

MATIMBA POWER STATION - ASH DISPOSAL FACILITY - TASK 966		
BACK-ASHING CONCEPT DESIGN OPTIMISATION		
ASH DUMP MODELLING OPTIONS AND DESIGN		
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ITEM	DESIGN CRITERIA	SOURCE / COMMENTS
GENERAL		
Project Location	Matimba Power Station	Eskom
Life of Power Station/ADF	64 years - 1991 to 2055	Eskom
ADF Current design		2019 Concept design report Eskom 2018
Remaining life of the proposed ADF		36 Concept design report Eskom 2018
Area Available	400ha	3145 SSI Matimba Ash 2015
Codes and Standards	SANS 10286 - Mine Residue Code of Practice: RSA Eskom standards?	
Units	International System of Units (SI); currency in SA Rand	
Design Base Survey	2019 March	To be measured by KP
Climate	Situated in the summer rainfall area of the waterberg watershed. Semi-Arid climate of hot summers and fairly cool winters	GCS Hydrological assessment, 2016
HYDROCLIMATOLOGY		
Stormwater management	Clean and dirty water separation	GN 704
	1 in 100 years storm (RI, 24hrs)	GN 705
	Clean stormwater run-off from rehabilitated dump to be released to stream if within limits	EIA/EMP - Matimba to confirm
Ash surface runoff coefficient	0,5	KP assumption
Rehabilitated ash dump runoff coefficient	0,3	KP assumption
Catchment area runoff coefficient	0,3	KP assumption
DESIGN EARTHQUAKE		
Operating Basis Earthquake	Not applicable	Not a seismic area
Maximum Design Earthquake	Not applicable	Not a seismic area
ASH DISPOSAL FACILITY (ADF)		
Ash Properties		
Coal burn rate (CBR) - Design MCR (max continuous rating) - 6 units	15,050,000 tpa	Concept design report Eskom 2018
Annual ash make (34% of CBR) (Received to ADF)	5,117,000 tpa	Concept design report Eskom 2018
Ash Volume per year	6,396,250 m ³ /year	Concept design report Eskom 2018
Total volume required (2019-2055)	230,265,000 m ³	Matimba to confirm
Ash Specific gravity		Geotech to confirm
Ash Dry Density on dump	800 kg/m ³	Concept design report Eskom 2018
Ash Moisture Content (on conveyor)		Matimba - to confirm
Ash Moisture Content (in dump)		Matimba - to confirm
Ash Composition by mass		Matimba - to confirm
Ash in situ Permeability		KP to test
Ash friction angle		KP to test
Ash cohesive strength		KP to test
Ash Bulk Density		KP to test
Ash Disposal Facility Geometry		
Ash natural angle of repose (dumped slope)	30 deg for sideslope ave slope, (6m cone 40 deg)	Environmental impact assessment (Jeffares & green, 2015) - KP to test
Standby system - Shift length	41m (6m cone)	Provided by Matimba
Standby system - Stacking reach	58m (6m cone)	Provided by Matimba
Main system - Shift length	58m (6m cone)	Provided by Matimba
Main system - Stacking reach	75m (6m cone)	Provided by Matimba
Comment on Stackers	Safe Edge Distance from CI Shiftable Conv to Crest = 17m	Provided by Matimba
Distance from head station to front stack side crest	40	Concept design report Eskom 2018
Stacker crawling slope (during ashing)	1V:20H	Concept design report Eskom 2018
Stacker crawling slope (during shifting)	1V:10H	Concept design report Eskom 2018
Extendible conveyor ramp up (average)	1V:15H	Concept design report Eskom 2018
Main/Standby system maximum volume split	70 - 30	Concept design report Eskom 2018
Ash Dump surfaces	Side slopes: 1V:5H max, Top Slopes: 1:300 min	Provided by Matimba
Existing Design dump Height	30 to 40m	Provided by Matimba
Maximum dump height	to be determined by stability analysis	Matimba - KP
Conveyor platform width (minimum)		Matimba - to confirm
Spreader length	Link 11 m, Boom 39 m	Provided by Matimba
Stacker Boom & Link	Link 32.5 m, Boom 35 m	Provided by Matimba
Reshaped ash slope angle	1V:5H	Provided by Matimba
Shiftable conveyor advance angle		Matimba - to confirm
Minimum allowable Design Factor of Safety	1.5 Post closure, 1.3 During construction	Provided by Matimba
Waste classification	Type 3 waste	Waste classification report (Jeffares & green, 2013)
Lining	Class C barrier System	Waste classification and management regulations (WCMR 636, 2013)
Road Design		
Width		To be confirmed by Matimba
Fence (Boundary line)	To be provided by Matimba	To be confirmed by Matimba
Pollution Control Dams (PCD's)		
Existing PCD Volumes	Matsemaholo 203 600 m ³ , North East 29 500 m ³ , South East 52 000 m ³	Provided by Matimba
Sizing PCD's	Must not spill more than once in 50 years, includes 1:100 year storm	Water Act 1998 & Reg 704
Freeboard	800mm	Water Act 1998 & Reg 704
Silt Traps	4hr retention time - 2 compartments, machine access	Matimba to confirm
Toe Catchment paddocks	none	To be confirmed by Matimba
Solution trenches	Concrete lined	KP
Stormwater trenches	Earthlined	KP
Seepage monitoring	Monitoring boreholes	To be confirmed by Matimba
Hydrogeology		
Ground Water	Expected to be between 1m-3m below hgl during the high rainfall events	Hydrological assessment report (GCS 2013)
Fault lines	Numerous faults intersect the study area	Diagram to be provided by Matimba
Ash monitoring		
Temperature monitoring		To be confirmed by Matimba
Max Temperature of ash	50C	Environmental impact assessment (Jeffares & green, 2015) - To be confirmed by Matimba
Temperature of ash	30-40C	Environmental impact assessment (Jeffares & green, 2015) - To be confirmed by Matimba
Topsoil Management		
Topsoil cover thickness (min)	0.3m	To be confirmed by Matimba
Re-use of 'contaminated' topsoil	0.2m thick (upper layer) 0.1m thick (lower layer)	Provided by Matimba

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