storage and or transfer Facility	
Treatment facility	
Disposal facility	**X**

10.3 Activities applied for in terms of the National Environmental Management: Waste Act

An application has been made for the following Category A and B listed activities under the relevant GN:

INDICATE THE NO. & DATE OF THE RELEVANT NOTICE:	ACTIVITY NUMBERS (AS LISTED IN THE WASTE MANAGEMENT ACTIVITY LIST) :	DESCRIBE EACH LISTED ACTIVITY (and not as per the wording of the relevant Government Notice):
No. R. 718 July 2009 Category A	19	The expansion of facilities of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of pollution, effluent or waste.
No. R. 718 July 2009 Category B	9	The disposal of any quantity of hazardous waste to land
	11	The construction of facilities for activities listed in Category B of this schedule (not in isolation to associated activity)

Under the new legislation the applicant would also like to apply for the following listed activities:

INDICATE THE NO. & DATE OF THE RELEVANT NOTICE:	ACTIVITY NUMBERS (AS LISTED IN THE WASTE MANAGEMENT ACTIVITY LIST) :	DESCRIPTION OF EACH LISTED ACTIVITY (and not as per the wording of the relevant Government Notice):

No. GN 921 November 2013 Category A	13	The expansion of a waste management activity listed in Category A or B of this schedule which does not trigger an additional waste management activity in terms of this schedule.
No. GN 921 November 2013 Category B	7	The disposal of any quantity of hazardous waste to land
	10	The construction of facilities for activities listed in Category B of this schedule (not in isolation to associated activity)

10.4 Site Identification, Location and Land use

The following Surveyor-general Cadastral Code 21 digit site (erf/farm/portion) reference number is applicable to the proposed new ash disposal facility at the Majuba Power Station:

SG_CODE	FARM_NO	PORTION	FARM NAME
Alternative E			
T0IS00000000008100001	81	01	WITKOPPIES 81 HS
T0IS00000000008100004		04	
T0IS00000000008100005		05	
T0IS00000000008100008		08	
T0IS00000000008100009		09	
T0IS00000000008100011		11	
T0IS00000000008100012		12	
T0IS00000000008100014		14	
T0IS00000000008100000		Remainder	
T0HS00000000007900002		2	MEZIG 79 HS
T0HS00000000007900004		4	
T0HS00000000007900006		6	
T0HS00000000007900010		10	

Figure 10.1: Affected portions for the (EIA) proposed Majuba ash disposal facility (on the Extended Alternative A). The indicated area include the proposed Ash Disposal Facility as well as all the associated infrastructure.

10.4.1 Size of Site and Classification

Ash classification report attached in **Appendix K**

Size of facility for a waste management activity	800ha
Area where the waste management activity takes place	Majuba Extended Alternative A
Classification of facility in terms of climatic water balance	Please Refer to Appendix C (Conceptual Design)
Classification of Facility in terms of the type and the quantity of waste received (using Minimum Requirements)	Ash Disposal Facility (Dry) (H:H)
Classification of Facility in terms of the type and the quantity of waste received (using DEA 2013 Norms & Standards)	Class C Barrier System (Dry)

10.4.2 Risk Rating

- ***Primary Hazard Rating of the Majuba Power Station Ash (DWA Minimum Requirements - repealed)***

  Based on the previous Minimum Requirements for waste disposal by landfill (DWAF, 2005) approach a waste is first categorised based on the industry type. In this case the waste is ash originating from the electricity generation process at Majuba Power Station, as a result the ash falls within the Industrial Group C. The ash is therefore classified as potentially hazardous, as the Energy Industry was identified in the Minimum Requirements as an industry generating potentially hazardous waste (DWAF, 1998a).

  The ash also falls within the waste stream E which includes High volume/Low Hazard Wastes (DWAF, 1998a). These wastes are those which, based on their intrinsic properties, present relatively low hazards, but may pose problems because of their high volumes (e.g. drilling mud, fly-ash from power plants, mine tailings, etc.).

- ***Secondary Hazard Rating of the Majuba Power Station Ash (DWA Minimum Requirements - repealed)***

  Based on the chemical analysis obtained from ARLP leach solution, the ash is classified as a Hazard Group 1 waste. This is due to chromium VI concentration in the ARLP solution being at a concentration higher than its ARL value of 0.020 mg/ℓ. In addition, vanadium, which is a Hazard Group 3 waste, also exceeded its ARL value of 1.3 mg/ℓ. None of the other elements and organic compounds tested for were detected in the leach solution at a concentration higher than their respective ARL values.

  The waste classification is dictated by the most hazardous substance in the waste, which in this case is chromium VI (Hexavalent chromium). The results indicate that disposal of the ash should be onto a facility that complies with the barrier (liner) performance requirements of a H:H waste disposal facility. A H:H waste disposal facility complies with the most stringent design requirements as per the Minimum Requirements.

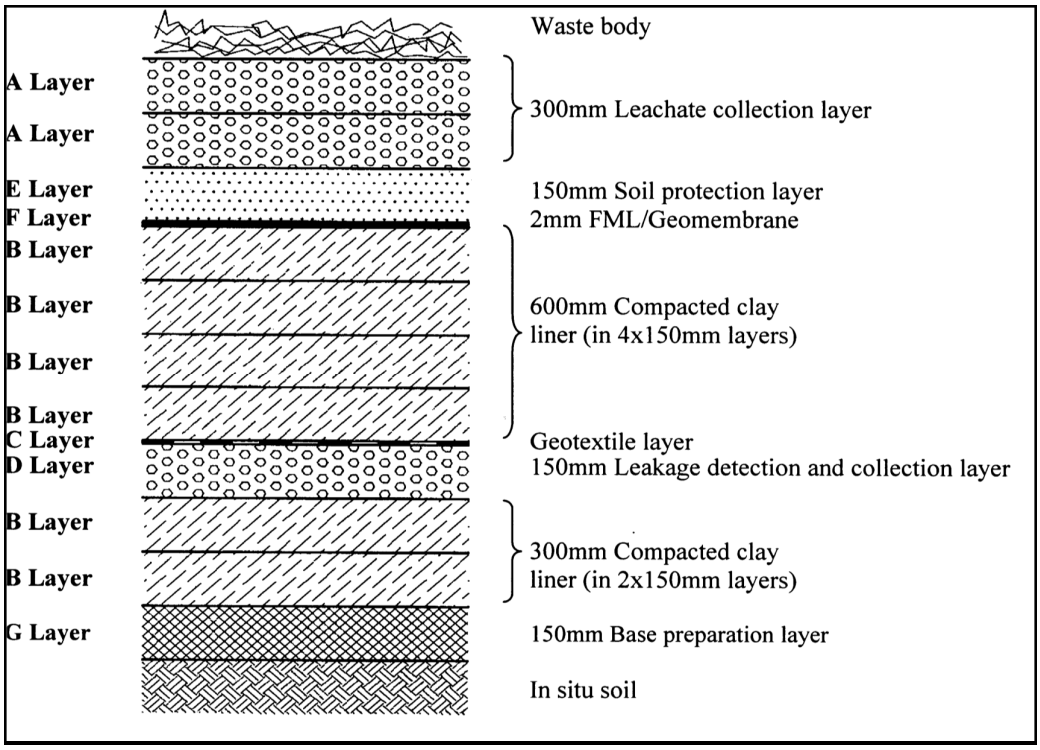

Figure 10.2: H:H Landfill Barrier System (DWAF, 1998b)

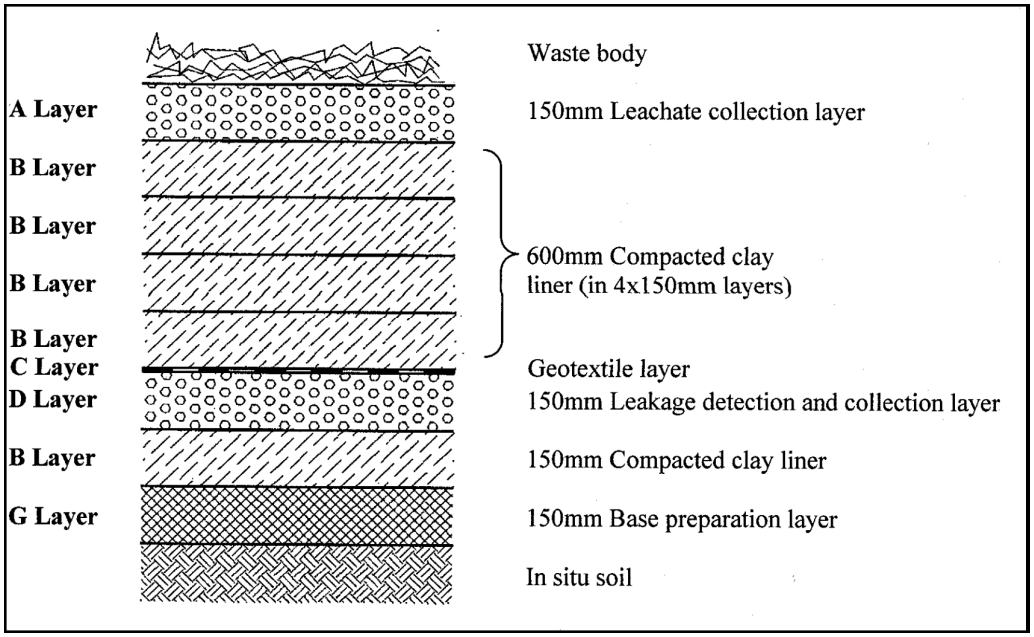

Figure 10.3: G:L:B^{+} Landfill Barrier System (DWAF, 1998b)

The monthly loading or disposal rate for the ash, based on the ARLP results for chromium VI, is presented in **Table 10.1**. Based on the concentration of hexavalent chromium present in the ash – only 50 tonnes may be disposed of per hectare on G:L:B+ waste disposal facility per month.

Table 10.1: Monthly loading rate based on Chromium VI leach concentration

	Majuba
Concentration of chromium VI (ppm) in ARLP ash leach	0.598
Load for element in g/ha/month from MinImum Requirements	30
Load in kg/ha/month	50167
Load in tons/ha/month for H:H	**50**
The monthly disposal rate is calculated by dividing the ARL by 0.66, which gives the load for the element in g/ha/month. The monthly load of the waste is then calculated by dividing the load (in g/ha/month) with the concentration of the component in the leach solution (ppb).	

The total loading rate will be a hundred (100) times the monthly loading rate, which is therefore 5 000 tonnes per hectare. It was indicated that Majuba has 4,2mt/a of ash production. The life of the new ash disposal facility should be in the order of an additional 46 years therefore over a 46 year period 210mt of ash will be generated. At a maximum disposal rate of only 5 000 tonnes per hectare, the G:L:B+ landfill will have to be in the order of 40 000 hectares in size, which will be completely impractical and very expensive.

- ***Waste Disposal Risk Rating in Accordance with Government Gazette Notice 634 of 2013 – 23 August 2013 (Waste Classification and Management Regulations - Current)***

The ash sample was also classified in terms of the DEA waste classification and management regulations for disposal purposes (DEA, 2013).

The number of potentially hazardous substances in the new classification system has been significantly reduced from that listed in the Minimum Requirements of 1998 and brought in line with the potentially hazardous substances being used in other parts of the world to classify waste for disposal purposes. However, if a generator is aware of a hazardous substance other than those listed by the DEA, they are obliged to indicate and analyse for this.

- ***Majuba Ash Classification***

Based on the results obtained from the distilled water leach performed on the leach solution and total concentration analyses performed on the ash, the ash sample is classified as a Type 3 waste requiring disposal on a waste disposal facility with a Class C barrier system provided there are no site specific risks that require a more conservative barrier system.

The Type 3 waste classification was the result of the Leachate Concentration (LC) value of chromium VI and molybdenum concentrations exceeding their respective LC0 values, and the Total Concentration (TC) values of arsenic (As), barium (Ba), molybdenum (Mo) and fluoride (F) exceeding their respective TC0 concentration values.

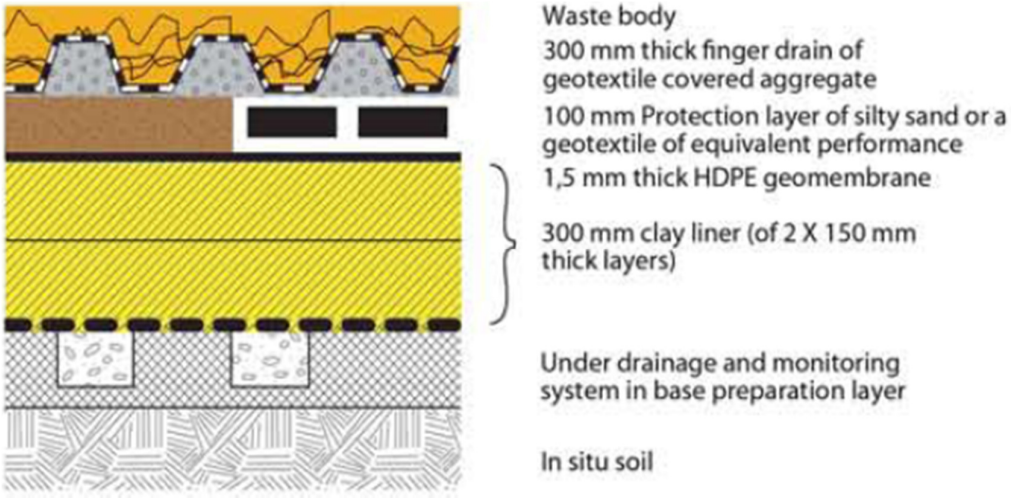

Figure 10.4: Class C landfill barrier system (DEA, 2012b)

- ***Carcinogenic, teratogenic and mutagenic characteristics of the ash***

  No testing of the ash sample was undertaken to establish the carcinogenic, mutagenic or teratogenic characteristics. The assessment is based on information obtained from literature sources, such as the International Association for Research on Cancer (IARC), the World Health Organisation, US National Institute for Occupational Safety and Health (NIOSH), the US EPA and the Minimum Requirements, etc.

  The ash contains elements which fall into the Group 1, Group 2 and Group 3 carcinogens as identified by the IARC. The ash contains in the order of 24.3% quartz (crystalline silica), based on the XRD analysis. Silica quartz has been classified as a Group 1 carcinogen by the IARC. In terms of the SANS 10234 rules, the ash would be classifiable as a Category 1 carcinogen, i.e., the ash contains more than 0.1% of a Group 1 carcinogen (SABS, 2008).

  However, despite the above, no medical evidence could be found that coal derived ash is actually classifiable as carcinogenic. From the literature study, it would appear that the respirable fractions of the silica are coated with amorphous alumina-silicate and thus renders the silica significantly less hazardous (Y. Nathan et al, 2009). Therefore coal ash, including bottom (coarse) and fly-ash, is currently classified as a non-hazardous waste in the European Union, State of Maryland and Ireland, USA (EU, 2000 and

Maryland Dept. of Health, 2007). The ash is therefore in this case also not classified as a carcinogen.

No evidence could be found that the ash is teratogenic or mutagenic either.

The above does not mean that the ash may not pose health hazards. In order to minimise the impact of the ash on the environment and human health it is recommended that:

- The ash disposal facility should have gentle slopes to minimise the generation of airborne dust,
- The ash should be moistened before disposal in order to minimise dust generation,
- Irrigation of the ash body should be done in order to minimise the generation of windblown dust,
- Progressive rehabilitation, including vegetation, of the ash disposal facility should be undertaken where the final disposal height and landform has been achieved,
- The base of the landfill should be constructed with a suitable barrier (Class C) and seepage water management system to prevent significant seepage of leachate from the site,
- Dust deposition should be monitored around the site for:

  Respirable dust ($PM_{2.5}$ and PM_{10}); and

  Settable dust monitoring

The air quality monitoring points and frequency should be determined in the air quality impact assessment.

- ***Conclusion (Risk Rating)***

In terms of the ***Government Gazette Notice 634 of 2013 – 23 August 2013 (DEA's Waste Classification and Management Regulations)*** which is currently in effect, the ash is classified as a Type 3 waste (low hazard waste), which requires disposal on a landfill with a **Class C** barrier system. The Type 3 waste classification was the result of the LC value of chromium VI and molybdenum concentrations exceeding their respective LC0 values, and the TC values of arsenic (As), barium (Ba), molybdenum (Mo) and fluoride (F) exceeding their respective TC0 concentration values.

As a results of certain practical limitations Eskom would like to apply for an extension for the implementation of the Class c liner system until 2019. The detailed motivation for this request as well as the implementation plan are included as (**Appendix X**).

The ash, based on the literature research and results obtained, is not classified as a carcinogen even though it contains 17.44 % quartz. The ash is also not classifiable as a teratogen or mutagen.

From a radioactivity perspective, it was found that the ash is below the limit set for material to be considered as radioactive. Assuming very conservative human exposure conditions (e.g. exposure in excess of 2 000 hours per annum) the potential radiological impact to members of the public is below the regulatory criteria for the radiological protection of members of the public. The assumed conditions did not consider the possibility for members of the public residing on top of the ash disposal facility for extended periods of time, in which case additional exposure conditions would need to be considered (e.g. radon exhalation from the ash body and the subsequent built-up of radon inside a house) (AquiSim, 2013).

10.4.3 Transitional arrangements for Class C barrier system on ash disposal facility (Eskom motivation)

As a result of the Engineering process (Conceptual and Final Design) that needs to be completed following the Authorisation, and the timeframes associated with construction, Eskom motivated for a transitional period to be granted as far as the implementation of the **Class C** barrier system are concerned, until 31 December 2019. The detailed motivation for this request as well as the implementation plan are included as (**Appendix X**).

The transitional arrangements application is the only practical means to ensure that the Majuba power station will remain in operation while the relevant internal processes are followed, until the barrier system in installed.

The EAP supports this motivation based on the available information and following a discussion with the Surface and Groundwater specialists. The Groundwater specialist indicated that according to the modelling conducted the effects of the liner are not significant enough to alter the model in any drastic manner if this transition is granted. The migration of the plume and the quality of water in the aquifer are very similar when the existing situation (without liner) are compared to the predicted situation (with liner) which is due to the nature of soils and rock in the area as well as the fact that a dry method of ash disposal are used.

It is therefore recommended that the Environmental Authorisation make provision for the allowance of this Five year transitional period.

This allowance, if granted, should place so much more emphasis on the importance of the monitoring programme. Close monitoring needs to be conducted especially during this transition period. Should any exceedance of standards be detected, the ECO would have to

report it to the relevant departments, and this arrangement and the conditions in the Environmental Authorisation might have to be revised.

10.4.4 Current land-use where the site is situated:

Industrial	X	Recreation	
Agriculture	X	Commercial	
Residential		Mining & quarrying	
Forestry		Wilderness areas	
Wetlands	X	Nature area	
Open spaces			

10.4.5 Geographical coordinates of all external corner points of the site:

Figure 10.5: shows the extent of the site that is recommended to be utilised for the proposed continuous ash disposal facility. **Table 10.2** provides the relevant co-ordinates.

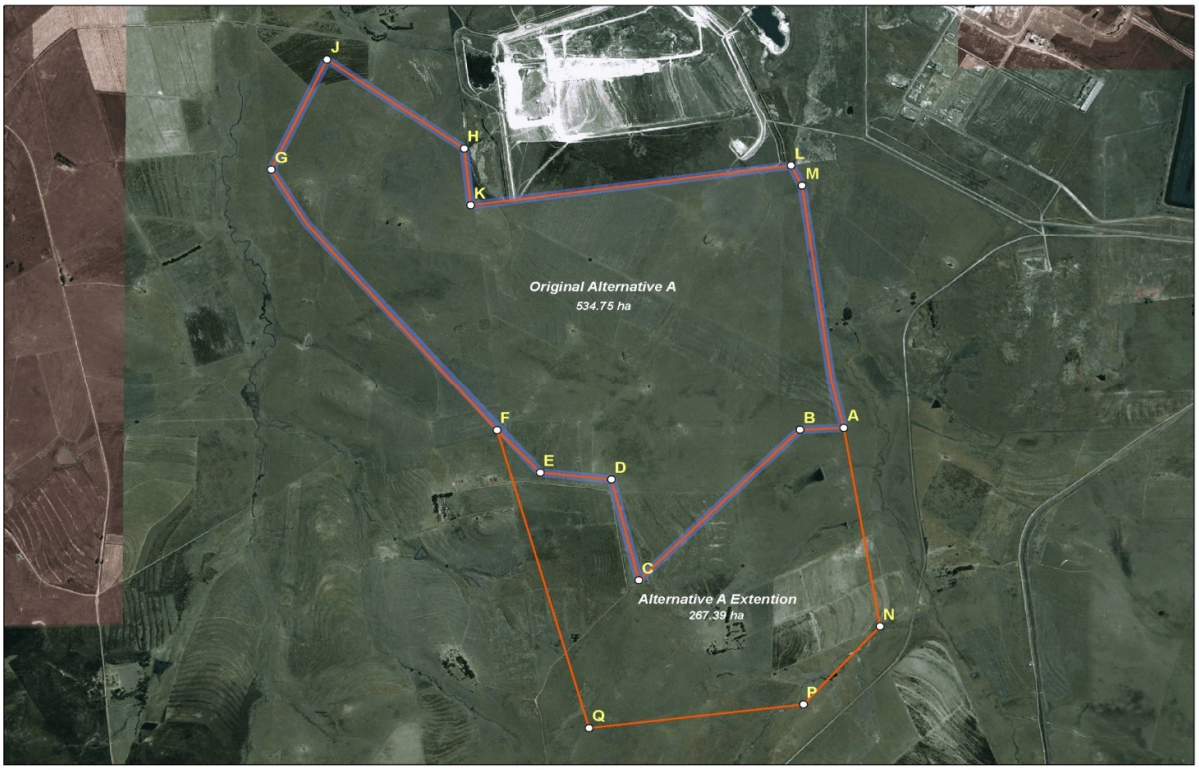

Table 10.2: Co-ordinates of the corner points of the proposed site

Name	East (dms)	South (dms)
A	29° 45' 38.99" E	27° 7' 44.14" S
B	29° 45' 29.65" E	27° 7' 44.62" S
C	29° 44' 55.27" E	27° 8' 16.25" S

D	29° 44' 49.32" E	27° 7' 55.24" S
E	29° 44' 34.09" E	27° 7' 53.83" S
F	29° 44' 24.72" E	27° 7' 44.99" S
G	29° 43' 36.13" E	27° 6' 50.75" S
J	29° 43' 47.87" E	27° 6' 27.67" S
H	29° 44' 17.32" E	27° 6' 46.08" S
K	29° 44' 18.78" E	27° 6' 57.96" S
L	29° 45' 27.33" E	27° 6' 49.31" S
M	29° 45' 29.67" E	27° 6' 53.45" S
N	29° 45' 47.02" E	27° 8' 25.56" S
P	29° 45' 30.68" E	27° 8' 41.94" S
Q	29° 44' 44.87" E	27° 8' 47.09" S

10.4.6 Operational times

Period	From	Until
Weekdays	Due to the fact that the facility supports the continuous station operations, it will be continuous**.**	
Saturdays		
Sunday		
Public holidays		

10.5 Process/Activity Description

The Majuba Power Station, in the Mpumalanga Province currently uses a dry ashing system for the disposal of ash. The proposed continuous development is an ash disposal facility with the following specifications:

- Capacity of airspace of 190 million m^3; and
- Ground footprint of 800 ha: 15 – 65 year

This ash disposal facility shall be able to accommodate the ashing requirements of the power station for the next 46 years, to 2060 (these timelines are based on an annual ash production rate of 4.2 million tonnes).

In terms of the EIA Regulations published in Government Notice R543 of 2 August 2010 in terms of Section 24 (5) of the National Environmental Management Act (Act No. 107 of 1998), certain listed activities as set out in Government Notices R544, R545 and R546 and in GN 921 of the National Environmental Management: Waste Act (NEMWA) require environmental authorisation and waste management license before they can proceed.

The need for this continuation is to allow the Majuba Power Station to continue ashing in an environmentally responsible way for the duration of the remaining operating life of the Power Station and to comply with the requirements of legislation.

The following diagram (**Figure 10.6**) provides an overview of the activities on site and where this project fits within the process. **Figure 10.7** also provides a simplified input and outputs diagram.

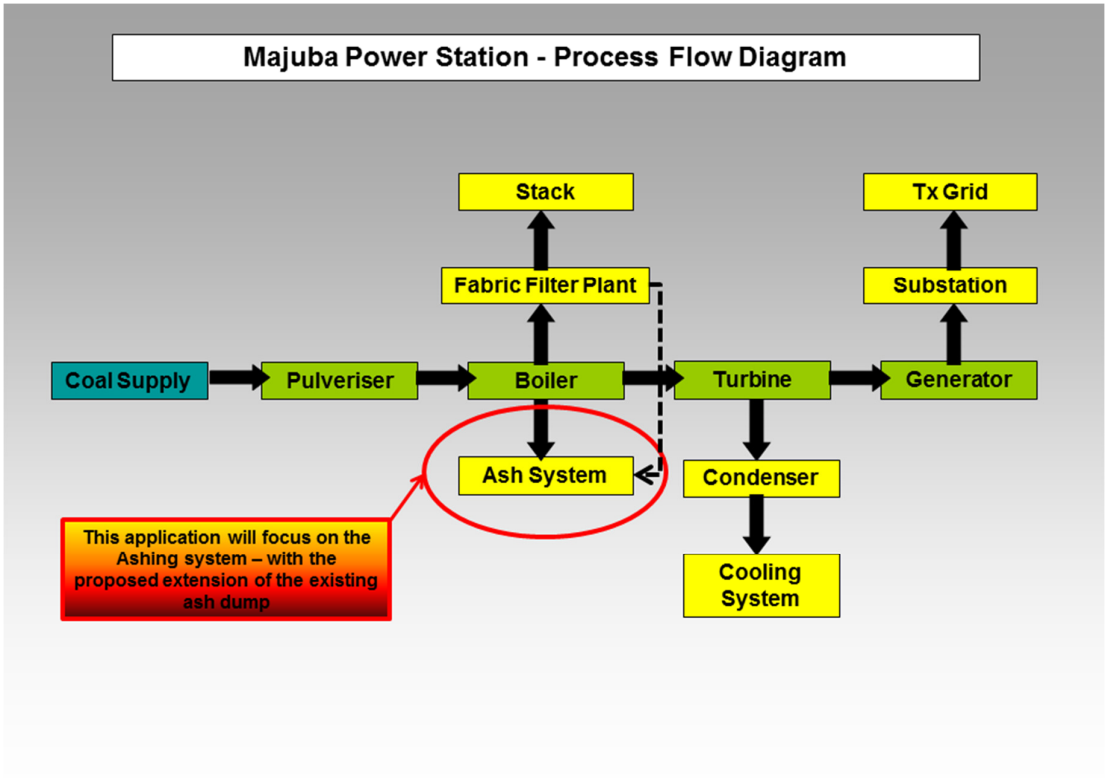

Figure 10.5: An overview of the activities on site and where this project fits within the process

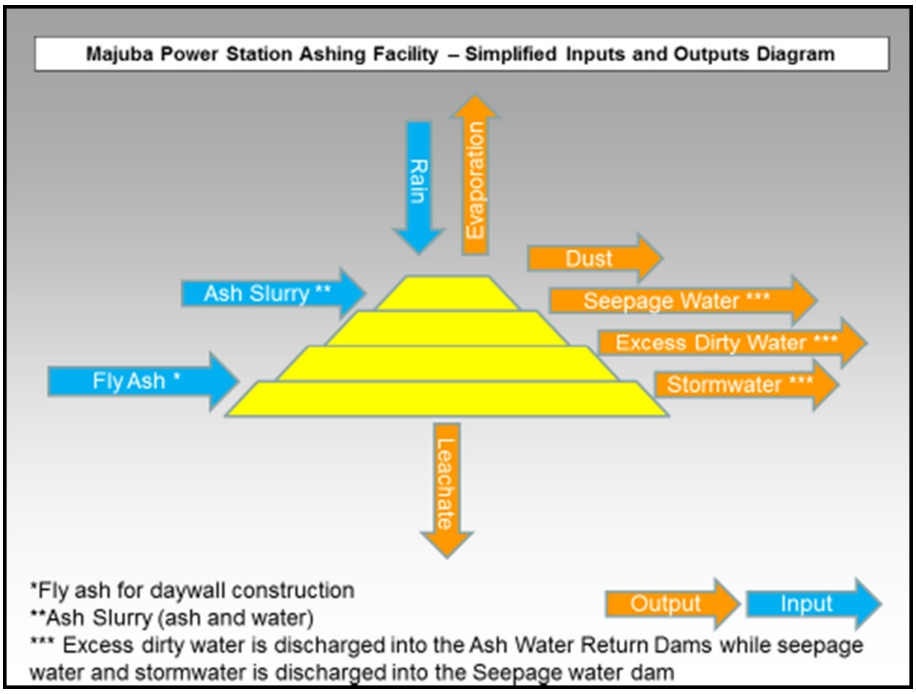

Figure 10.6: Simplified inputs and outputs diagram of the dry ash disposal facility

10.6 Waste Quantities

The following estimated quantities of waste are expected to be managed daily at the proposed continuous ash disposal facility for Majuba Power Station

Hazardous waste	Non-hazardous waste	Total waste handled (tonnes per day)
Ash	-	Approximately 11 000 tons per day (utilising a specific gravity for fly ash of 2.3)

10.6.1 Recovery, Reuse, Recycling, treatment and disposal quantities:

Types of Waste	Main Source (Name Of Company)	Quantities		On-Site Recovery Reuse Recycling Treatment Or Disposal	Offsite Recovery Reuse Recycling Treatment Or Disposal	Offsite Disposal
		Tons/ Month	M^3/Month	Method & Location	Method Location And Contractor Details	
Ash	Majuba Power Station	-	-	On site dry disposal	1)LF 71% = 335 860t (441 921m3)/m 2) LF 75% = 354 780 (466 815m3)/m 3) LF 80% = 378 432 (497 937m3)/m Dry ash disposal @ Majuba PS	Contractor : Roshcon-

10.7 General

10.7.1 Prevailing wind direction

Figure 10.8 provides period wind roses for the proposed Majuba ash disposal facility site, with **Figure 10.9** including the seasonal wind roses for the same site. The co-dominant wind directions are easterly and west-north-west with a frequency of occurrence approaching 12% for each direction. Winds from the southern and south-western sectors occur relatively infrequently (<4% of the total period). Calm conditions (wind speeds <1 metres per second ($m.s^{-1}$)) occur for 8.5% of the time.

A frequent westerly flow dominates day-time conditions with >12% frequency of occurrence. At night, an increase in easterly flow is observed with a decrease in westerly air flow.

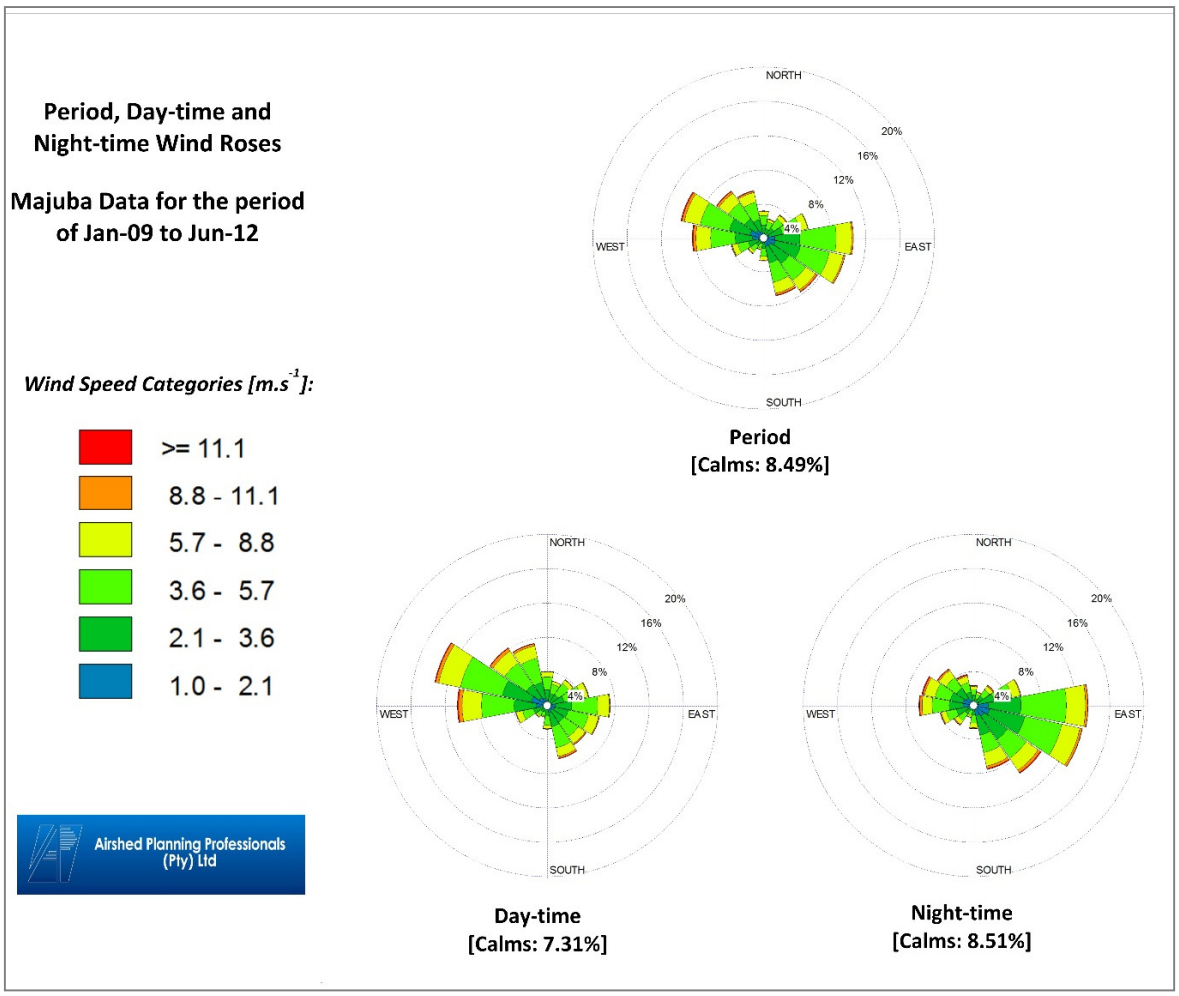

Figure 10.7: Period, day-time and night-time wind roses for Majuba ash disposal facility (1 January 2009 to 31 June 2012)

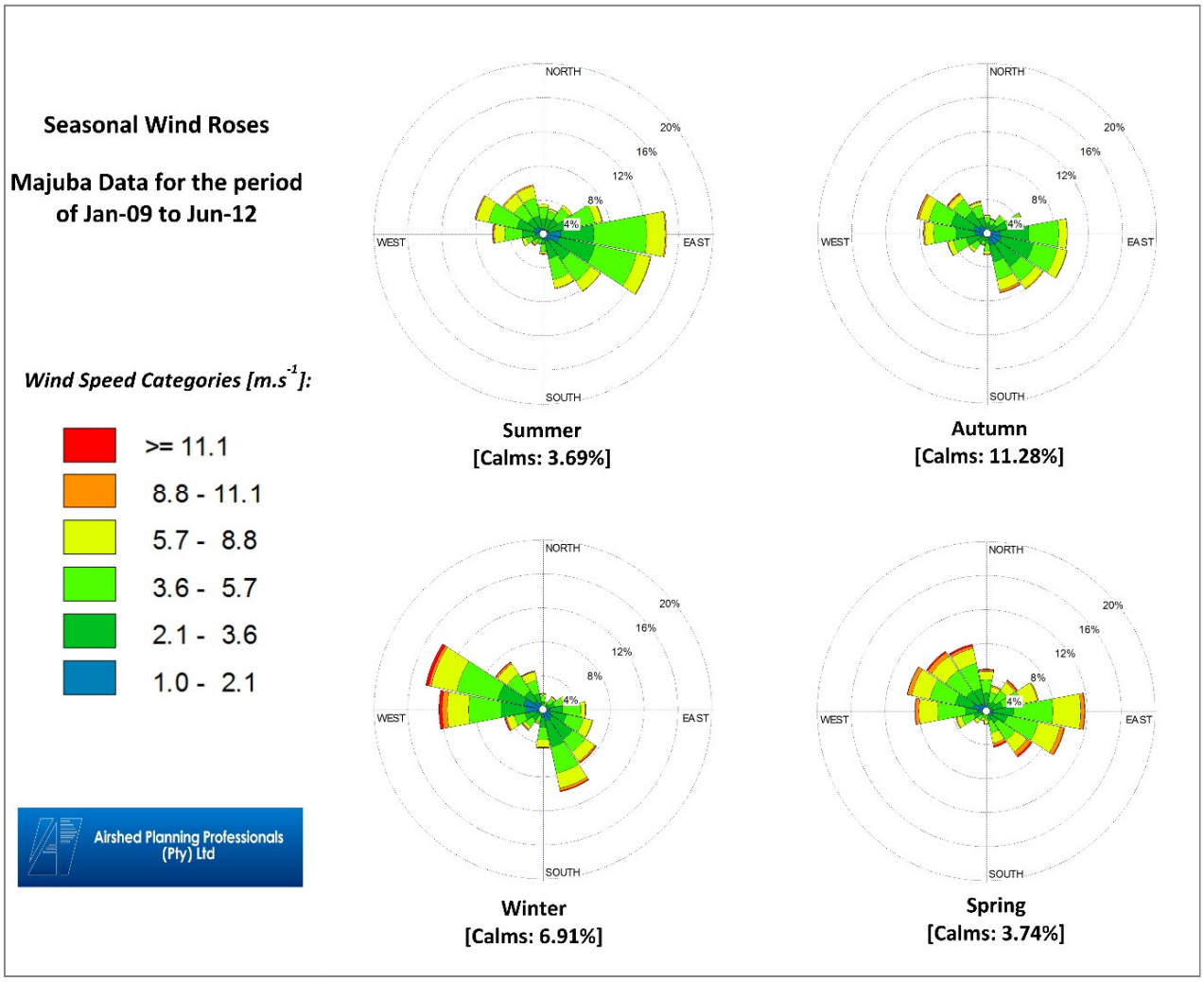

Figure 10.8: Seasonal wind roses for Majuba ash disposal facility (1 January 2009 to 31 June 2012)

During summer months, winds from the east become more frequent, due to the strengthened influence of the tropical easterlies and the increasing frequency of occurrence of ridging anticyclones off the east coast. There is an increase in the frequency of calm periods (i.e. wind speeds <1 $m.s^{-1}$) during the autumn (11.28%) and winter months (6.91%) with an increase in the westerly flow.

10.7.2 The size of population to be served by the facility

	Mark with "X"	Comment
0-499		The waste facility proposed is an ash disposal facility for Majuba power station's use, it therefore contribute to the National Grid and in doing so serve the population of South Africa.
500-9,999		
10,000-199,999		
200,000 upwards		

10.7.3 The geological formations underlying the site:

Granite		Quartzite	**X**
Shale	**X**	Dolomite	
Sandstone	**X**	Dolerite	**X**

10.8 Competence to Operate Site

It is imperative that the holder of the waste licence is a fit person in terms of section 59 of the NEMWA (59 of 2008).

10.8.1 Legal compliance

	YES/NO	DETAILS
Has the applicant ever been found guilty or issued with a non-compliance notice in terms of any national environmental management legislation?	**NO**	These details have specific reference to Majuba Power Station
Has the applicant's licence in terms of the Waste Act 2008 ever been revoked?	**NO**	
Has the applicant ever been issued with a noncompliance notice or letter in terms of any South African Law?	**NO**	

10.8.2 Technical competence

What technical skills are required to operate the site?	Eskom contracted an external Professional Engineer to oversee that the ash disposal facilities are in good condition and operating as required. Roshcon is also contracted by Eskom to operate the ash disposal facilities and supervise all the activities taking place at the ash disposal facilities
How will the applicant ensure and maintain technical competency in the operation of the site?	

The details of Eskom's experience and qualifications along with that of relevant employees are summarised as shown in the table below:

Name	Position	Duties And Responsibilities	Qualifications And Experience
Please note these are the current names and are accurate as of June 2014, it should be noted that the specific people involved may change from time to time.			
	External consultant		
Roshcon	External contractor	1) Operating the stacker 2) Stacking of ash 3) Maintenance of conveying/ashing system 4) Shifting the stacker & conveying systems 5) Dust suppression Rehabilitation of stripped vegetation	**Experience:** Roshcon specialises in ash dump management and has been the appointed Contractor since 1996 at Majuba Power Station. **Qualifications:** Site manager: Pierre Cameron ND Civils Supervisor: Mark Cooke (2nd year ND Civils)

10.9 Landfill Parameters

10.9.1 The method of disposal of waste:

Land-building	X	Land-filling		Both	

10.9.2 The dimensions of the disposal site in metres

	At commencement	After rehabilitation
Height/Depth	Concept Designs are included in **Appendix C**,	
Length		
Breadth		

10.9.3 The total volume available for the disposal of waste on the site:

Volume Available	Mark with "X"	Source of information (Determined by surveyor/ Estimated)
Up to 99		
100-34 999		
35 000- 3,5 million		

>3,5 million	**X**	Majuba Power Station is anticipated to ash until the end of its planned life span in 2060 (approximately 46 years) an additional 190 million cubic metre storage space is required, which is the subject of this report.

10.9.4 The total volume already used for waste disposal:

(a) Will the waste body be covered daily		**NO**
(b) Is sufficient cover material available	**YES**	
(c) Will waste be compacted daily		**NO**

10.9.5 The Salvage method

At source	
Recycling installation	
Formal salvaging	
Contractor	
No salvaging planned	**X**

10.9.6 Fatal Flaws for the site:

Table 10.3 indicates which of the following apply to the facility for a waste management activity:

Table 10.3: Fatal Flaws for Alternative A

	YES	NO	Comment
Within a 3000m radius of the end of an airport landing strip		**X**	
Within the 1 in 50 year flood line of any watercourse	**X**		See Surface Water and Aquatic Specialist Study in **Appendix Q** for more information
Within an unstable area(fault zone, seismic zone, dolomitic area, sinkholes)		**X**	
Within the drainage area or within 5 km of water source	**X**		See Surface Water and Aquatic Specialist Study in **Appendix Q** for more information
Within an area with shallow and/or visible water table	**X**		
Within an area adjacent to or above an aquifer	**X**		See the Ash Classification and Ground Water Studies attached in **Appendices K and N** respectively

Within an area with shallow bedrock and limited available cover material		**X**	
Within 100 m of the source of surface water	**X**		See Surface Water and Aquatic Specialist Study in **Appendix Q** for more information
Within 1km from the wetland	**X**		
Indicate the distance to the boundary of the nearest residential area	**Approximately 16km**		
Indicate the distance to the boundary of the industrial area	**500 metres**		

10.9.7 Wettest six months of the year

Monthly rainfall for the site (August 2011 to July 2012) is given in Error! Reference source not found.**4**. The study area falls within a summer rainfall region, with over 85% of the annual rainfall occurring during the October to March period. Between October 2011 and March 2012, monthly rainfall ranged between 21 and 128 mm.

Table 10.4: Monthly rainfall at the Majuba monitoring station 2011/2012

Month	Precipitation (mm)
Aug-11	5
Sep-11	33
Oct-11	43
Nov-11	35
Dec-11	128
Jan-12	49
Feb-12	125
Mar-12	24
Apr-12	21
May-12	0
Jun-12	10
Jul-12	0

10.9.8 Location and depth of ground water monitoring boreholes:

Twenty-five boreholes with measured groundwater levels were used for the numerical calibration of the groundwater model for Majuba power station (GHT, 2013) **Table 10.5**. The water levels in metres below ground level (mbgl) were converted to water levels in metres above mean sea level (mamsl). **Figure 10.10** provides a map of the boreholes on and around the Majuba site.

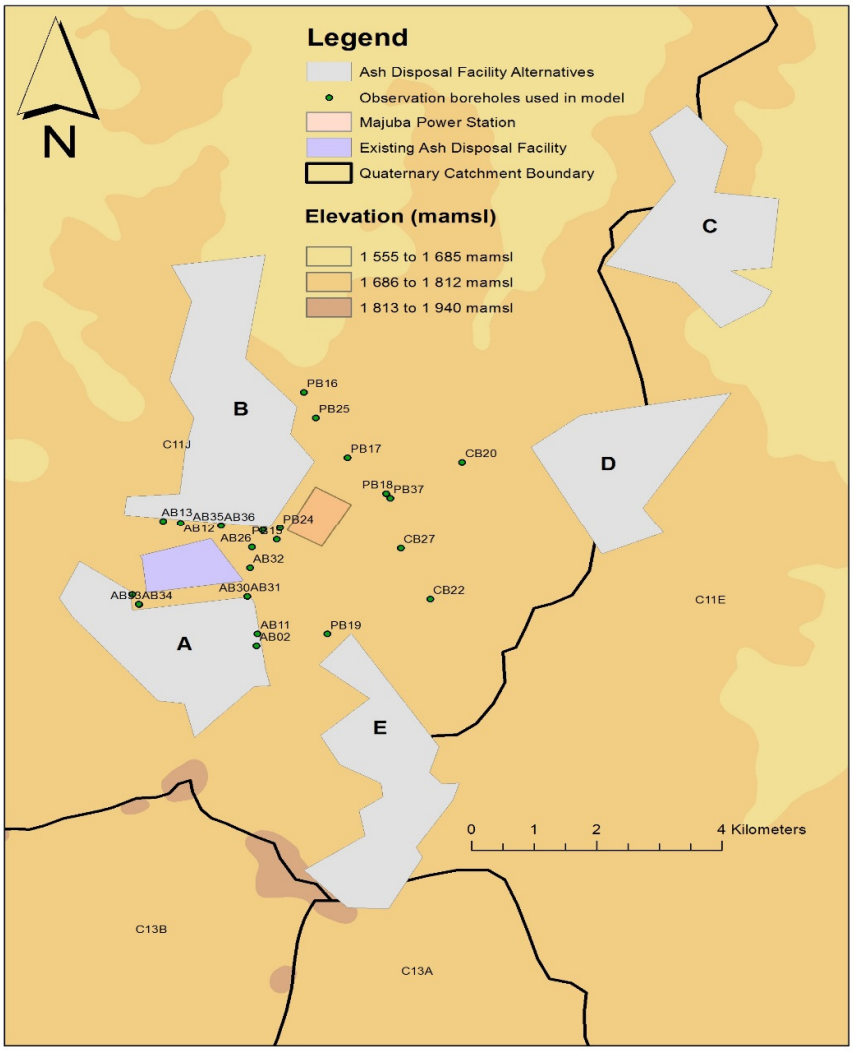

Figure 10.9: A map of the Groundwater monitoring boreholes in the study area

Table 10.5: Majuba Power Station – Groundwater Monitoring Boreholes

Borehole	X Coordinate	Y Coordinate	Water Level (mbgl)	Water Level (mamsl)
AB02	75214.561	-3001386.528	3.34	1713.097
AB04	75307.203	-2999181.868	0.70	1698.239
AB11	75225.881	-3001153.884	0.85	1714.070
AB12	73998.948	-2999041.059	3.66	1704.386
AB13	73721.465	-2999006.171	3.85	1703.438
AB14	73227.261	-3000410.603	2.90	1715.742
AB26	75136.678	-2999502.202	0.68	1700.757
AB30	75065.529	-3000448.133	4.00	1709.939
AB31	75065.549	-3000444.809	3.10	1710.842
AB32	75112.451	-2999902.098	0.31	1708.893

AB33	73338.190	-3000601.856	8.55	1717.950
AB34	73332.280	-3000595.173	11.75	1714.385
AB35	74647.268	-2999088.140	3.16	1700.711
AB36	74644.286	-2999089.230	3.00	1700.937
CB20	78498.870	-2997882.843	0.59	1698.643
CB22	77986.609	-3000494.879	4.26	1713.561
CB27	77516.634	-2999527.852	5.16	1713.499
PB15	75534.221	-2999360.544	0.69	1699.041
PB16	75967.865	-2996548.480	1.53	1691.223
PB17	76664.499	-2997793.867	1.95	1696.085
PB18	77285.155	-2998473.669	1.44	1698.643
PB19	76346.327	-3001160.698	7.23	1735.564
PB24	75585.148	-2999139.223	1.68	1698.332
PB25	76163.272	-2997037.256	0.80	1694.455
PB37	77354.035	-2998561.640	1.44	1700.953

10.10 Information needed when applying for scheduled activities listed under Category B:

Information Required	Comment
Scoping and Environmental Impact Assessment Report which should include:	
Description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity	See **Chapter 6** and **Chapter 8** of this report
Description of significant environmental impacts, including cumulative impacts, that may occur as a result of the undertaking of the activity	See **Chapter 8** of this report
Conducting public participation as outlined in EIA Regulations	See **Chapter 3** and the comments and responses report as part of this report **(Appendix G)**
Closure plan (report) / Rehabilitation	Due to the fact that the proposed new facility is to be operated in the same way as the existing disposal facilities at Majuba power station, the existing operational plan has been included in **Appendix U**

Operational plan	Due to the fact that the proposed new facility is to be operated in the same way as the existing disposal facilities at Majuba power station, the existing operational plan has been included in **Appendix U**
Waste disposal facility designs **(DRAFT)**	See **Appendix C**
A3 size layout plans (four hard copies for all applications) **(DRAFT)**	See **Appendix C**
Landfill conceptual designs **(DRAFT)**	See **Appendix C**
Geo-hydrological report (only apply to landfill sites, storage and treatment of waste)	See **Appendix N**
Consideration of alternatives	See **Chapter 7** of this report
Description of mitigation measures and risk assessment	See the EMPr in **Appendix D** as well as **Chapter 8** of this report
Any inputs made by specialists to the extent that may be necessary	See **Appendices I to S**
Any specific information as may be required by the competent authority	Not Applicable as yet
Plan of study for environmental impact assessment which must among others include:	
Description of the tasks to be undertaken as part of the environmental impact assessment process, including specialist report or specialized processes, and a manner in which such tasks will be undertaken	The Plan of Study for EIA was submitted to the DEA in 8 January 2013 and was approved and accepted on 20 March 2013 – See **Appendix A.**
An indication of stages at which the competent authority will be consulted	
Description of methods for assessing issues and alternatives, including the no-go alternative	
Particulars of participation process that will be conducted during the EIA process	
Draft environmental management plan	See **Appendix D**
Copies of any specialist reports and specialized processes	See **Appendices I to S**

The following is also included as supporting documentation.

Required Piece Of Information	Section In The Reports Where It Can Be Found	Comments (If Any)
Extremely clear Google Earth colour picture of the site (dated not more than a month from the date of the application)	**Appendix V**	

1:50 000 topography /topo-cadastral map of the area showing o the site and 5km radius o Existing residential and industrial areas o Possible future development (indicate the type of development) o Other waste handling sites (existing or closed) in the area o Existing and possible future residential areas. o Sites which are listed as national monuments or archaeological, paleontological and cultural historical sites or objects worthy of conservation;	**Appendix W**
The site plan drawn to scale showing the site's boundary showing: o Activities or development existing on all 4 directions of the site. o Waste receipt, storage and handling areas o Impermeable surfaces o Sealed drainage systems o Drainage system for the site including sumps and discharge points o Road names and access from all major roads in the area o Land Owner's consent (letter with signature)	**Appendix C**
Waste hierarchy implementation plan	Not Applicable

In additional to the above, the following has also been included.

Required Piece Of Information	Section In The Reports Where It Can Be Found	Comments (If Any)
Design for site roads	Not Applicable	
Laboratory facilities	Not Applicable	
Design and location of fuel storage areas	Not Applicable	
Design and location waste quarantine areas	Not Applicable	
Design and location of waste Inspection areas	Not Applicable	
Liner specifications	**Appendix C**	
Gas generation and management	Not Applicable	
Air quality monitoring and management	See Air Quality Study in **Appendix I**, Environmental Management Programme in **Appendix D** as well as the Operational Plan in **Appendix U**	

Co-disposal ratio calculation	Not Applicable
Daily and intermediate cover requirements	Not Applicable
Temporary and permanent capping requirements	Not Applicable