Appendix F-6: Presentations and minutes of the meeting

Zitholele Consulting
Reg. No2000/000392/07

PO Box 6002 Halfway House 1685, South Africa
Building 1, Maxwell Office Park, Magwa Crescent West
c/o Allandale Road & Maxwell Drive, Waterfall City, Midrand
Tel + 27 11 207 2060
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ENVIRONMENTAL IMPACT ASSESSMENT, VARIATION TO EXISTING WASTE MANAGEMENT LICENCE, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

PUBLIC MEETING

Monday, 12 March 2018 @ 11h00

Community Hall, Lesedi Tshukudu Thusong Centre, Steenbokpan

A G E N D A

Facilitator: Mathys Vosloo, Zitholele Consulting

10:30 – 11:00	Registration for the meeting	
11:00 – 11:10	Welcome, Evacuation Procedures, Introductions	M. Vosloo
11:10 – 11:30	Project Background	T. Blom
11:30 – 12:15	Presentation of application process and findings	M. Vosloo
12:15 – 12:45	Discussion	All
12:45 – 13:00	Closing and Way Forward	M. Vosloo

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

Public Meeting

ZITHOLELE CONSULTING

Monday, 12 March 2018, 11h00 – 13h00
Community Hall, Lesedi Tshukudu Thusong Centre, Steenbokpan, Lephalale

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
MR	EZEKIEL	MOCHAMBI	LESEDI Community	WARD COMMITTEE WARD THREE		303 LESEDI LOCATION STEENBOKPAN	LEPHALALE	0533			076 535 8026 / 073 820 4486	dielhori50134@gmail.com
MR	Joseph	Nkwadi	Lesedi community	community		106 Lesedi location Steenbokpan	LEPHALALE	0533			0746372061 / 0765353538	nkwadij@gmail.com
MR	HENRY	NAWA	ESKOM	LAND DEVELOPMENT	ENVIRONMENTAL ADVISOR	1 MAXWELL DRIVE SUNNINGHILL SANDTON JHB	JOHANNESBURG	2000	011 800 2774	086 602 9704	084 326 5329	nawah@eskom.co.za
Mr	Bongani	Dhlamini	Zitholele Consulting	Environmental	Environmental Assessment Practitioner	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City	Johannesburg	2000	011 207 2060	[illegible]	[illegible]	bonganid@zitholele.co.za
Mr	Leon	Van Wyk	Eskom	[illegible]	[illegible]	Megawatt Park	Johannesburg	2000	011 800 5631			vanwykl@eskom.co.za
Mr	Theuns	Blom	Eskom	Group Capital	Project Manager	Megawatt Park	Johannesburg	2000	011 800 6266			blomtf@eskom.co.za

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Mr	Goitsemang	Mofitshe	—	—	—	Leseding village	Lephalale	0533	—	—	0823755519	—
Ms	Maria	Monanyane	—	—	—	Leseding	Lephalale	0533	—	—	0783245852	—
Ms	Rebecca	Lewatle	—	—	—	Leseding	Lephalale	0533	—	—	0764998615	—
Mr	Alfred	Sekoboane	—	—	—	Leseding	Lephalale	0533	—	—	0729236071	—
Mr	Jeremia	Mabe	—	—	—	Leseding	Lephalale	0533	—	—	0725599335	—
Mr	Steve	Tswinyane	—	—	—	Leseding	Lephalale	0533	—	—	0825528791	—
Ms	Rachel	Nyambe	—	—	—	Leseding	Lephalale	0533	—	—	060600175	—
Mr	Gotlhi	Molwantwa	—	—	—	Leseding	Lephalale	0533	—	—	0649400686	—

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
MR		Jolly	—	—		Lesedi 299	Lephalale	0555			0765055148	\
Mr	Romeo	Thomas				Steenbokpan	"	857			0719452896	
MR	Jeffry	Leaule				Steenbokpan		0533			0726888068	—
Mr	Magdeline	Selokoana				Steenbokpan		0535			0712023361	—
Ms	Tsholofelo	Senkoane				Lesedi		0533			0736492615	
MS	Salome LEBO	Motgopa	—			Lesedi		0533			0711918485	
Mr	Geoffrey LEKI	Lesenya	-			Lesedi		0533			0794689941	
MS	Johanna	Mokutswane				Lesedi		2033			0764154714	

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
	THATO	MAHWAI				Steenbokpan					0711944382	
	Piet	MOAISHE				SteenbokPAN					0723337198	/
	Sally	mokwena				Steenbokpan					0606592306	
	Shadi	SANNIE				Steenbokpan					079 757 1536	
MS	Lillian	Mokwantu				steenbokpan					0721100179	
D.P	DAVID	mogale				Steenbokpan					0712011866	
M.H	Hendrick	Shongoane				Steenbokpan					0766779378	
T.M	THEMBA	ZOMA				Steenbokpan					061835[illegible]	

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Ms	Lisbeth	Mokeswa				steenbokpan	Lephalale				0711123766	
MS	Lisbeth	Mediba				Steenbokpan	Lephalale					

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

Public Meeting

Monday, 12 March 2018, 11h00 – 13h00
Community Hall, Lesedi Tshukudu Thusong Centre, Steenbokpan, Lephalale

ZITHOLELE CONSULTING

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Mr	Frankie	Maemai				House No:160 Lesedi Location	Lephalale	0555			0794423547	frangue1979@gmail.com
Ms	Felicia	Sono	Eskom	Sustainability Division - Environmental Management	Chief Environmental Advisor	Eskom Megawatt Park, Sunninghill JHB	JHB	2000	011 800 8652		0832974328	felicia.sono@eskom.co.za
MR	Tobile	Bokwe	Eskom	Sustainability, Env. Mngt	Middle Mngr EIA CoE	"	"	2000	011 800 2303	086 663 2051	082828 1777	BokweTT@Eskom.co.za
MR	Paul	Thabiso	—	—	—	Lesedi House 355	Lephalale	0555	0789327?	—	—	Pmothapi@gmail.com
MR	George	Moatshe				Lesedi House 212	Lephalale	0555	0711 5?7650			
MR	Joan	George				Lesedi House 224	Lephalale	0555	0728576?			

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
MISS	ELIZABETH	MOGALE				STEENBOKPAN	LEPHALALE	0533			0720318207	—
MISS	ROSCA	SEBINA				STEENBOKPAN	LEPHALALE	0533			0764111455	
MR	ATANYANG	EDWARD				STEENBOKPAN	LEPHALALE	0533			063 280 0915	
MISS	ROSINAH	KGANGETO				STEENBOKPAN	LEPHALALE	0533			0764575165	
MR	HEHERE	ALPHEUS				STEENBOKPAN	LEPHALALE	0533			078 512 3735	
MR	SINAT					STEENBOKPAN	LEPHALALE	0533			—	
MS	REFILWE	SINAI				STEENBOKPAN	LEPHALALE	0533			073 112 6267	
MR	LAZARUS	THABISO				STEENBOKPAN	LEPHALALE	0533			063 761 7706	

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Mr	DANIEL	MODISE				STEENBOKPAN	LEPHALALE				0788662928	—
Mr	Daniel	MFISA				Steenbokpa Leseding house401	Lephalale				0794480282	—
Mr	HERMAN	MERE				(					—	
JKL	John	lesenyu						05[illegible]			073[illegible]80933 0737180933	
MP		Ramere				STeenbok paal	Lephalale				08259999	
I	5	Ramohomoe				5Geenbokpan					0607443660	
ms	Dual	Masegu				Steenbokpan	Lephalale				0798196885	dnuamasego@gmail.com
MS	SANNA	TIBANYANE	CDP	COGHSTA	CDW	155 LESEDING STEENBOK PAN	LEPHALALE	0533			0738067114	makgatse@yahoo.com

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Mr	Alfred	Molesiwa	Stee	-	-	Steenbokpan Leseding 216	Lephalale	0555	-	-	0710342848	-
Mr	Hendrik	MAJAPHOLO	-	-		Steenbokpan Lesedi	Lephalale	0555			0827623241 0829753801	
MR	SICAS	MAREDI	STEENBOKPAN			STEENBOK LESEDING	LEPHALALE	0555			0761818639	/
Mr	RICHARD	MOSHABANE	N/A	N/A	N/A	STEENBOKPAN LESEDING	LEPHALALE	0555	N/A	N/A	0791875435	N/A
Miss	Kediemetse	ELIZABETH MAGOBI	LESEDI STEENBOKPAN	N/A	N/A	Lesedi HOUSE NO 124 STEENBOKPAN	LEPHALALE	0555			0718904471	N/A
miss	FRANCINA	MATJILA	STEENBOKPAN			LESEDI HOUSE	LEPHALALE	0555			0763635858	-
Miss	Maria	Mashabane	Steenbokpan			288 Lesedi House No	Lephalale	0555			082 860 6986	
	Mokete	Mpele	Steenbokpan			Lesedi No 288	lephalale				076 990 4616	

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Mr	Petrus	Moguai	N/A	EPF Chairperson		P.O Box 94 [illegible] 0533	Lephalale	0533	0729119510	N/A	0729119516	N/A
Mr	[illegible]	[illegible]		Chairperson				335	07889583 8			
MR	[illegible]	[illegible]	[illegible]	[illegible] Lesedi [illegible]		Lesedi 189	Lephalale	0533	078 881 8483	N/A		
Mr	George	[illegible]	–	–	–	–	–		072[illegible]			[illegible]
Ms	Leah	[illegible]	N/A	–	–	Lesedi 151	Lephalale	0533	[illegible]	N/A	0723[illegible]	–
Miss	Lettah	Mokonyane	[illegible]	–	–	–	Leseding		0785631477	N/A		
Ms	Annamarie		N.A	–	–	Lesedi	Lephalale		0728166615	N/A	0728166615	–
Ms	Marula		N/A	–	–	Lesedi	Lephalale		0634737289	N/A	0634737289	N/A

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
	Andries	Mohlala				Steenbokpan	Lephalale				0605359758	
Mr	Claas	Molebane				Leseding	Lephalale				0820857021 0820857021	
	ADAM	Mogasera				Leseding	Lephalale				083751622	
	Simon	Moranyane				Leseding	Lephalale				0734296564	
	Ephesia	mothore				Leseding	lephalale				0799355819	
	FRANCINA	MACHAMAI				Leseding	LEPHALALE				0722888668	
	CRistina	magoa.				Leseding	lephalale				0721165888	
MRS	Emily	Lebuell				Leseding	Lephalale				071273379	

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

Public Meeting

Monday, 12 March 2018, 11h00 – 13h00
Community Hall, Lesedi Tshukudu Thusong Centre, Steenbokpan, Lephalale

ZITHOLELE CONSULTING

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
MR	Thomas	Mospidi				293 Lesedi Village Steenbokpan	Lephalale	0555			071 859 0593	mospidi75@gmail.com
MR	Thabang	Bekoboana				60 Lesedi Village Steenbokpan	Lephalale	0333			073 196 8852	
MR	ABIE	SEKOBOANE				238 Lesedi Village Steenbokpan	Lephalale	0533			0768689239	
MRS	Marea	Moatshe				101 Lesedi Village Steenbokpan	Lephalale	0533			071 904 135	—
MISS	Linah	MOATSHE				STEENBOKPAN	LEPHALALE	0533			071 859 6374	—
MR	STEVE	TLHABEDI				STEENBOKPAN	LEPHALALE	0533			078 823 6315	

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Mr	Radinoga	Albert										
Mr	Paulus	TSIANE				House no 60 Lesedi	Lephalale	0535			072 059 3561	
Mr	Paulus	TSIANE				Lesedi	Lephalale	0533			072360202	
Mr	Wipolelo	Stephen Mbhawula				Lesedi	Lephalale	0533			0786250927	
MR	Thomas	Mojaphola				Lesedi	Lesedi	0533			07614[illegible]0	
	Annah	Ngcafe				Lasedi	Lephalale	0533			0765068674	
Mr	Lucky	Joseph				LESEDI	LEPHALALE	0533			0726246831	
Ms	Linah-Lewaele					Lesedi	Lephalale				060742[illegible]	
MR	Gert	Fredericks				Lesedi	Lephalale	0533			0637529017	

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
MS	Sinq	Diketedi				Leseding	Lephalale				0795706882	

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
MR	Andries	Sebati	ESKOM			Lesedi Steenbokpan	Lephalale				0769784841	
MR	JACKSON	AKANYANG	ESKOM ESKOM			LESEDI STEENBOKPAN	LEPHALALE				0767597169	
MR	Moses	Sbanda				Steenbokpan	Lephalale				0709369944	
Mr	JORS	Molesiwa	Eskom				Lephalale				071200672	
MS	Tleika	mmana				Lesedi	Lephalale				0729311788	
MS	Matshegoa	Lettie Tolofelo	Eskom			Lesedi	Lephalale				[illegible]	
MS	Masala	Esther	Eskom			Lesedi	Lephalale				0716325779	
MS	Mgapholo	Rosina	Eskom			Lesedi	Lephalale				0606625680	

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Mr	Piet	gare				leseding HOUSE 214	lEphalale				0606265990	
MR	Frekie	Mayoai				Lesedi House No: 124	Lephalale				082 951 7447	
MR	Abraham	Sibanti				Lesedi House 291	Lephalale				078 751 6578	
Ms MR	Betty Judas	Mmamula Nhau				Leseding 192	Lephalale				07854 12578	
Mr	Judas	Nhau				Leseding 267	Lephalale				076[illegible]	
MS	Malebogo	marea				Lesedi Lesedi.	Lephalale Lephalale				0835611726	
MR M	Peiku	OLifant									078122062[illegible]	
MR	Jonas Rakoryana	Nkoane			Assistant electrical	LESEDING House no. 2	LEPHALALE				064 7686541 0810253941	ornkoane[illegible]@gmail.com

ENVIRONMENTAL IMPACT ASSESSMENT, WASTE MANAGEMENT LICENSE VARIATION APPLICATION, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

Public Meeting

Lesedi Tshukudo Thusong Centre
11am – 1pm

Zitholele Consulting
Mathys Vosloo
12 March 2018

Conduct of the Meeting for Productive Discussions

- Focus on project related issues
- Focus on issue, not the person
- Agree to disagree
- Courtesy – one person at a time
- Question / Comment - raise your hand
- Please state name & organisation when raising question/comment
- Work through facilitator
- Cell phones on silent

Objectives of the Meeting

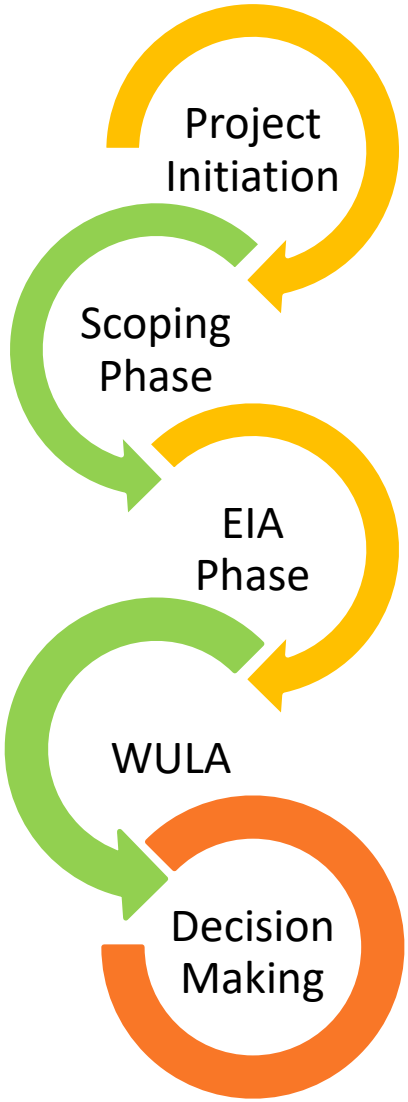
- Project Motivation
- Proposed development activities
- Study / development area
- What is being applied for?
- Findings of specialist studies
- Public Participation Process
- Recommendation of the EAP
- Way forward

1. Project Motivation

- Medupi PS Air Emissions Licence (AEL) amended in 2015
  - Operate and maintain a Flue Gas Desulphurisation (FGD) plant for SO_2 control
  - Reduce SO_2 to below 500 mg/Nm^2 by 1 April 2025
- Funder requirements

Result in need to retrofit a FGD system to the Medupi PS before 2025.

2. Project Progression



December 2013 – April 2014

May 2014 – July 2015

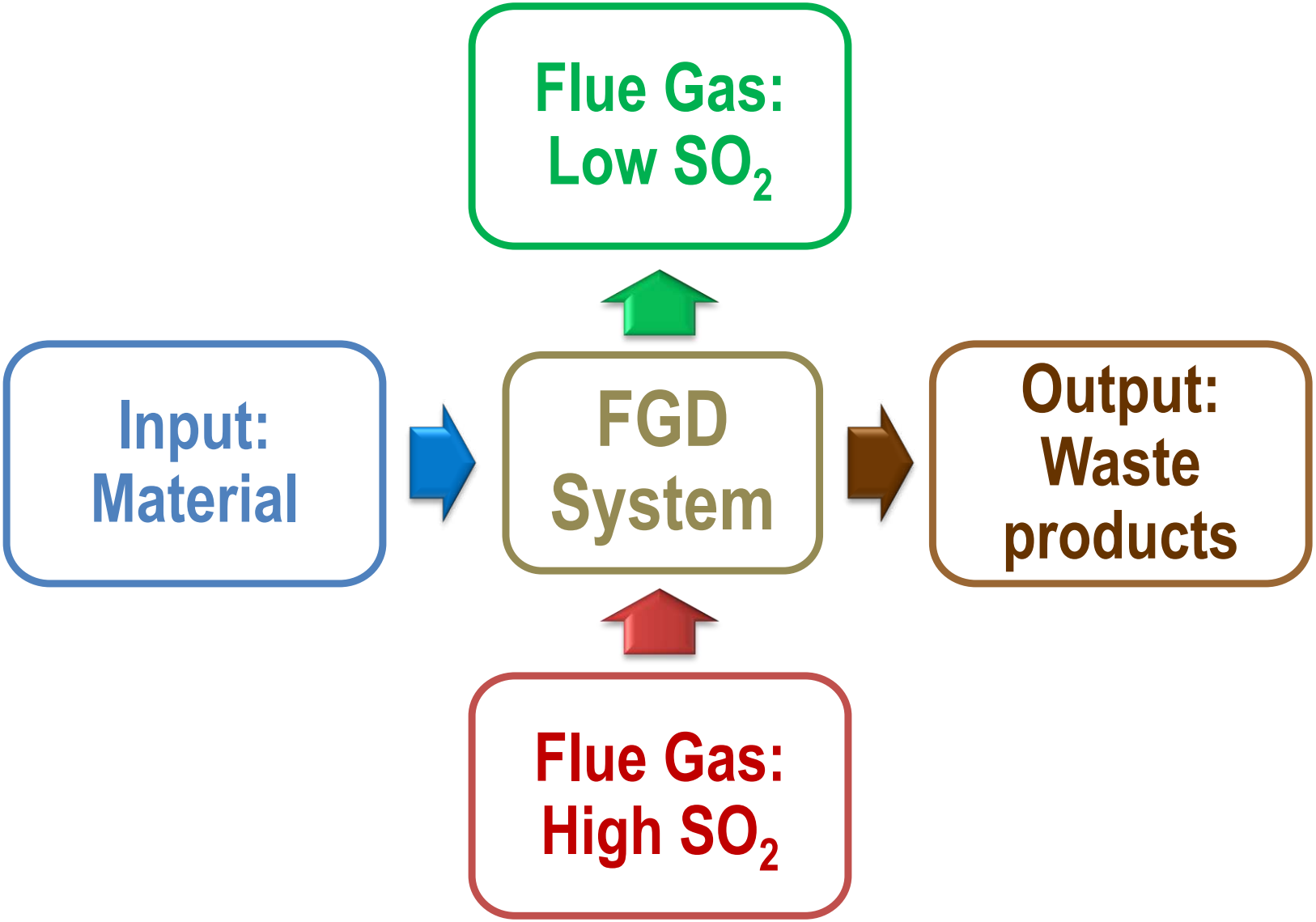
August 2015 – April 2018

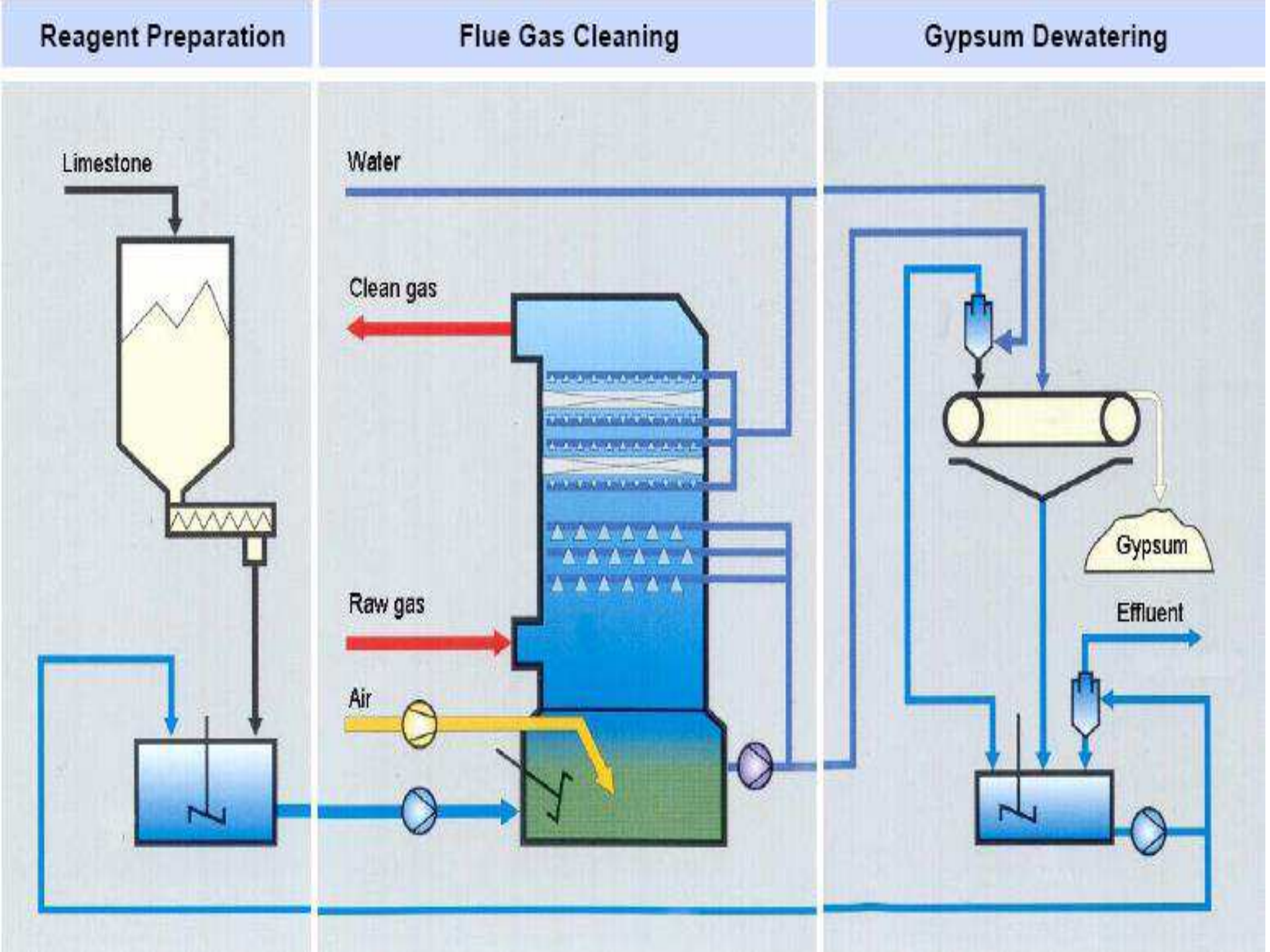
August 2016 – May 2015

May 2018 – August 2018 (EIA)

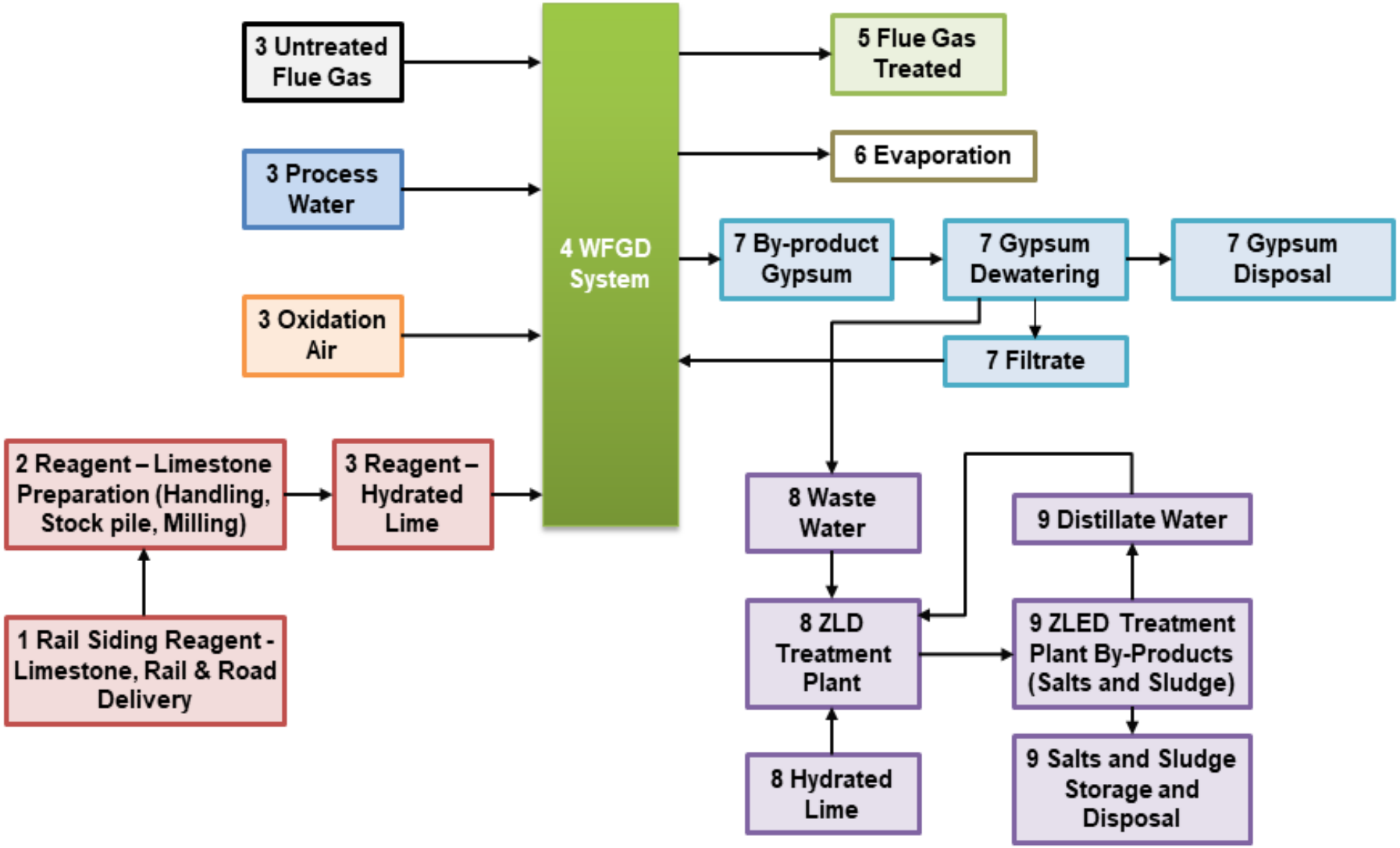
May 2018 – February 2018 (WULA)

3. FGD Simplified

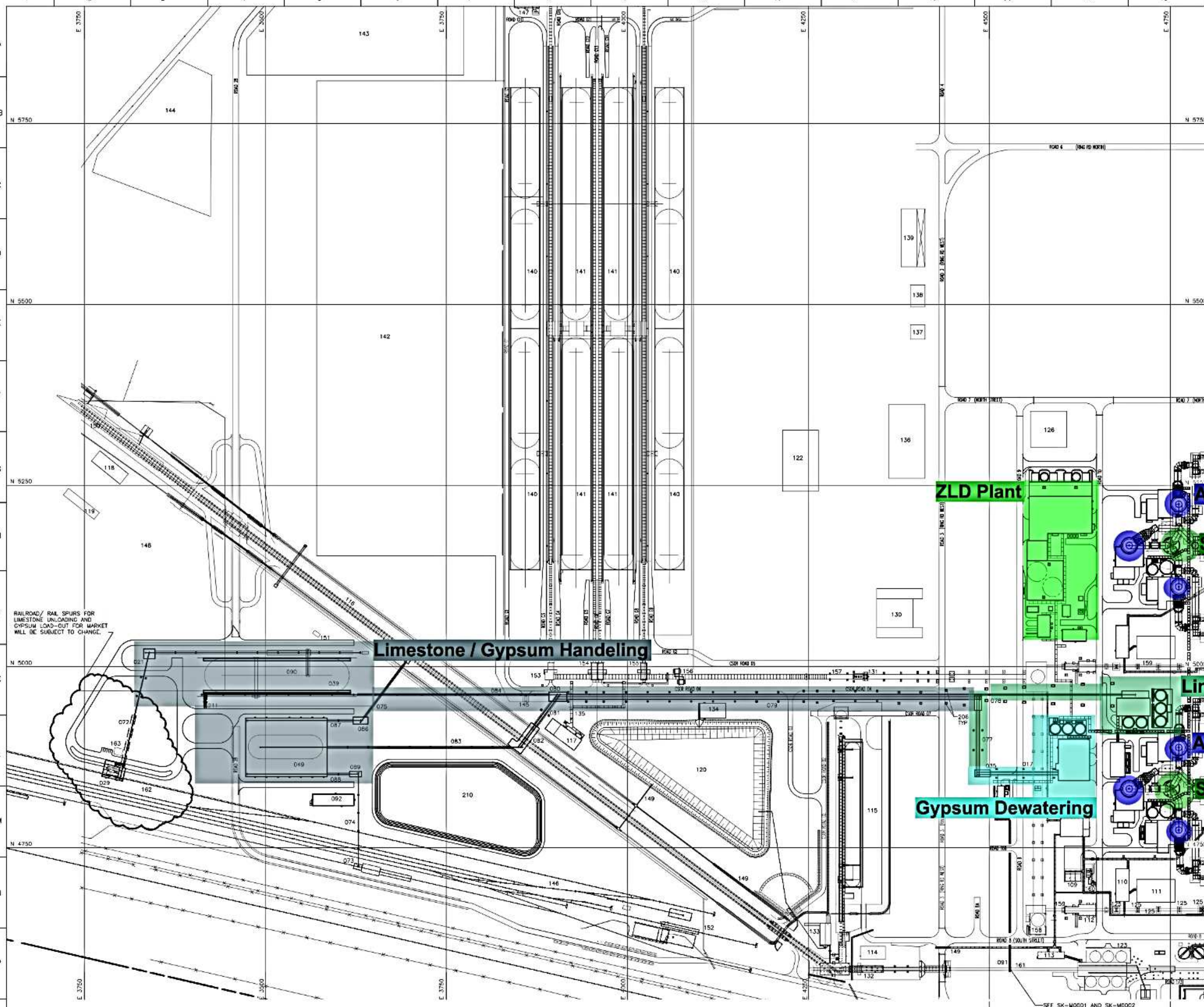



Reagent Preparation
Flue Gas Cleaning
Gypsum Dewatering
Limestone
Water
Clean gas
Raw gas
Air
Gypsum
Effluent

4. FGD Components Diagram



5. Development site



NEW FACILITIES LEGEND

ID	FACILITY	FOUNDATION	TIEDOWN LOCATION NORTH	TIEDOWN LOCATION EAST	REMARKS
017	GYPSUM COLLECTING CONVEYORS 1 AND 2				
021	LIMESTONE TRANSFER HOUSE LTH-1				
029	LIMESTONE UNLOADING FACILITY				
035	GYPSUM TRANSFER HOUSE GTH-1				
039	LIMESTONE STORAGE AREA				
049	GYPSUM STORAGE BUILDING				
072	LIMESTONE UNDERGROUND LINK CONVEYOR 1				
073	GYPSUM LOADOUT HOPPER				
074	SALEABLE GYPSUM CONVEYOR 13				
075	REJECT GYPSUM CONVEYOR 11				
076	RECLAIMER FEED CONVEYOR				
077	GYPSUM LINK CONVEYORS 3 AND 4				
078	GYPSUM TRANSFER HOUSE GTH-2				
079	GYPSUM CROSS CONVEYORS 5 AND 6				
080	GYPSUM TRANSFER HOUSE GTH-3				
081	GYPSUM LINK CONVEYORS 7 AND 8				
082	GYPSUM TRANSFER HOUSE GTH-4				
083	SALEABLE GYPSUM STACKING CONVEYOR 9				
084	LIMESTONE RECLAIM CONVEYOR 3				
085	GYPSUM TRANSFER HOUSE GTH-6				
086	GYPSUM TRANSFER HOUSE GTH-5				
087	REJECT GYPSUM RECLAIM CONVEYOR 10				
088	SALEABLE GYPSUM RECLAIM CONVEYOR 12				
089	GYPSUM TRANSFER HOUSE GTH-7				
090	LIMESTONE STACKING CONVEYOR 2				
092	LIMESTONE AND GYPSUM HANDLING SUBSTATION				
206	LIMESTONE/GYP COMBINED CONVEYOR FOUNDATION				
210	STORM WATER DIRTY DAM				
211	EMERGENCY LIMESTONE UNLOADING				

EXISTING FACILITIES LEGEND

ID	FACILITY	FOUNDATION	TIEDOWN LOCATION NORTH	TIEDOWN LOCATION EAST	REMARKS
109	EXISTING DIESEL GENERATION BUILDING				
110	EXISTING COMPRESSOR HOUSE SOUTH SUBSTATION				
111	EXISTING COMPRESSOR HOUSE SOUTH				
112	EXISTING INCLINED CONVEYOR DRIVE HOUSE				
113	EXISTING ASH CONDITIONING SUBSTATION				
114	EXISTING ASH CONVEYOR SUBSTATION				
115	EXISTING EMERGENCY ASH DUMP				
116	EXISTING OVERLAND ASH CONVEYORS				
117	EXISTING COAL STOCKYARD SUBSTATION SOUTH				
118	EXISTING ASH DUMP SUBSTATION				
119	EXISTING ASH DUMP WORKSHOP				
120	EXISTING COAL STOCKYARD POLLUTION CONTROL DAM				
121	EXISTING BULK FUEL OIL OFFLOADING				
[illegible]	[illegible] P. PIPEWORK FABRIC				
123	EXISTING FLY ASH CONDITIONING PLANT				
125	EXISTING INCLINED COAL CONVEYOR FOUNDATION				
126	EXISTING MAINTENANCE LAYDOWN AREA				
[illegible]	[illegible]				
[illegible]	[illegible] HOUSE				
[illegible]	[illegible]				
133	EXISTING STOCKPILE TERRACE SUMP				
134	EXISTING SILT TRAP				
135	EXISTING ELECTRICAL TUNNEL				
136	EXISTING WAREHOUSE STORES				
137	EXISTING PLANT WASH BAY				
138	EXISTING PLANT WORKSHOP				
139	EXISTING FUEL OIL STATION				
140	EXISTING SEASONAL STOCKPILE				
141	EXISTING LIVE STOCKPILE				
142	EXISTING STRATEGIC STOCKPILE AREA				
143	EXISTING COAL CONTRACTORS YARD				
144	EXISTING WASTE STORAGE AREA				
145	EXISTING CSY TANKER FILLING				
[illegible]	[illegible]				
[illegible]	[illegible]				
148	EXISTING EARTH WORKS AND ROADS CONTRACTORS YD				
149	EXISTING ELECTRICAL TRENCH				
150	EXISTING OVERLAND ASH CONVEYORS				
151	EXISTING SUBSTATION				
[illegible]	[illegible]				
[illegible]	[illegible] FER HOUSE #4				
154	EXISTING COAL CONVEYOR TRANSFER HOUSE #5				
155	EXISTING COAL CONVEYOR TRANSFER HOUSE #6				
156	EXISTING MAGNET STRUCTURE				
[illegible]	[illegible] R				
[illegible]	[illegible] HOUSE SOUTH				
159	EXISTING INCLINED COAL CONVEYOR				
160	EXISTING DIESEL FUEL TANK				
161	EXISTING OVERLAND LINK CONVEYOR				
162	EXISTING WAGON POSITIONER				
163	EXISTING YARD CONTROLLER'S OFFICE				

EXTENSIVE REVISIONS
SEE PREVIOUS REVISION

GENERAL LEGEND

	NEW STRUCTURES/FACILITIES		AGGREGATE SURFACING
	EXISTING STRUCTURES/FACILITIES		CONCRETE SURFACING
	EXISTING FENCE		PROPERTY LINE

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PLANT NORTH · TRUE NORTH · 30°

1:2000 — 0 · 50 · 100 · 150 — SCALE IN METERS

REV	DATE	REVISION	REV BY	CHKD BY	AUTH BY			REFERENCE DRAWINGS
5	[illegible]	EXTENSIVE REVISIONS	MED		JLG		0	174330-DS-10
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3	[illegible]	EXTENSIVE REVISIONS	MED		JLG		0	174330-DS-10
2	[illegible]	EXTENSIVE REVISIONS	MED		JLG		0	174330-DS-10
1	[illegible]	ISSUED FOR TEAM REVIEW	WAH		JLG			

steinmüller engineering · BLACK & VEATCH · Eskom Enterprises

MEDUPI POWER STATIO
MEDUPI FGD RETROFIT PROJECT
PLOT PLAN

DRAWN BY: WAH
SCALE: 1:2000

178771-CGAU-G1000

0.84/30759 DDL

6. Changes in project packaging

Scoping Phase	**Integrated EIA/WML & WULA** FGD, RAIL, LIME, INFRAS, ADF, *on-site* WDF				
Bridging Document, Nov 2016	**Integrated EIA/WML 1 & WULA** FGD, RAIL, LIME, INFRAS	**Integrated EIA/WML 2** *Off-site* WDF	**WML Variation** ADF	**WULA** FGD, RAIL, LIME, INFRAS, ADF	
Bridging Document 2, Nov 2017	**EIA** FGD, RAIL, LIME (*NEMA*), INFRAS	**GN926** LIME (Registration of storage facility prior construction)	**Integrated EIA/WML 2** *Off-site* WDF	**WML Variation** ADF	**WULA** FGD, RAIL, LIME, INFRAS, ADF

FGD = FGD system, **RAIL =** Rail Yard, **LIME =** Limestone / Gypsum handling & storage, **INFRAS =** Associated Infrastructure, **ADF =** Disposal of ash & gypsum on existing Ash Disposal Facility (4-20 yrs), **WDF =** Disposal of ash, gypsum, salts & sludge on new Waste Disposal Facility (21-50 yrs)

7. Legislative requirements – EIA

EIA - National Environmental Management Act (Act 107 of 1998) as amended

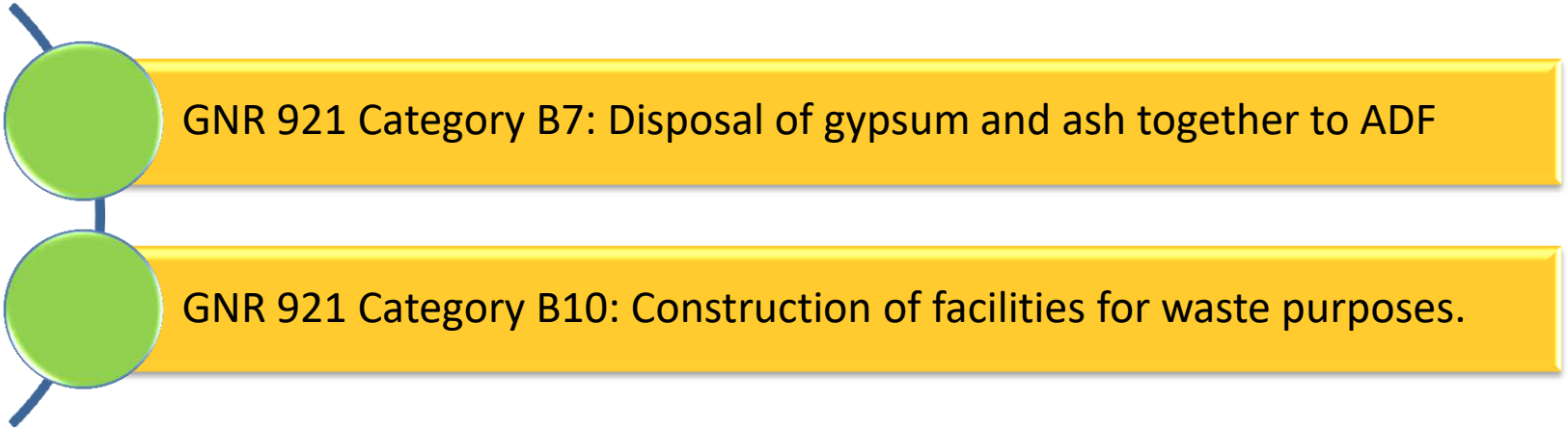
EIA Regulations of 2010 (GNR 543), as amended

- GNR 545 activity 3: Storage and handling of diesel within the FGD footprint and rail yard.
- GNR 545 activity 11: Construction of railway yard for purposes of transport of products and wastes relating to FGD process.
- GNR 545 activity 15: Alteration of undeveloped land for the railway yard of more than 20ha.

Activities 9 and 18 of GNR 544 (Basic Assessment), and 14(a)(i) of GNR 546 also triggered

7. Legislative requirements – WML

WML Variation Application – National Environmental Management: Waste Act (Act 59 of 2008) as amended.



Registration of temporary waste storage facility for storage of salts and sludge i.t.o. Schedule C of GN 921 (list of waste management activities) of the NEM:WA, and GN 926 of 29 November 2013 (Norms and Standards for Storage of Waste).

7. Legislative requirements – WULA

WULA – National Water Act (Act 36 of 1998) as amended.

- 21(c) – Construction activities associated with FGD system and rail yard carried out within the 500 m buffer of the water resources
- 21(i) – Construction activities associated with FGD system and rail yard carried out within the 500 m buffer of the water resources
- 21(g) – disposal of waste in a manner that may be detrimental to a water resource.

Environmental Impact Assessment
DEA REF: 14/12/16/3/3/3/110

FGD Infrastructure (within MPS footprint)
Rail Yard Infrastructure and Buildings
Limestone and Gypsum Handling Facilities
Associated Infrastructure (incl. fuel storage areas)
Waste Water Treatment Plant and Waste Storage Area

8. Alternatives considered (EIA)

1. Location / Layout

None – infrastructure to be fitted to footprint predefined by power station layout and infrastructure

2. Technology

Dry FGD: Slightly lower water consumption that WFGD, cannot fit within existing available space, very high capital and operating costs

Wet FGD: Fit within site space constraints, high efficiency to remove SO_2, uses more water than DFGD

Wet FGD (gas cooler): uses less water than WFGD, layout and space constraints, high maintenance & problematic during operation, reduction in unit power output, high capital and operation cost

8. Alternatives considered (EIA)

3. No-go Option

The no-go option is to continue operation of the Medupi Power Station without the FGD retrofit.

- Medupi PS not be compliant with AEL
- Need to shut down the power station
- Significant impact on economy and stability of electricity supply
- Considered FATALLY FLAWED

9. Key issues identified

- Air Quality
- Waste handling and disposal
- Water allocation and use
- Social and economic impacts of FGD
- Biodiversity and wetland impacts

10. Studies undertaken

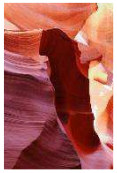

Terrestrial ecology (Biodiversity)


Aquatic and wetland ecology


Socio-economic


Air Quality


Waste classification


Groundwater


Surface water


Heritage, Archaeology


Palaeontology


Traffic


Noise


Geotechnical


Soils and land capability

11. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Geology / Geotechnical	Standard footing/ foundations systems.	**No significant** geotechnical hazards or fatal flaws identified.
Soils and Land capability	Site already disturbed, but loss of soil resources probable.	Residual impact **Moderate to Low.**
Groundwater	Impact on groundwater quality, volume and flow minor for all phases.	**Low** significance, groundwater monitoring to be undertaken.
Surface water	No significant changes in surface water runoff or flooding, no expected increases in pollutant loads.	Residual impact **Low**, implement SWMP and continue surface water monitoring.

11. Specialist conclusions (cont.)

Study area	Conclusion	Residual impact / Impact significance
Biodiversity and Wetlands	Loss of vegetation species, habitat, catchment area and fauna mortality identified . Direct loss of pans and wetlands.	Residual impact **Moderate**, in some cases **High**. Avoid / reduce vegetation clearing and impact on Sandloop tributary FEPA, "Search and Rescue", Wetland offset and rehabilitation plan.
Air quality	Scenarios included baseline air quality, Medupi PS with a/ without FGD. With FGD no exceedances of NAAQS for SO_2, NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors.	Impact significance found to be **Low, i.e. retrofit of FGD positive impact on air quality.** Specialist recommended that the FGD Retrofit Project be implemented.
Noise levels	Noise levels in the area during operation representative of suburban districts, but notable yet local during construction and decommissioning.	Specialist concluded that with noise mitigation, noise levels from the project will be **Low**. Mitigation include management of traffic and construction site.

11. Specialist conclusions (cont.)

Study area	Conclusion	Residual impact / Impact significance
Socio-economic environment	Although some negative impacts identified, **overall impact of the FGD project is overwhelmingly positive**, especially benefits from economic and employment opportunities, local economic development and *quality of life*.	Specialist concluded that significance of positive social impacts generally exceeds the significance of negative social impacts. Specialist recommend implementation of FGD retrofit.
Heritage, Archaeology & Palaeontology	No heritage, archaeological or palaeontological resources / sensitivities identified within the development footprint.	No potential / expected impact exist.
Traffic	Potential traffic delays at major intersections around Medupi PS identified.	Significance of residual impacts regarded as **Low**, recommended upgrade of identified intersections and traffic calming measures.

Variation Application for existing Medupi Waste Management Licence

WML No: 12/9/11/L50/5/R1

Disposal of gypsum and ash on existing disposal facility

Gypsum Handling Infrastructure

Associated Infrastructure, including Conveyor,

transfer houses, temp. gypsum loading area and Gypsum Storage Building

Storage of WWTP salts and sludge i.t.o. N&S for Storage of Waste (GN 926) prior construction

12. WML Variation Application

Variation application included activities:

- Disposal of ash and gypsum together on the existing ADF
- Reduction of ADF footprint, but increase in height from 60m to 72m
- Inclusion of infrastructure associated with the handling and management of gypsum waste, including:
  - Conveyor for transport of gypsum,
  - Transfer houses
  - Temporary gypsum loading area for loading of saleable gypsum onto trucks
  - Gypsum Storage Building for the storage of saleable gypsum via rail

13. Studies undertaken


Visual


Waste classification


Air Quality


ADF Concept Design


Terrestrial ecology (Biodiversity)


Aquatic and wetland ecology


Groundwater


Surface water

Impacts associated with construction of infrastructure as per the findings and conclusions of EIA

14. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Waste Assessment (disposal of ash and gypsum on ADF)	Gypsum is a Type 3 waste, same as Ash. Therefore can be disposed together with ash on disposal facility with Class C barrier system, as is the case for the Medupi ADF.	No additional impact for disposal of ash and gypsum disposed together on Class C barrier system is expected, as apposed to disposal of ash only on the Class C barrier.
Groundwater (disposal of ash and gypsum on ADF)	A specialist opinion on the impact of disposal of ash and gypsum together on groundwater concluded **no significant impact** on the groundwater regime expected.	Class C barrier system itself is a management measure to reduce any groundwater impacts. No significant residual impact expected.
Surface Water (disposal of ash and gypsum on ADF)	No additional impact on surface water runoff or quality has been identified by the surface water specialist	Surface water management system for existing ADF will continue to manage potential surface water quality and quantity impacts.

14. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Visual (Increase in height of WDF)	Original visual assessment for Medupi PS found impact to be Moderate (45-50m facility). VIA for increased height to 72m also Moderate, i.e. equivalent to existing ADF.	Residual impact rated as Moderate significance, same as original assessment.
Air quality (Increase in height of WDF)	Disposal of ash and gypsum together expected to create crust when mixed with water, but could contribute to dust nuisance. Simulations found no exceedances of NAAQS for PM_{10} and $PM_{2.5}$	Increase in height will have **LOW** impact significance.
Biodiversity and wetlands (Increase in height of WDF)	Gypsum is not likely to a have a major toxicological impact on biodiversity / wetlands. Probability of contamination event expected to be **Low**.	Residual impact expected to be of Moderate significance. Dust management and control main method in reducing impact potential.

Water Use Licence Application (WULA)

FGD Infrastructure (within MPS footprint)

Rail Yard Infrastructure and Buildings

Limestone and Gypsum Handling Facilities

Associated Infrastructure (incl. fuel storage areas)

Waste Water Treatment Plant and Temporary Waste Storage Area

Existing Ash Disposal Facility

15. WULA

Water Use	Infrastructure to be licenced
Section 21 (c) - Impeding or diverting the flow of water in a watercourse	Existing waste disposal facility, including the associated PCDs, and Medupi FGD footprint
Section 21 (i) - Altering the bed, banks, course or characteristics of a watercourse	Existing waste disposal facility and Medupi FGD footprint
Section 21 (g) - disposing of waste in a manner which may detrimentally impact on a water resource;	• Gypsum Transfer Houses • Gypsum Storage Building and temporary storage area • Limestone Storage Area • Limestone unloading facility at rail yard • Emergency Limestone unloading area • Pollution Control Dams (also 21(h)) • Existing Disposal Facility footprint • Sludge and Salts handing and storage areas • Dust suppression of disposal facility during construction, operation and rehabilitation

16. Stakeholder Engagement

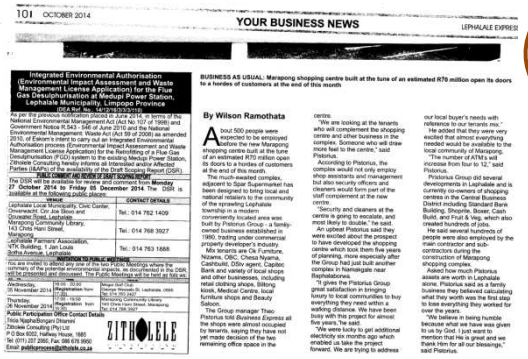
Scoping Phase

EIA Process Advert (06 June 2014) → Site Notices & BID Distribution (06 June 2014) → Draft Scoping Report (27 Oct – 05 Dec 2014 – ext to 09 January 2015)

Draft Scoping Report → KSW & Public Meetings (05 & 06 Nov 2014) → FSR (12 June – 13 July 2015)

EIA Process (Mogol Post)

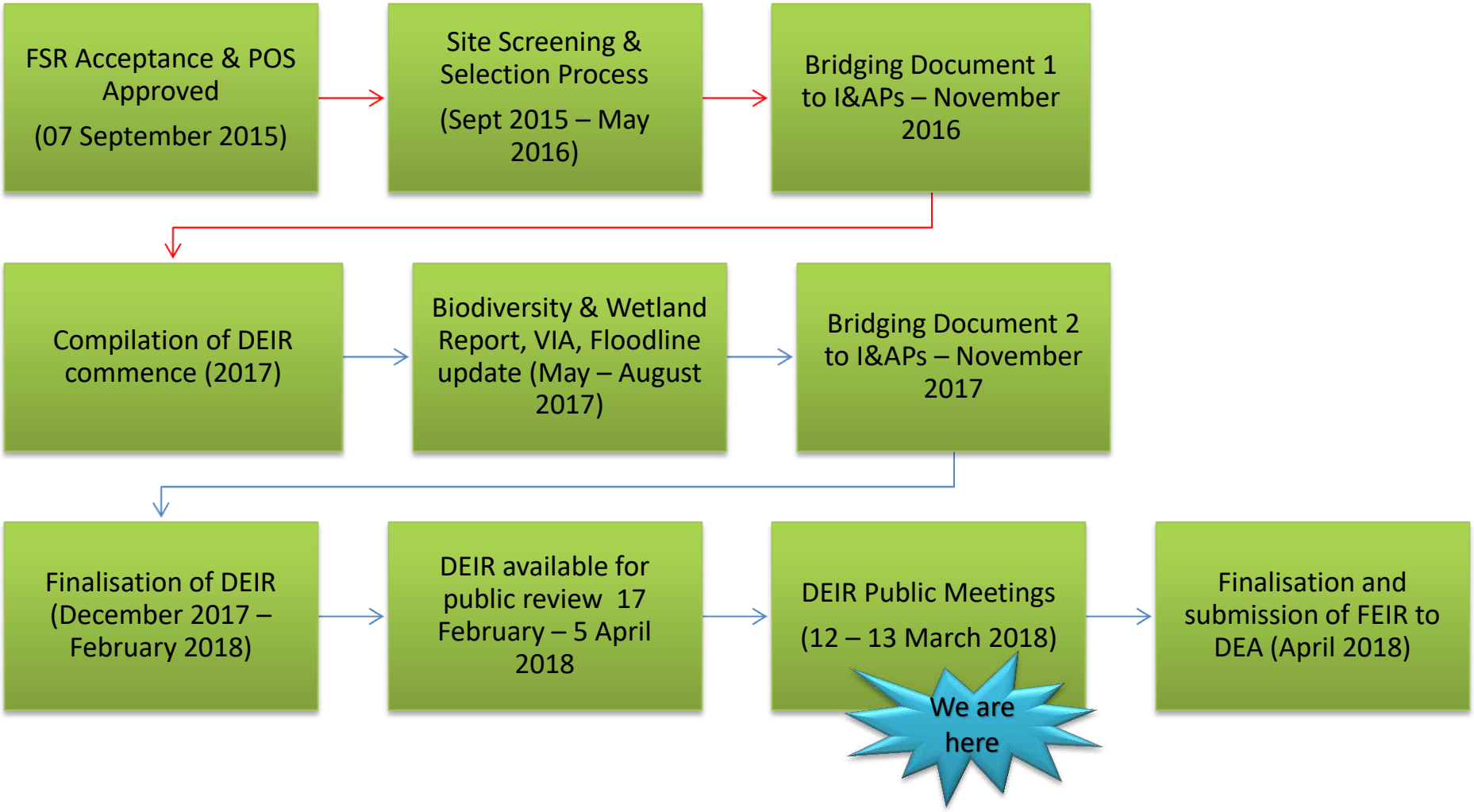
BID Distribution



DSR & PM (Lephalale Express/Mogol Post/Northern News)

16. Stakeholder Engagement

Impact Phase



17. Authority engagement

08 July 2014	• DEA • Intro project • Post application meeting
11 Nov 2014	• DEA Waste Directorate • Project info • Waste disposal methods
02 July 2015	• DEA and DWS • Gypsum disposal method
01 Oct 2015	• DEA • Dynamic info post Scoping Phase
23 February 2016	• DEA and DWS • CBA and NFEPA on site
30 November 2017	• DWS • NFEPA on site, wetland offset requirements and rehabilitation plan

9. Discussion

Mathys Vosloo / Bongani Dhlamini

Public Participation Office

Zitholele Consulting

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Halfway House

1685

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ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

DEA REF.: 14/12/16/3/3/2/1060

Minutes

CLIENT	:	Eskom Holdings SOC Ltd
CONSULTANT	:	Zitholele Consulting (Pty) Ltd
PROJECT	:	Medupi FGD Retrofit Project EIA
CONTRACT NO.	:	DEA REF.:14/12/16/3/3/3/110
PROJECT NO.	:	12949
DATE	:	12 March 2018
TIME	:	11h00
VENUE	:	Community Hall, Lesedi Tshukudu Thusong Centre, Steenbokpan

PRESENT

Please refer to the attendance register

APOLOGIES

Please refer to the attendance register

ITEM	DISCUSSION POINTS	ACTION, DATE
1	**WELCOME AND ATTENDANCE:** Dr. Mathys Vosloo, Zitholele Consulting welcomed all attendees to the Public Meeting and introduced the project team and proponent.	
2	**MEETING OBJECTIVES:** • To present information regarding the proposed development • To present the EIA and Public Participation Processes followed to date • Provide key stakeholders overview of project activities and applications • Present findings of specialist studies • Provide clarity on the FDG processes • Present recommendations of the EAP and Way forward.	
3	**ACCEPTANCE OF AGENDA**	
4	**ACCEPTANCE OF MINUTES**	
5	**MATTERS ARISING FROM THE PREVIOUS MINUTES – No previous minutes**	
6	**GENERAL**	
	NEXT MEETING	

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LIST OF ABBREVIATIONS

ADF	Ash Disposal Facility
AEL	Atmospheric Emission License
BID	Background Information Document
CBA's	Critical Biodiversity Areas
DAFF	Dept. of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEIR	Draft Environmental Impact Report
DFGD	Dry Flue Gas Desulphurisation
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMC	Environmental Monitoring Committee
FGD	Flue Gas Desulphurisation
FSR	Final Scoping Report
IAP	Interested and Affected Party's
GNR	Government Notice Regulation
KSW	Key Stakeholder Workshop
MPS	Medupi Power Station
NAAQS	National Ambient Air Quality Standards
NEMA	National Environmental Management Act
NFEPA	National Freshwater Ecosystem Priority Areas
NWA	National Water Act
PM	Public Meeting
POS	Plan of Study
PM	Public Participation Process
SO_2	Sulphur Dioxide
WDF	Waste Disposal Facility
WFGD	Wet Flue Gas Desulphurisation
WML	Waste Management License
WULA	Water Use License Application
WWTP	Waste Water Treatment Plant
ZLD	Zero Liquid Discharge

The following aspects was presented at the meeting presentation:

- Background of the FGD plant was presented.
- The importance of the project in relation to reducing the air gas emission and reducing SO_2 footprint which will benefit the health of the community.
- History of the project and timeline highlighted.
- Water usage is also an important feature of the project, for which the application of the water use license is still under way.
- The FGD process was explained.
- The main purpose of the project is essentially to build an infrastructure that will assist in the disposal and reduction of air quality pollution to receiving the environment.
- A WWTP will ensure that waste water can be treated for reuse within the FGD process and power station operation.
- Important aspects of the process are the gypsum, sludge and salts – these are the most critical aspects of the project including the Atmospheric Emissions License which came with conditions which require that the SO_2 emissions from the Power Station be reduced by more than 90%. This is one of the key reasons for the initiation of the FGD retrofit project.
- FGD Technology explained.
- No Go option says that the FGD infrastructure will not be constructed which means that the entire power station would have to be decommissioned, which would have economical and socioeconomical implications.
- Specialist studies were conducted for the following areas:
    - Physical environment

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- Ground and surface water
- Socioeconomic factors
- Traffic
- Heritage
- Geology, including consideration of geotechnical factors.

- The conclusion of the studies was that there was minimal impact on the project for geology, noise, heritage and traffic.
- Significant negative impacts related to biodiversity impacts, while positive impacts relate to reduction in SO_2 concentrations in emissions from the power station.
- The biodiversity and wetland studies had triggers especially for the sensitive vegetation. Although mitigation strategies are in place, some residual wetland loss is unavoidable resulting in the need for offsets for which a wetland offset plan must be developed.
- The socioeconomic impacts have been raised by the community which are being monitored through the Medupi Power Station EMC.
- With regard to the disposal of ash and gypsum together on the existing ADF, no additional impact on surface water runoff or quality has been identified by the surface water specialist.
- Public review process is still underway comment sheets can still be filled in and forwarded to councilor.

Discussion

Comments / questions raised by Mr. Miles Mputhi

- Why is the power station only taking measures now to protect the community from health impacts of the gas emissions?
  - Eskom must remain compliant to legislative requirements of the authorizations and licenses issued to the power station. The Medupi Power Station is therefore implementing requirements relating to the FGD system in relation to changes in the National Ambient Air Quality (NAAQ) Minimum Emission Standards (MES).
- How long will construction process take and when will it start?
  - Construction will commence in approximately 2020 and will take 3 years to complete.
- Protection of the water resources, particularly the underground systems, must be ensured
  - Dirty water dams would be lined as required by legislation, while a water use license application must also be obtained to prevent or minimize pollution into the ground water. External Environmental Control Officers are furthermore contracted to undertake continuous assessment of the construction activities.
- What were the learning outcomes from the other power stations, particularly Matimba so that similar mistakes aren't repeated?
  - All legislative process was followed and adhered to for compliance purposes. However, the question will be deferred to Matimba Power Station Environmental Manager.
- Heritage issues still remains a problem, especially with surveying of land and keeping the respect of ancestral graves, local tradition and implications thereof.
  - Eskom undertook an extensive process to investigate, and rectify where needed, any impacts on graves during the construction of the Medupi Power Station. Heritage specialists were also appointed to specifically investigate issues around graves and relocation where it was needed. Eskom understands that it is an ongoing issue, and this issue will be addressed through the Medupi Power Station EMC.
- The ward councillor said that Eskom was going to talk about jobs at this meeting.
  - Eskom has not made such promises to the ward councillor and the matter will be raised with the councillor. It was specifically said that this meeting was to present the outcomes of the Environmental Impact Assessment to the community and engage in discussion relating to the project with the community.

Comments and questions raised by Ms Magda Mogwane (Ex Matimba employee)

- I think the distance between the power station and the community will not affect the community. Tests are also being conducted to ascertain the truth if those that claim grave sites that those graves belong to them.

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	○ Processes have been undertaken to compensate for the loss of graves for those that have a right.	
	Meeting closed and adjourned	

ACTION	FUNCTION	NAME	DATE	SIGNATURE
Prepared				
Reviewed				
Approved				

Zitholele Consulting
Reg. No2000/000392/07

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ENVIRONMENTAL IMPACT ASSESSMENT, VARIATION TO EXISTING WASTE MANAGEMENT LICENCE, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

PUBLIC MEETING

Monday, 12 March 2018 @ 15h00

Ditheku Primary School, 1601 Ramahlody Street, Marapong Ext 2.

A G E N D A

Facilitator: Mathys Vosloo, Zitholele Consulting

14:30 – 15:00	Registration for the meeting	
15:00 – 15:10	Welcome, Evacuation Procedures, Introductions	M. Vosloo
15:10 – 15:30	Project Background	T. Blom
15:30 – 16:15	Presentation of application process and findings	M. Vosloo
16:15 – 16:45	Discussion	All
16:45 – 17:00	Closing and Way Forward	M. Vosloo

ENVIRONMENTAL IMPACT ASSESSMENT, WASTE MANAGEMENT LICENSE VARIATION APPLICATION, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

Public Meeting

Ditheku Primary School
Marapong
3pm – 5pm

Zitholele Consulting
Mathys Vosloo
12 March 2018

Conduct of the Meeting for Productive Discussions

- Focus on project related issues
- Focus on issue, not the person
- Agree to disagree
- Courtesy – one person at a time
- Question / Comment - raise your hand
- Please state name & organisation when raising question/comment
- Work through facilitator
- Cell phones on silent

Objectives of the Meeting

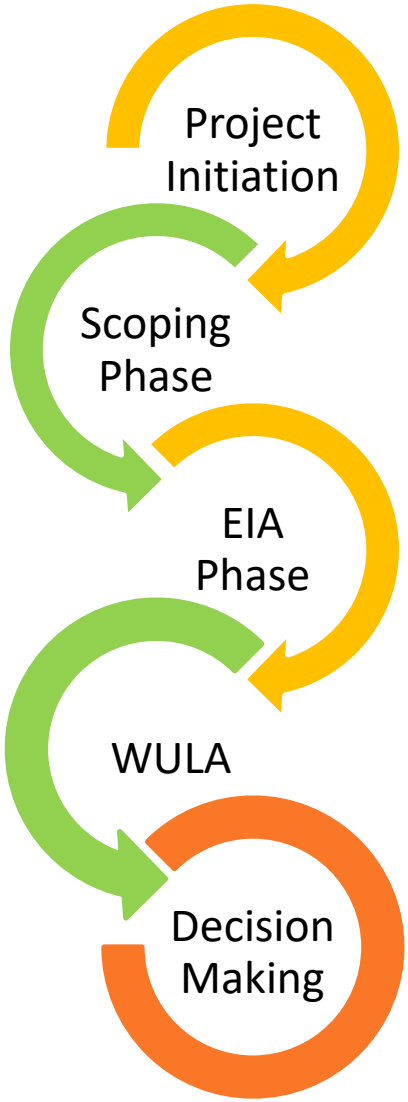
- Project Motivation
- Proposed development activities
- Study / development area
- What is being applied for?
- Findings of specialist studies
- Public Participation Process
- Recommendation of the EAP
- Way forward

1. Project Motivation

- Medupi PS Air Emissions Licence (AEL) amended in 2015
  - Operate and maintain a Flue Gas Desulphurisation (FGD) plant for SO_2 control
  - Reduce SO_2 to below 500 mg/Nm^2 by 1 April 2025
- Funder requirements

Result in need to retrofit a FGD system to the Medupi PS before 2025.

2. Project Progression



December 2013 – April 2014

May 2014 – July 2015

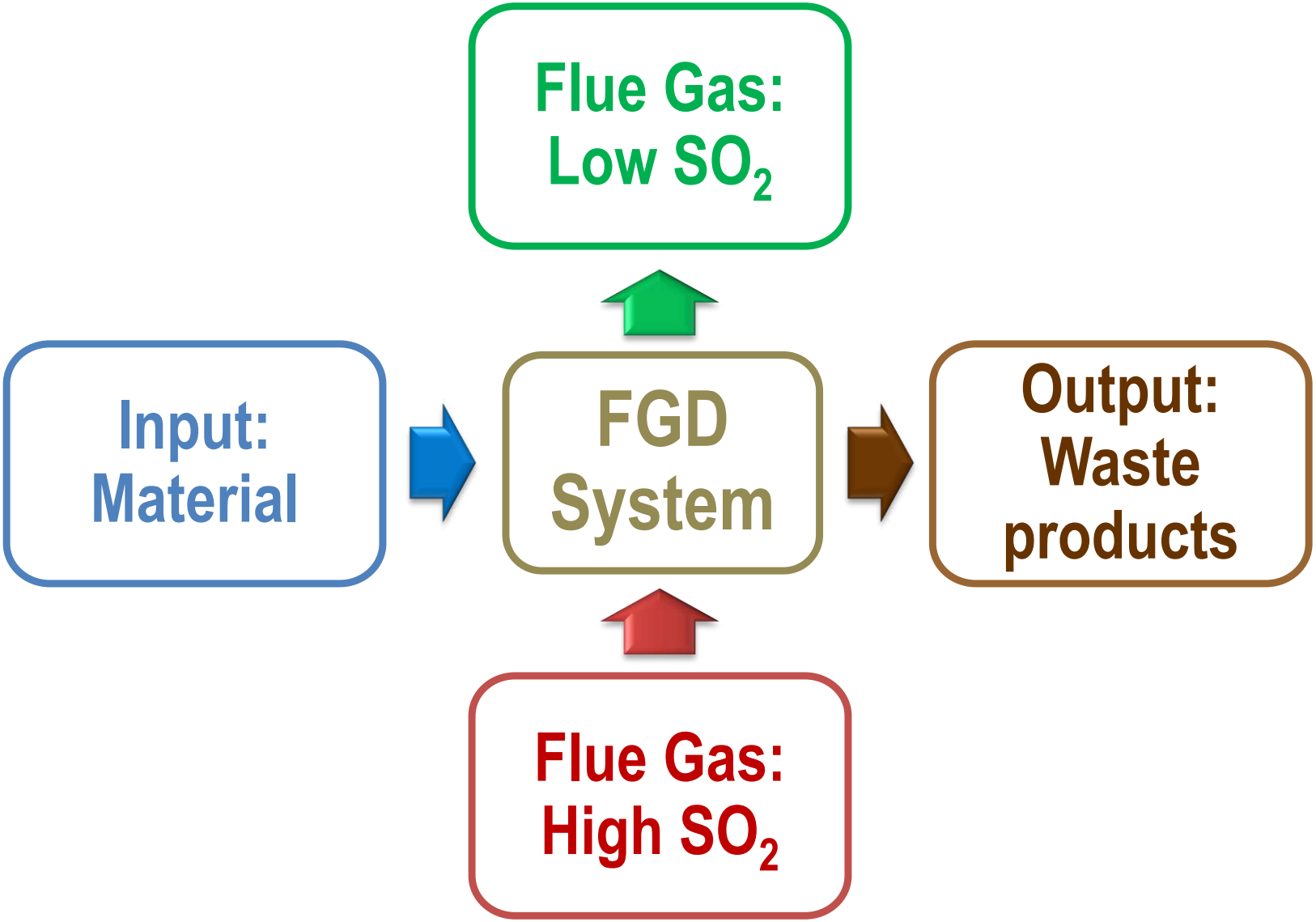
August 2015 – April 2018

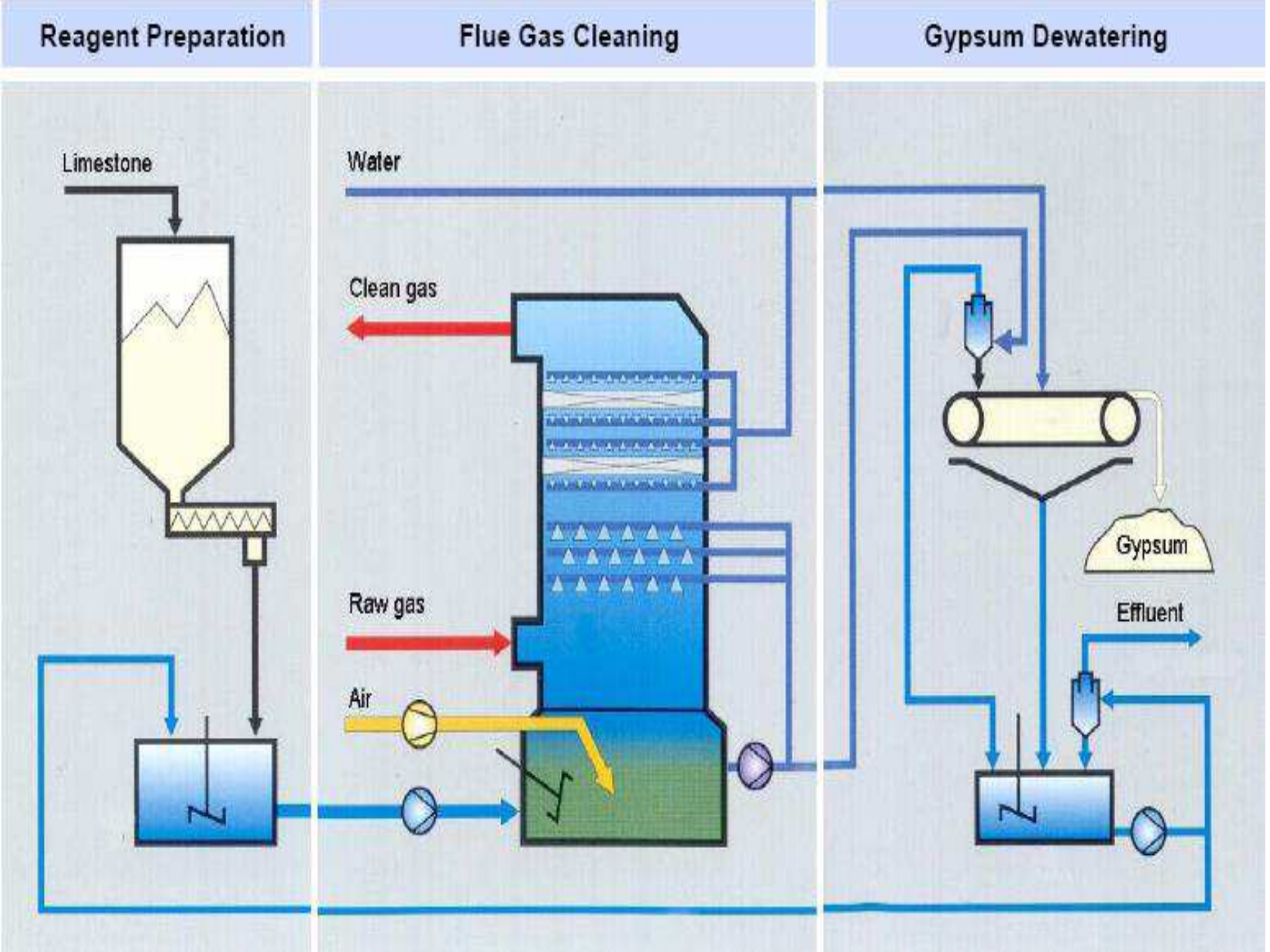
August 2016 – May 2018

May 2018 – August 2018 (EIA)

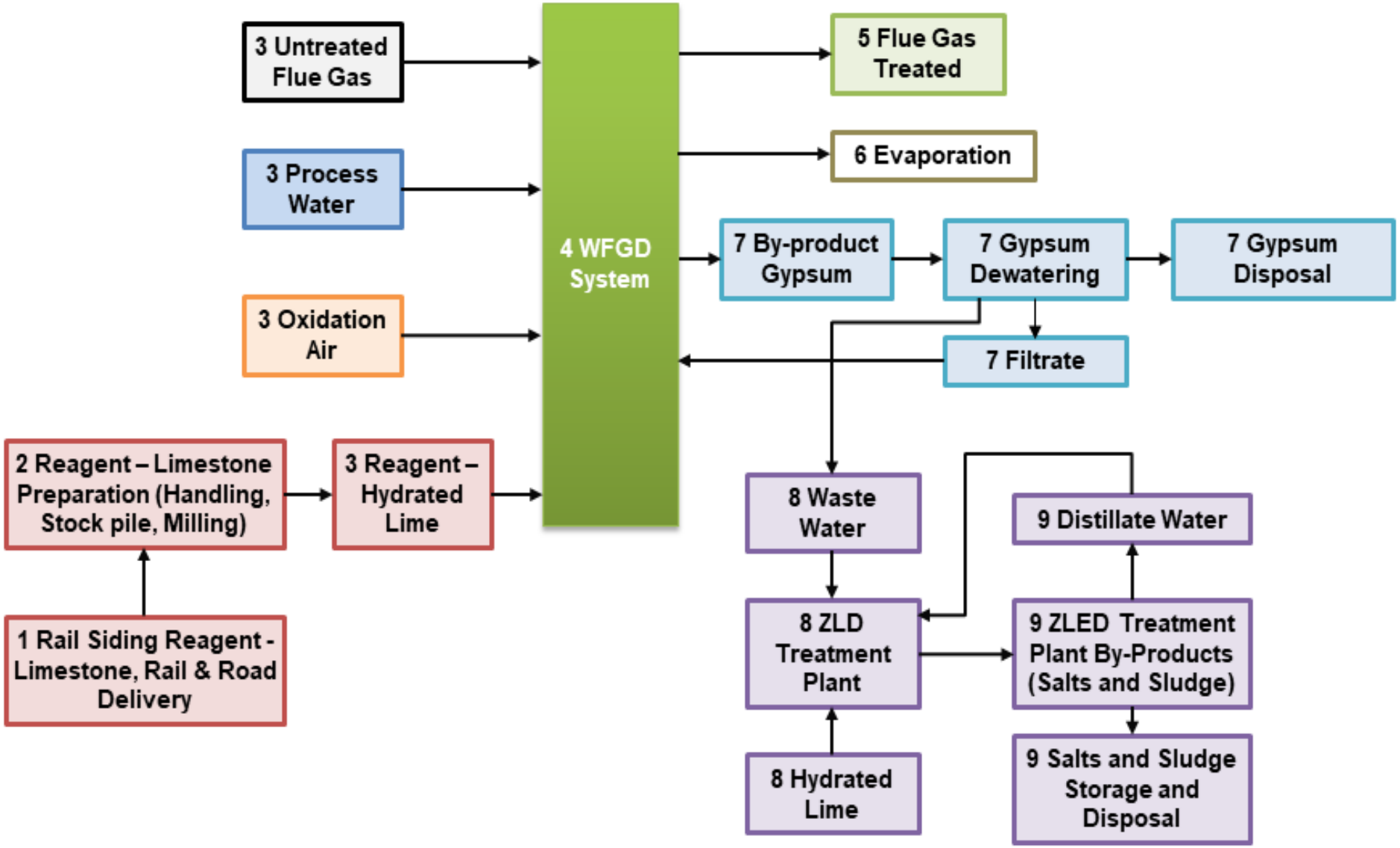
May 2018 – February 2019 (WULA)

3. FGD Simplified

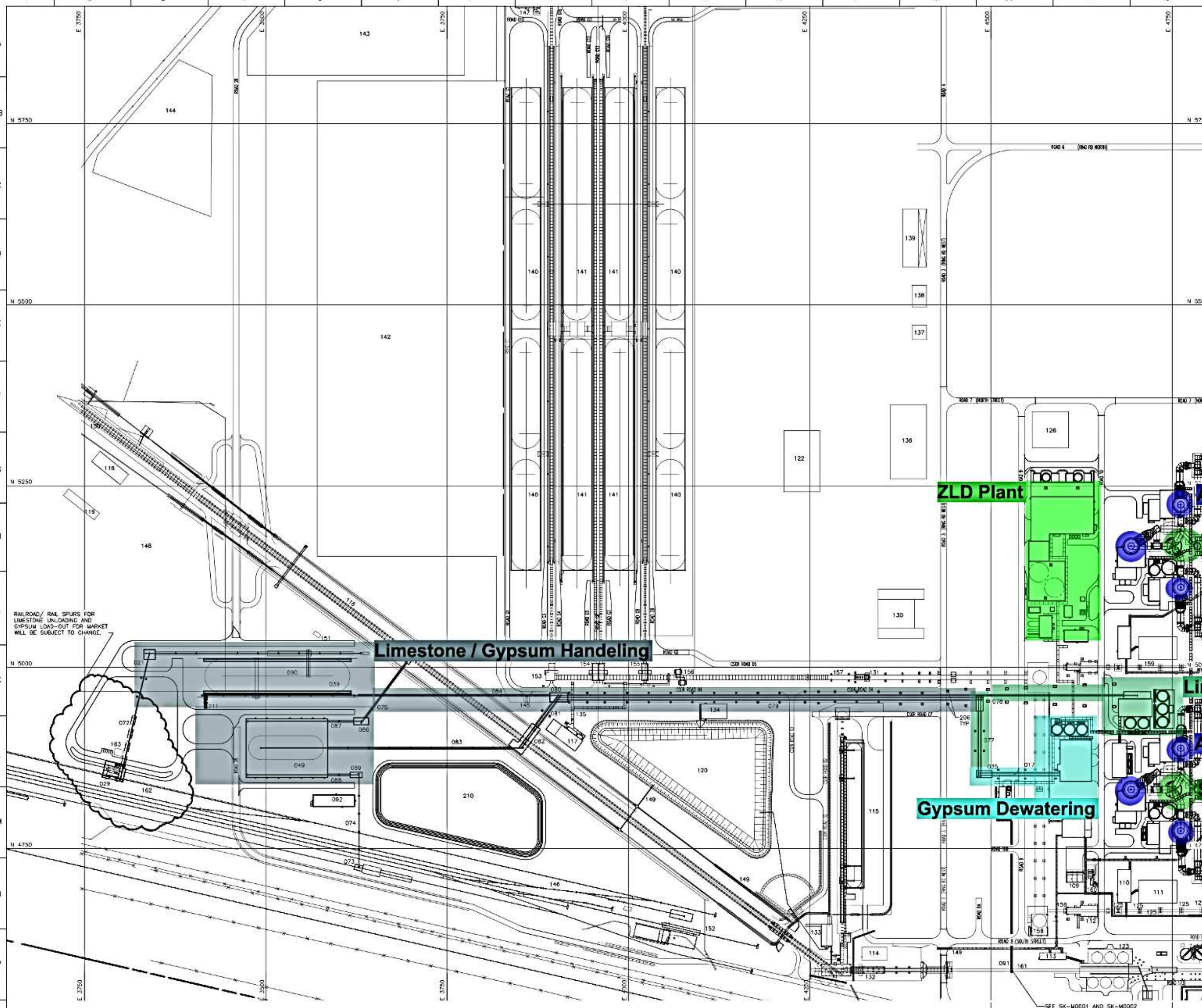



Reagent Preparation
Flue Gas Cleaning
Gypsum Dewatering
Limestone
Water
Clean gas
Raw gas
Air
Gypsum
Effluent

4. FGD Components Diagram



5. Development site



EXTENSIVE REVISIONS SEE PREVIOUS REVISION

NEW FACILITIES LEGEND

ID	FACILITY	FOUNDATION	TIEDOWN LOCATION		REMARKS
			NORTH	EAST	
017	GYPSUM COLLECTING CONVEYORS 1 AND 2				
021	LIMESTONE TRANSFER HOUSE LTH-1				
029	LIMESTONE UNLOADING FACILITY				
035	GYPSUM TRANSFER HOUSE GTH-1				
039	LIMESTONE STORAGE AREA				
049	GYPSUM STORAGE BUILDING				
072	LIMESTONE UNDERGROUND LINK CONVEYOR 1				
073	GYPSUM LOADOUT HOPPER				
074	SALEABLE GYPSUM CONVEYOR 13				
075	REJECT GYPSUM CONVEYOR 11				
076	RECLAIMER FEED CONVEYOR				
077	GYPSUM LINK CONVEYORS 3 AND 4				
078	GYPSUM TRANSFER HOUSE GTH-2				
079	GYPSUM CROSS CONVEYORS 5 AND 6				
080	GYPSUM TRANSFER HOUSE GTH-3				
081	GYPSUM LINK CONVEYORS 7 AND 8				
082	GYPSUM TRANSFER HOUSE GTH-4				
083	SALEABLE GYPSUM STACKING CONVEYOR 9				
084	LIMESTONE RECLAIM CONVEYOR 3				
085	GYPSUM TRANSFER HOUSE GTH-6				
086	GYPSUM TRANSFER HOUSE GTH-5				
087	REJECT GYPSUM RECLAIM CONVEYOR 10				
088	SALEABLE GYPSUM RECLAIM CONVEYOR 12				
089	GYPSUM TRANSFER HOUSE GTH-7				
090	LIMESTONE STACKING CONVEYOR 2				
092	LIMESTONE AND GYPSUM HANDLING SUBSTATION				
206	LIMESTONE/GYP COMBINED CONVEYOR FOUNDATION				
210	STORM WATER DIRTY DAM				
211	EMERGENCY LIMESTONE UNLOADING				

EXISTING FACILITIES LEGEND

ID	FACILITY	FOUNDATION	TIEDOWN LOCATION		REMARKS
			NORTH	EAST	
109	EXISTING DIESEL GENERATION BUILDING				
110	EXISTING COMPRESSOR HOUSE SOUTH SUBSTATION				
111	EXISTING COMPRESSOR HOUSE SOUTH				
112	EXISTING INCLINED CONVEYOR DRIVE HOUSE				
113	EXISTING ASH CONDITIONING SUBSTATION				
114	EXISTING ASH CONVEYOR SUBSTATION				
115	EXISTING EMERGENCY ASH DUMP				
116	EXISTING OVERLAND ASH CONVEYORS				
117	EXISTING COAL STOCKYARD SUBSTATION SOUTH				
118	EXISTING ASH DUMP SUBSTATION				
119	EXISTING ASH DUMP WORKSHOP				
120	EXISTING COAL STOCKYARD POLLUTION CONTROL DAM				
121	EXISTING BULK FUEL OIL OFFLOADING				
[illegible]	[illegible] PIPEWORK FABRIC				
123	EXISTING FLY ASH CONDITIONING PLANT				
125	EXISTING INCLINED COAL CONVEYOR FOUNDATION				
126	EXISTING MAINTENANCE LAYDOWN AREA				
[illegible]	[illegible]				
[illegible]	[illegible] HOUSE				
[illegible]	[illegible]				
133	EXISTING STOCKPILE TERRACE SUMP				
134	EXISTING SILT TRAP				
135	EXISTING ELECTRICAL TUNNEL				
136	EXISTING WAREHOUSE STORES				
137	EXISTING PLANT WASH BAY				
138	EXISTING PLANT WORKSHOP				
139	EXISTING FUEL OIL STATION				
140	EXISTING SEASONAL STOCKPILE				
141	EXISTING LIVE STOCKPILE				
142	EXISTING STRATEGIC STOCKPILE AREA				
143	EXISTING COAL CONTRACTORS YARD				
144	EXISTING WASTE STORAGE AREA				
145	EXISTING CSY TANKER FILLING				
[illegible]	[illegible]				
[illegible]	[illegible]				
148	EXISTING EARTH WORKS AND ROADS CONTRACTORS YD				
149	EXISTING ELECTRICAL TRENCH				
150	EXISTING OVERLAND ASH CONVEYORS				
151	EXISTING SUBSTATION				
[illegible]	[illegible]				
[illegible]	[illegible]FER HOUSE #4				
154	EXISTING COAL CONVEYOR TRANSFER HOUSE #5				
155	EXISTING COAL CONVEYOR TRANSFER HOUSE #6				
156	EXISTING MAGNET STRUCTURE				
[illegible]	[illegible]R				
[illegible]	[illegible] HOUSE SOUTH				
159	EXISTING INCLINED COAL CONVEYOR				
160	EXISTING DIESEL FUEL TANK				
161	EXISTING OVERLAND LINK CONVEYOR				
162	EXISTING WAGON POSITIONER				
163	EXISTING YARD CONTROLLER'S OFFICE				

GENERAL LEGEND

(symbol)	NEW STRUCTURES/FACILITIES	(symbol)	AGGREGATE SURFACING
(symbol)	EXISTING STRUCTURES/FACILITIES	(symbol)	CONCRETE SURFACING
(symbol)	EXISTING FENCE	(symbol)	PROPERTY LINE

NOT TO BE USED FOR CONSTRUCTION

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

1:2000 — 0 50 100 150 — SCALE IN METERS

REV	DATE	REVISION	REV BY	CHKD BY	AUTH BY	REFERENCE DRAWINGS
5	[illegible]	EXTENSIVE REVISIONS	MED	JLG	0	174330-DS-10[illegible]
4	[illegible]	EXTENSIVE REVISIONS	MED	JLG	0	174330-DS-10[illegible]
3	[illegible]	EXTENSIVE REVISIONS	MED	JLG	0	174330-DS-10[illegible]
2	[illegible]	EXTENSIVE REVISIONS	MED	JLG	0	174330-DS-10[illegible]
1	[illegible]	ISSUED FOR TEAM REVIEW	WAH	JLG		

steinmüller engineering

BLACK & VEATCH

Eskom Enterprises

MEDUPI POWER STATIO[N]
MEDUPI FGD RETROFIT PROJECT
PLOT PLAN

178771-CGAU-G1000

0.84/30759

DDL

DRAWN BY: WAH
SCALE: 1:2000

6. Changes in project packaging

Scoping Phase	**Integrated EIA/WML & WULA** FGD, RAIL, LIME, INFRAS, ADF, *on-site* WDF				
Bridging Document, Nov 2016	**Integrated EIA/WML 1 & WULA** FGD, RAIL, LIME, INFRAS	**Integrated EIA/WML 2** *Off-site* WDF	**WML Variation** ADF	**WULA** FGD, RAIL, LIME, INFRAS, ADF	
Bridging Document 2, Nov 2017	**EIA** FGD, RAIL, LIME (*NEMA*), INFRAS	**GN926** LIME (Registration of storage facility prior construction)	**Integrated EIA/WML 2** *Off-site* WDF	**WML Variation** ADF	**WULA** FGD, RAIL, LIME, INFRAS, ADF

FGD = FGD system, **RAIL =** Rail Yard, **LIME =** Limestone / Gypsum handling & storage, **INFRAS =** Associated Infrastructure, **ADF =** Disposal of ash & gypsum on existing Ash Disposal Facility (4-20 yrs), **WDF =** Disposal of ash, gypsum, salts & sludge on new Waste Disposal Facility (21-50 yrs)

7. Legislative requirements – EIA

EIA - National Environmental Management Act (Act 107 of 1998) as amended

EIA Regulations of 2010 (GNR 543), as amended

- GNR 545 activity 3: Storage and handling of diesel within the FGD footprint and rail yard.
- GNR 545 activity 11: Construction of railway yard for purposes of transport of products and wastes relating to FGD process.
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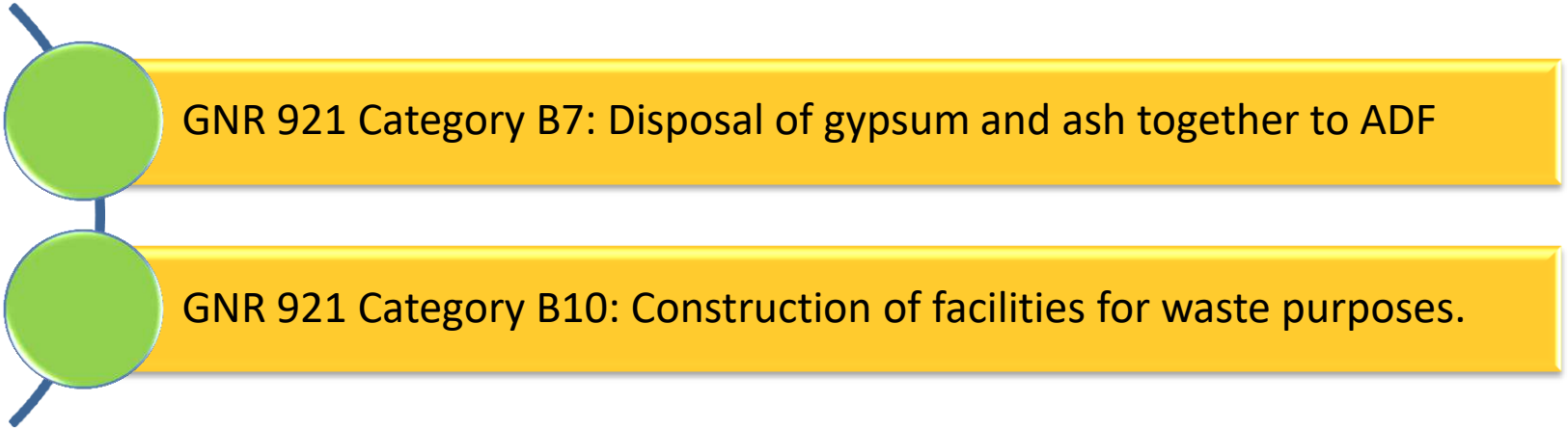
Activities 9 and 18 of GNR 544 (Basic Assessment), and 14(a)(i) of GNR 546 also triggered

7. Legislative requirements – WML

WML Variation Application – National Environmental Management: Waste Act (Act 59 of 2008) as amended.



Registration of temporary waste storage facility for storage of salts and sludge i.t.o. Schedule C of GN 921 (list of waste management activities) of the NEM:WA, and GN 926 of 29 November 2013 (Norms and Standards for Storage of Waste).

7. Legislative requirements – WULA

WULA – National Water Act (Act 36 of 1998) as amended.

- 21(c) – Construction activities associated with FGD system and rail yard carried out within the 500 m buffer of the water resources
- 21(i) – Construction activities associated with FGD system and rail yard carried out within the 500 m buffer of the water resources
- 21(g) – disposal of waste in a manner that may be detrimental to a water resource.

Environmental Impact Assessment
DEA REF: 14/12/16/3/3/3/110

FGD Infrastructure (within MPS footprint)
Rail Yard Infrastructure and Buildings
Limestone and Gypsum Handling Facilities
Associated Infrastructure (incl. fuel storage areas)
Waste Water Treatment Plant and Waste Storage Area

8. Alternatives considered (EIA)

1. Location / Layout

None – infrastructure to be fitted to footprint predefined by power station layout and infrastructure

2. Technology

Dry FGD: Slightly lower water consumption that WFGD, cannot fit within existing available space, very high capital and operating costs

Wet FGD: Fit within site space constraints, high efficiency to remove SO_2, uses more water than DFGD

Wet FGD (gas cooler): uses less water than WFGD, layout and space constraints, high maintenance & problematic during operation, reduction in unit power output, high capital and operation cost

8. Alternatives considered (EIA)

3. No-go Option

The no-go option is to continue operation of the Medupi Power Station without the FGD retrofit.

- Medupi PS not be compliant with AEL
- Need to shut down the power station
- Significant impact on economy and stability of electricity supply
- Considered FATALLY FLAWED

9. Key issues identified

- Air Quality
- Waste handling and disposal
- Water allocation and use
- Social and economic impacts of FGD
- Biodiversity and wetland impacts

10. Studies undertaken

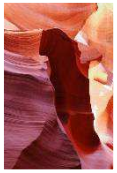

Terrestrial ecology (Biodiversity)


Aquatic and wetland ecology


Socio-economic


Air Quality


Waste classification


Groundwater


Surface water


Heritage, Archaeology


Palaeontology


Traffic


Noise


Geotechnical


Soils and land capability

11. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Geology / Geotechnical	Standard footing/ foundations systems.	**No significant** geotechnical hazards or fatal flaws identified.
Soils and Land capability	Site already disturbed, but loss of soil resources probable.	Residual impact **Moderate to Low.**
Groundwater	Impact on groundwater quality, volume and flow minor for all phases.	**Low** significance, groundwater monitoring to be undertaken.
Surface water	No significant changes in surface water runoff or flooding, no expected increases in pollutant loads.	Residual impact **Low**, implement SWMP and continue surface water monitoring.

11. Specialist conclusions (cont.)

Study area	Conclusion	Residual impact / Impact significance
Biodiversity and Wetlands	Loss of vegetation species, habitat, catchment area and fauna mortality identified . Direct loss of pans and wetlands.	Residual impact **Moderate**, in some cases **High**. Avoid / reduce vegetation clearing and impact on Sandloop tributary FEPA, "Search and Rescue", Wetland offset and rehabilitation plan.
Air quality	Scenarios included baseline air quality, Medupi PS with a/ without FGD. With FGD no exceedances of NAAQS for SO_2, NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors.	Impact significance found to be **Low, i.e. retrofit of FGD positive impact on air quality.** Specialist recommended that the FGD Retrofit Project be implemented.
Noise levels	Noise levels in the area during operation representative of suburban districts, but notable yet local during construction and decommissioning.	Specialist concluded that with noise mitigation, noise levels from the project will be **Low**. Mitigation include management of traffic and construction site.

11. Specialist conclusions (cont.)

Study area	Conclusion	Residual impact / Impact significance
Socio-economic environment	Although some negative impacts identified, **overall impact of the FGD project is overwhelmingly positive**, especially benefits from economic and employment opportunities, local economic development and *quality of life*.	Specialist concluded that significance of positive social impacts generally exceeds the significance of negative social impacts. Specialist recommend implementation of FGD retrofit.
Heritage, Archaeology & Palaeontology	No heritage, archaeological or palaeontological resources / sensitivities identified within the development footprint.	No potential / expected impact exist.
Traffic	Potential traffic delays at major intersections around Medupi PS identified.	Significance of residual impacts regarded as **Low**, recommended upgrade of identified intersections and traffic calming measures.

Variation Application for existing Medupi Waste Management Licence

WML No: 12/9/11/L50/5/R1

Disposal of gypsum and ash on existing disposal facility

Gypsum Handling Infrastructure

Associated Infrastructure, including Conveyor,

transfer houses, temp. gypsum loading area and Gypsum Storage Building

Storage of WWTP salts and sludge i.t.o. N&S for Storage of Waste (GN 926) prior construction

12. WML Variation Application

Variation application included activities:

- Disposal of ash and gypsum together on the existing ADF
- Reduction of ADF footprint, but increase in height from 60m to 72m
- Inclusion of infrastructure associated with the handling and management of gypsum waste, including:
  - Conveyor for transport of gypsum,
  - Transfer houses
  - Temporary gypsum loading area for loading of saleable gypsum onto trucks
  - Gypsum Storage Building for the storage of saleable gypsum via rail

13. Studies undertaken


Visual


Waste classification


Air Quality


ADF Concept Design


Terrestrial ecology (Biodiversity)


Aquatic and wetland ecology


Groundwater


Surface water

Impacts associated with construction of infrastructure as per the findings and conclusions of EIA

14. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Waste Assessment (disposal of ash and gypsum on ADF)	Gypsum is a Type 3 waste, same as Ash. Therefore can be disposed together with ash on disposal facility with Class C barrier system, as is the case for the Medupi ADF.	No additional impact for disposal of ash and gypsum disposed together on Class C barrier system is expected, as apposed to disposal of ash only on the Class C barrier.
Groundwater (disposal of ash and gypsum on ADF)	A specialist opinion on the impact of disposal of ash and gypsum together on groundwater concluded **no significant impact** on the groundwater regime expected.	Class C barrier system itself is a management measure to reduce any groundwater impacts. No significant residual impact expected.
Surface Water (disposal of ash and gypsum on ADF)	No additional impact on surface water runoff or quality has been identified by the surface water specialist	Surface water management system for existing ADF will continue to manage potential surface water quality and quantity impacts.

14. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Visual (Increase in height of WDF)	Original visual assessment for Medupi PS found impact to be Moderate (45-50m facility). VIA for increased height to 72m also Moderate, i.e. equivalent to existing ADF.	Residual impact rated as Moderate significance, same as original assessment.
Air quality (Increase in height of WDF)	Disposal of ash and gypsum together expected to create crust when mixed with water, but could contribute to dust nuisance. Simulations found no exceedances of NAAQS for PM_{10} and $PM_{2.5}$	Increase in height will have **LOW** impact significance.
Biodiversity and wetlands (Increase in height of WDF)	Gypsum is not likely to a have a major toxicological impact on biodiversity / wetlands. Probability of contamination event expected to be **Low**.	Residual impact expected to be of Moderate significance. Dust management and control main method in reducing impact potential.

Water Use Licence Application (WULA)

FGD Infrastructure (within MPS footprint)

Rail Yard Infrastructure and Buildings

Limestone and Gypsum Handling Facilities

Associated Infrastructure (incl. fuel storage areas)

Waste Water Treatment Plant and Temporary Waste Storage Area

Existing Ash Disposal Facility

15. WULA

Water Use	Infrastructure to be licenced
Section 21 (c) - Impeding or diverting the flow of water in a watercourse	Existing waste disposal facility, including the associated PCDs, and Medupi FGD footprint
Section 21 (i) - Altering the bed, banks, course or characteristics of a watercourse	Existing waste disposal facility and Medupi FGD footprint
Section 21 (g) - disposing of waste in a manner which may detrimentally impact on a water resource;	• Gypsum Transfer Houses • Gypsum Storage Building and temporary storage area • Limestone Storage Area • Limestone unloading facility at rail yard • Emergency Limestone unloading area • Pollution Control Dams (also 21(h)) • Existing Disposal Facility footprint • Sludge and Salts handing and storage areas • Dust suppression of disposal facility during construction, operation and rehabilitation

16. Stakeholder Engagement

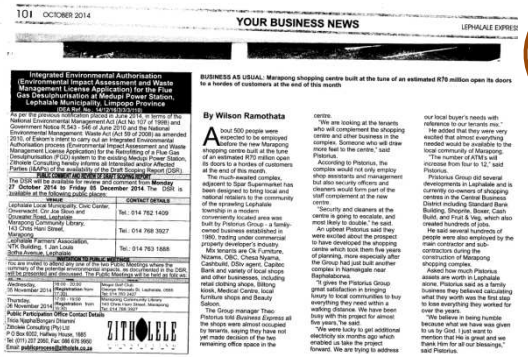
Scoping Phase

EIA Process Advert (06 June 2014) → Site Notices & BID Distribution (06 June 2014) → Draft Scoping Report (27 Oct – 05 Dec 2014 – ext to 09 January 2015)

Draft Scoping Report → KSW & Public Meetings (05 & 06 Nov 2014) → FSR (12 June – 13 July 2015)

EIA Process (Mogol Post)

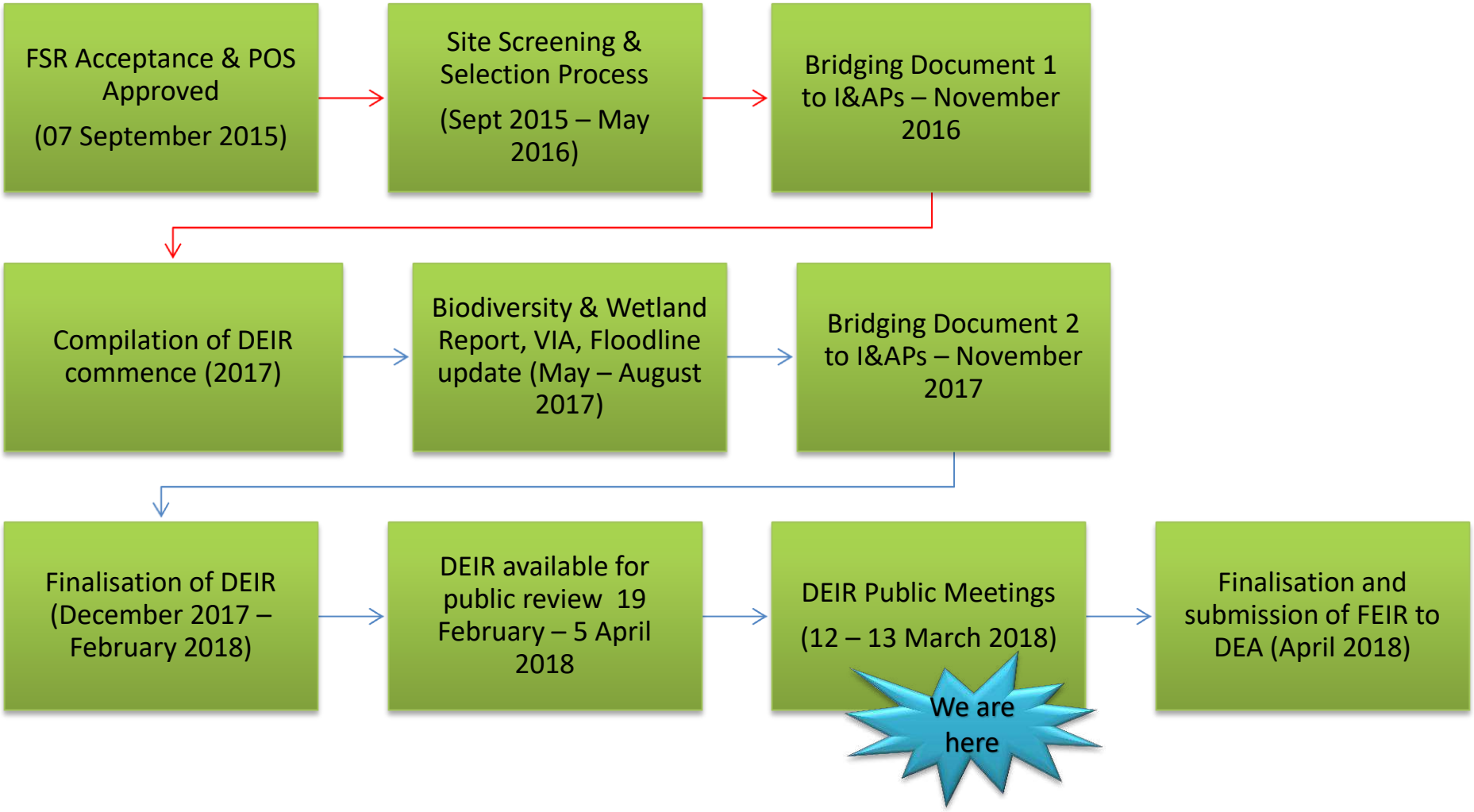
BID Distribution



DSR & PM (Lephalale Express/Mogol Post/Northern News)

16. Stakeholder Engagement

Impact Phase



17. Authority engagement

08 July 2014	• DEA • Intro project • Post application meeting
11 Nov 2014	• DEA Waste Directorate • Project info • Waste disposal methods
02 July 2015	• DEA and DWS • Gypsum disposal method
01 Oct 2015	• DEA • Dynamic info post Scoping Phase
23 February 2016	• DEA and DWS • CBA and NFEPA on site
30 November 2017	• DWS • NFEPA on site, wetland offset requirements and rehabilitation plan

9. Discussion

Mathys Vosloo / Bongani Dhlamini

Public Participation Office

Zitholele Consulting

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Halfway House

1685

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Tel: 011 207 2060

Fax: 086 674 6121

Zitholele Consulting
Reg. No2000/000392/07

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Building 1, Maxwell Office Park, Magwa Crescent West
c/o Allandale Road & Maxwell Drive, Waterfall City, Midrand
Tel + 27 11 207 2060
Fax + 27 11 86 674 6121
E-mail : mail@zitholele.co.za

ENVIRONMENTAL IMPACT ASSESSMENT, VARIATION TO EXISTING WASTE MANAGEMENT LICENCE, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

KEY STAKEHOLDER WORKSHOP

Tuesday, 13 March 2018 @ 14h00

Mogol Golf Club, George Wells St., Onverwacht, Lephalale

A G E N D A

Facilitator: Mathys Vosloo, Zitholele Consulting

13:30 – 14:00	Registration for the meeting	
14:00 – 14:10	Welcome, Evacuation Procedures, Introductions	M. Vosloo
14:10 – 14:30	Project Background	T. Blom
14:30 – 15:15	Presentation of application process and findings	M. Vosloo
15:15 – 15:45	Discussion	All
15:45 – 16:00	Closing and Way Forward	M. Vosloo

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

Key Stakeholder Workshop

Tuesday, 13 March 2018, 14h00 – 16h00
Mogol Golf Club, George Wells St., Onverwacht, Lephalale

ZITHOLELE CONSULTING

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Ms	Felicia	Sono	Eskom	Sustainability Division: Environmental Management	Chief Environmental Advisor	Eskom Megawatt Park, Maxwell Drive, Sunninghill	JHB	2000	011 800 8652		083 297 4328	felicia.sono@eskom.co.za
Dr.	Mathys	Vosloo	Zitholele Consulting	Environmental	EAP				011 207 2079		084 748 3018	mathysv@zitholele.co.za
Mr	Theuns	Blom	Eskom	Group Capital	Project Manager	Megawatt Park	JHB	2000	0118006266			blomtf@eskom.co.za
Mr	Tobile	Bokwe	Eskom	R+S; Env. Mngt.	Chief Env. Advisor	"	JHB	2000	011 800 2303	086 663 2051	082 828 1777	bokwett@eskom.co.za
Mr	Leon	Van Wyk	Eskom	Group Tech Engineering	Air Quality Manager	Megawatt Park	JHB	2000	011 800 5631	082 320 2374	←	vanwykl@eskom.co.za
Ms	Love	Hlekane	DWS	Water use Authorisation	Engineering Production Technician	49 Market Street	Polokwane	0700	0152901517	0829094... ←	0152958249	hlekanel@dws.gov.za

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
MR	HENRY	NAWA	ESKOM	LAND DEVELOPMENT	ENVIRONMENTAL ADVISOR	1 MAXWELL DRIVE SUNNINGHILL SANDTON	JOHANNESBURG	2000	011 2002774	086 607 9704	084 320 5329	nawah@eskom.co.za
Dr	Sfiso	Mazibuko	Eskom	Construction Management	Project Director	—	"		012-4215423	—		mazibusi@eskom.
Mr	Bongani	Dhlamini	Zitholele Consulting	Environmental	EAP	Waterfall City Midrand	Johannesburg	1685	011 207 2060	011 8056 6121	0784 5 4801	bonganid@zitholele.co.za

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Ms	Elana	Greyling	Concerned Citizens of Lephalale	—	—	Box 1058 Ellisras	Lephalale	0555	082863 8696	—	082863 8696	bububush@ lantic.net
Ms	Astrid	Basson	Lephalale Municipality	Cttr	Cllr	22 Cheetah str Lephalale	Lephalale	0555	082822 9027	—	082822 9027	a3bc@ Hmg Mingeley. cc 29

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Mr.	Jacques	Snyman	Lephalale Development Forum (LDF)		Coordinator	Bavianaustoek, Witkop Rd.	Lephalale	0555			0825741590	jacquess@macgroup.co.za
Mr.	Emile	Marell	Eskom	GCD	Env. Manager.	Medupi	Lephalale	0555		014 762 6504	082 560 4618.	MarellEMP eskom.co.za
Mr	Msaulesi	Polisi	11	GT	Engineer	4969 Imbani complex Lephalale	Lephalale	0555			0823597[illegible]	Polisimc eskom.co.za.

ENVIRONMENTAL IMPACT ASSESSMENT, WASTE MANAGEMENT LICENSE VARIATION APPLICATION, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

Key Stakeholder Workshop

Mogol Golf Club
Lephalale
2pm – 4pm

Zitholele Consulting
Mathys Vosloo
13 March 2018

Objectives of the Meeting

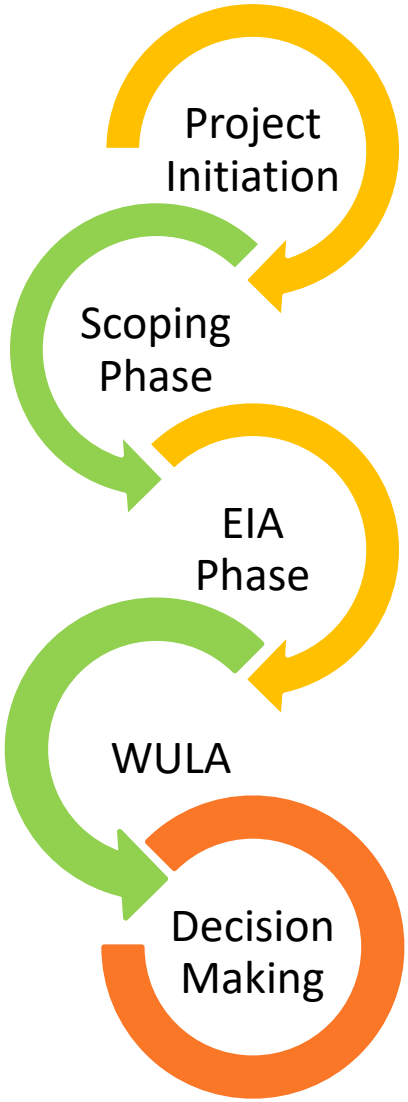
- Meeting to focus on Medupi FGD Retrofit Project only
- Provide key stakeholders overview of project activities and applications
- Present findings of specialist studies
- Present recommendation of the EAP
- Way forward

1. Project Motivation

- Medupi PS Air Emissions Licence (AEL) amended in 2015
  - Continue operation of commissioned units
  - Operate and maintain a Flue Gas Desulphurisation (FGD) plant for SO_2 control
  - Reduce SO_2 to below 500 mg/Nm^2 by 1 April 2025
- Funder requirements

Result in need to retrofit a FGD system to the Medupi PS before 2025.

2. Project Progression



December 2013 – April 2014

May 2014 – July 2015

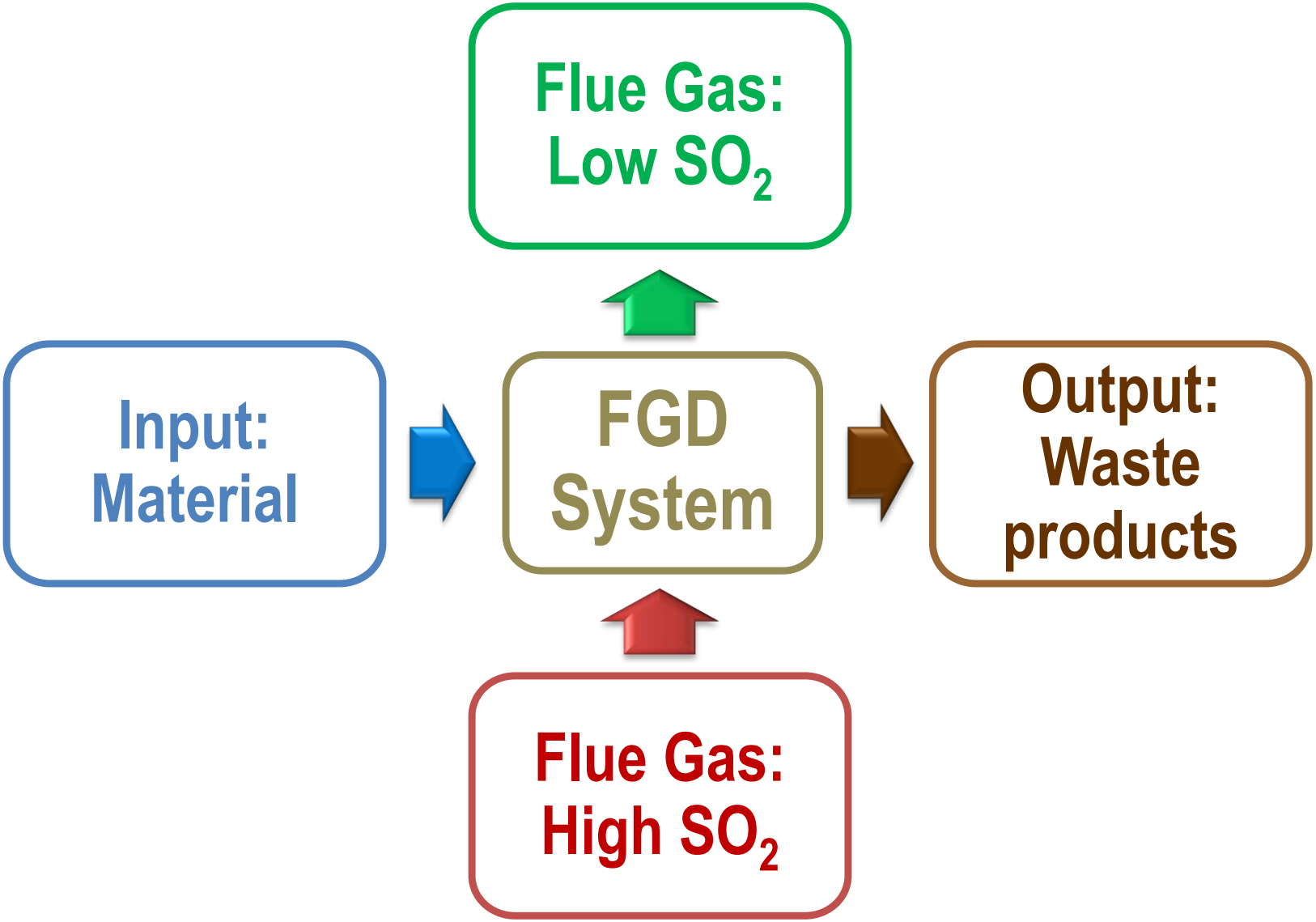
August 2015 – April 2018

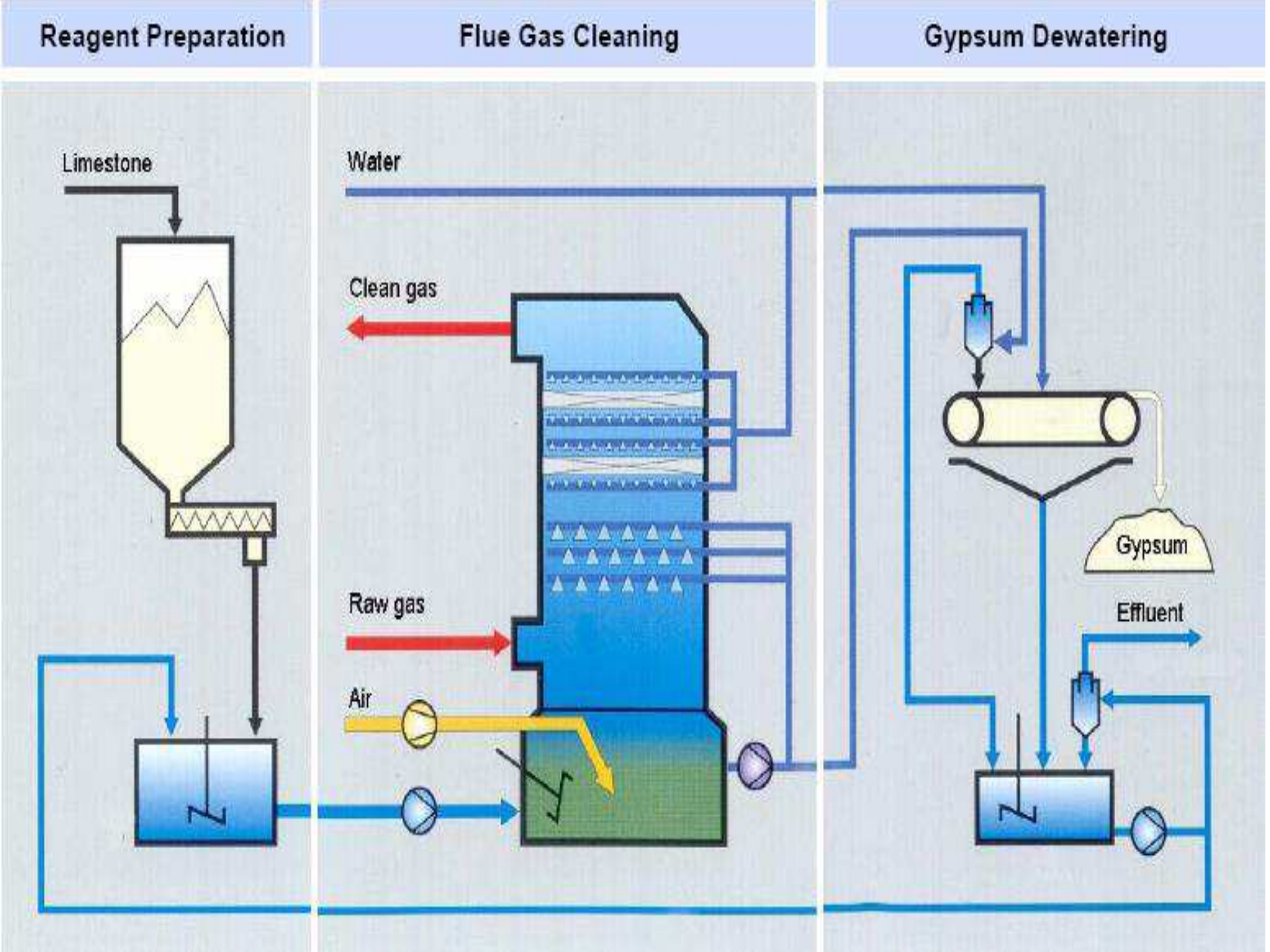
August 2016 – May 2018

May 2018 – August 2018 (EIA)

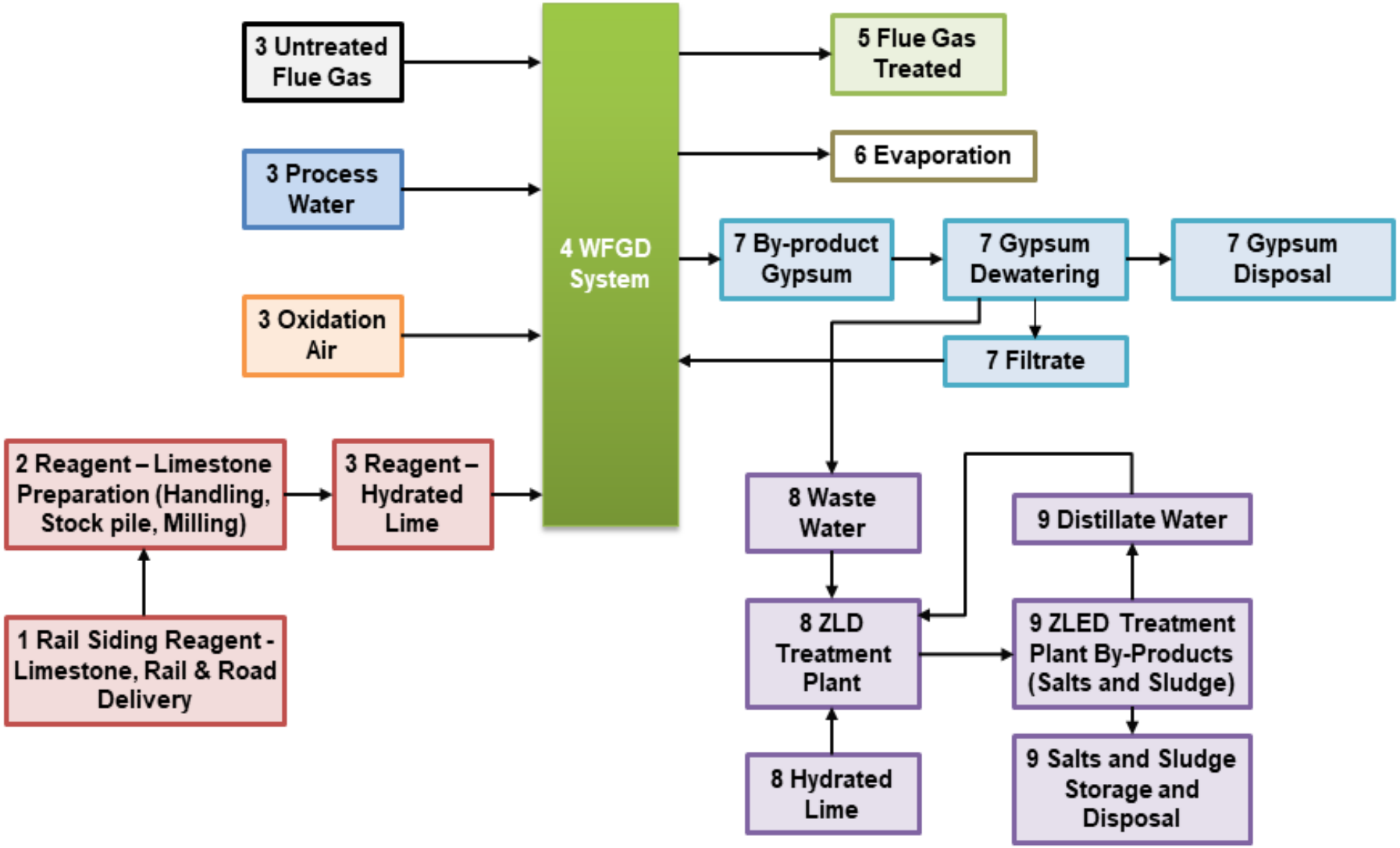
May 2018 – February 2019 (WULA)

3. FGD Simplified




Reagent Preparation
Flue Gas Cleaning
Gypsum Dewatering
Limestone
Water
Clean gas
Raw gas
Air
Gypsum
Effluent

4. FGD Components Diagram



5. Development site

6. Changes in project packaging

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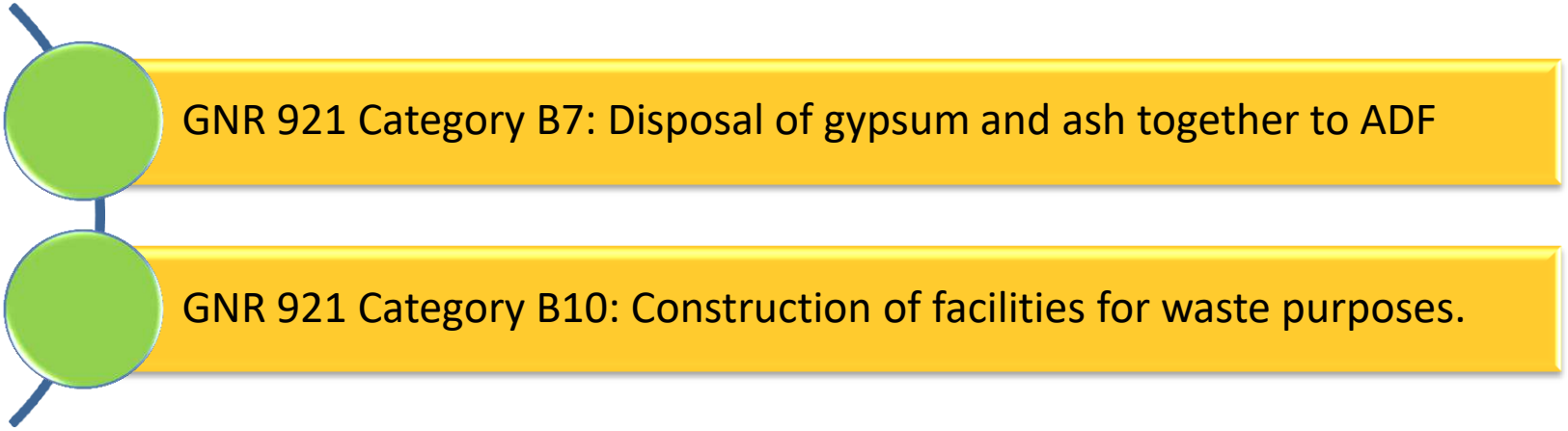
7. Legislative requirements – WML

WML Variation Application – National Environmental Management: Waste Act (Act 59 of 2008) as amended.



Registration of temporary waste storage facility for storage of salts and sludge i.t.o. Schedule C of GN 921 (list of waste management activities) of the NEM:WA, and GN 926 of 29 November 2013 (Norms and Standards for Storage of Waste).

7. Legislative requirements – WULA

WULA – National Water Act (Act 36 of 1998) as amended.

- 21(c) – Construction activities associated with FGD system and rail yard carried out within the 500 m buffer of the water resources
- 21(i) – Construction activities associated with FGD system and rail yard carried out within the 500 m buffer of the water resources
- 21(g) – disposal of waste in a manner that may be detrimental to a water resource.

Environmental Impact Assessment
DEA REF: 14/12/16/3/3/3/110

FGD Infrastructure (within MPS footprint)
Rail Yard Infrastructure and Buildings
Limestone and Gypsum Handling Facilities
Associated Infrastructure (incl. fuel storage areas)
Waste Water Treatment Plant and Waste Storage Area

8. Alternatives considered (EIA)

1. Location / Layout

None – infrastructure to be fitted to footprint predefined by power station layout and infrastructure

2. Technology

Dry FGD: Slightly lower water consumption that WFGD, cannot fit within existing available space, very high capital and operating costs

Wet FGD: Fit within site space constraints, high efficiency to remove SO_2, uses more water than DFGD

Wet FGD (gas cooler): uses less water than WFGD, layout and space constraints, high maintenance & problematic during operation, reduction in unit power output, high capital and operation cost

8. Alternatives considered (EIA)

3. No-go Option

The no-go option is to continue operation of the Medupi Power Station without the FGD retrofit.

- Medupi PS not be compliant with AEL
- Need to shut down the power station
- Significant impact on economy and stability of electricity supply
- Considered FATALLY FLAWED

9. Key issues identified

- Air Quality
- Waste handling and disposal
- Water allocation and use
- Social and economic impacts of FGD
- Biodiversity and wetland impacts

10. Studies undertaken

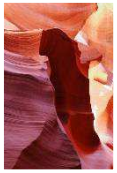

Terrestrial ecology (Biodiversity)


Aquatic and wetland ecology


Socio-economic


Air Quality


Waste classification


Groundwater


Surface water


Heritage, Archaeology


Palaeontology


Traffic


Noise


Geotechnical


Soils and land capability

11. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Geology / Geotechnical	Standard footing/ foundations systems.	**No significant** geotechnical hazards or fatal flaws identified.
Soils and Land capability	Site already disturbed, but loss of soil resources probable.	Residual impact **Moderate to Low.**
Groundwater	Impact on groundwater quality, volume and flow minor for all phases.	**Low** significance, groundwater monitoring to be undertaken.
Surface water	No significant changes in surface water runoff or flooding, no expected increases in pollutant loads.	Residual impact **Low**, implement SWMP and continue surface water monitoring.

11. Specialist conclusions (cont.)

Study area	Conclusion	Residual impact / Impact significance
Biodiversity and Wetlands	Loss of vegetation species, habitat, catchment area and fauna mortality identified . Direct loss of pans and wetlands.	Residual impact **Moderate**, in some cases **High**. Avoid / reduce vegetation clearing and impact on Sandloop tributary FEPA, "Search and Rescue", Wetland offset and rehabilitation plan.
Air quality	Scenarios included baseline air quality, Medupi PS with a/ without FGD. With FGD no exceedances of NAAQS for SO_2, NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors.	Impact significance found to be **Low, i.e. retrofit of FGD positive impact on air quality.** Specialist recommended that the FGD Retrofit Project be implemented.
Noise levels	Noise levels in the area during operation representative of suburban districts, but notable yet local during construction and decommissioning.	Specialist concluded that with noise mitigation, noise levels from the project will be **Low**. Mitigation include management of traffic and construction site.

11. Specialist conclusions (cont.)

Study area	Conclusion	Residual impact / Impact significance
Socio-economic environment	Although some negative impacts identified, **overall impact of the FGD project is overwhelmingly positive**, especially benefits from economic and employment opportunities, local economic development and *quality of life*.	Specialist concluded that significance of positive social impacts generally exceeds the significance of negative social impacts. Specialist recommend implementation of FGD retrofit.
Heritage, Archaeology & Palaeontology	No heritage, archaeological or palaeontological resources / sensitivities identified within the development footprint.	No potential / expected impact exist.
Traffic	Potential traffic delays at major intersections around Medupi PS identified.	Significance of residual impacts regarded as **Low**, recommended upgrade of identified intersections and traffic calming measures.

Variation Application for existing Medupi Waste Management Licence

WML No: 12/9/11/L50/5/R1

Disposal of gypsum and ash on existing disposal facility

Gypsum Handling Infrastructure

Associated Infrastructure, including Conveyor,

transfer houses, temp. gypsum loading area and Gypsum Storage Building

Storage of WWTP salts and sludge i.t.o. N&S for Storage of Waste (GN 926) prior construction

12. WML Variation Application

Variation application included activities:

- Disposal of ash and gypsum together on the existing ADF
- Reduction of ADF footprint, but increase in height from 60m to 72m
- Inclusion of infrastructure associated with the handling and management of gypsum waste, including:
  - Conveyor for transport of gypsum,
  - Transfer houses
  - Temporary gypsum loading area for loading of saleable gypsum onto trucks
  - Gypsum Storage Building for the storage of saleable gypsum via rail

13. Studies undertaken


Visual


Waste classification


Air Quality


ADF Concept Design


Terrestrial ecology (Biodiversity)


Aquatic and wetland ecology


Groundwater


Surface water

Impacts associated with construction of infrastructure as per the findings and conclusions of EIA

14. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Waste Assessment (disposal of ash and gypsum on ADF)	Gypsum is a Type 3 waste, same as Ash. Therefore can be disposed together with ash on disposal facility with Class C barrier system, as is the case for the Medupi ADF.	No additional impact for disposal of ash and gypsum disposed together on Class C barrier system is expected, as apposed to disposal of ash only on the Class C barrier.
Groundwater (disposal of ash and gypsum on ADF)	A specialist opinion on the impact of disposal of ash and gypsum together on groundwater concluded **no significant impact** on the groundwater regime expected.	Class C barrier system itself is a management measure to reduce any groundwater impacts. No significant residual impact expected.
Surface Water (disposal of ash and gypsum on ADF)	No additional impact on surface water runoff or quality has been identified by the surface water specialist	Surface water management system for existing ADF will continue to manage potential surface water quality and quantity impacts.

14. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Visual (Increase in height of WDF)	Original visual assessment for Medupi PS found impact to be Moderate (45-50m facility). VIA for increased height to 72m also Moderate, i.e. equivalent to existing ADF.	Residual impact rated as Moderate significance, same as original assessment.
Air quality (Increase in height of WDF)	Disposal of ash and gypsum together expected to create crust when mixed with water, but could contribute to dust nuisance. Simulations found no exceedances of NAAQS for PM_{10} and $PM_{2.5}$	Increase in height will have **LOW** impact significance.
Biodiversity and wetlands (Increase in height of WDF)	Gypsum is not likely to a have a major toxicological impact on biodiversity / wetlands. Probability of contamination event expected to be **Low**.	Residual impact expected to be of Moderate significance. Dust management and control main method in reducing impact potential.

Water Use Licence Application (WULA)

FGD Infrastructure (within MPS footprint)

Rail Yard Infrastructure and Buildings

Limestone and Gypsum Handling Facilities

Associated Infrastructure (incl. fuel storage areas)

Waste Water Treatment Plant and Temporary Waste Storage Area

Existing Ash Disposal Facility

15. WULA

Water Use	Infrastructure to be licenced
Section 21 (c) - Impeding or diverting the flow of water in a watercourse	Existing waste disposal facility, including the associated PCDs, and Medupi FGD footprint
Section 21 (i) - Altering the bed, banks, course or characteristics of a watercourse	Existing waste disposal facility and Medupi FGD footprint
Section 21 (g) - disposing of waste in a manner which may detrimentally impact on a water resource;	• Gypsum Transfer Houses • Gypsum Storage Building and temporary storage area • Limestone Storage Area • Limestone unloading facility at rail yard • Emergency Limestone unloading area • Pollution Control Dams (also 21(h)) • Existing Disposal Facility footprint • Sludge and Salts handing and storage areas • Dust suppression of disposal facility during construction, operation and rehabilitation

16. Stakeholder Engagement

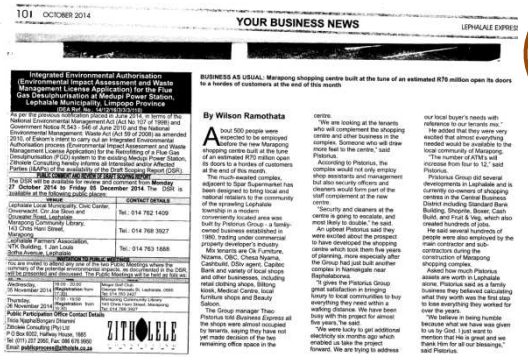
Scoping Phase

EIA Process Advert (06 June 2014) → Site Notices & BID Distribution (06 June 2014) → Draft Scoping Report (27 Oct – 05 Dec 2014 – ext to 09 January 2015)

Draft Scoping Report → KSW & Public Meetings (05 & 06 Nov 2014) → FSR (12 June – 13 July 2015)

EIA Process (Mogol Post)

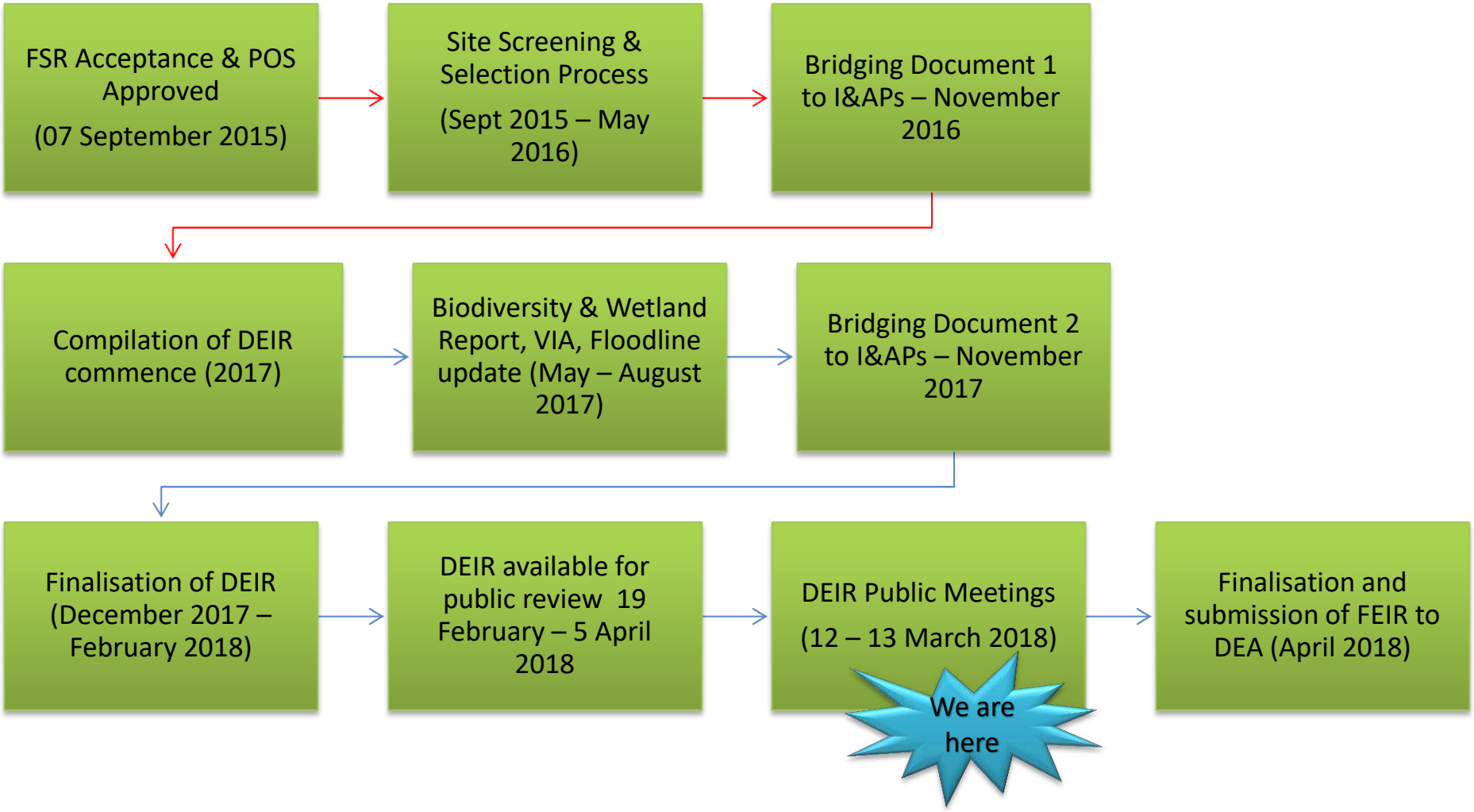
BID Distribution



DSR & PM (Lephalale Express/Mogol Post/Northern News)

16. Stakeholder Engagement

Impact Phase



17. Authority engagement

08 July 2014	• DEA • Intro project • Post application meeting
11 Nov 2014	• DEA Waste Directorate • Project info • Waste disposal methods
02 July 2015	• DEA and DWS • Gypsum disposal method
01 Oct 2015	• DEA • Dynamic info post Scoping Phase
23 February 2016	• DEA and DWS • CBA and NFEPA on site
30 November 2017	• DWS • NFEPA on site, wetland offset requirements and rehabilitation plan

18. Conclusions

- Air Quality: FGD successfully reduce impact on air quality (+ve)
- Waste handling and disposal:
  - Disposal of gypsum with ash on existing ADF – WML Variation Application
  - Storage of Salts & Sludge i.t.o. N&S Storage of Waste (GN926)
- Water allocation and use: Water allocation from MCWAP 1 & 2a
- Social and economic impacts: Residual positive impact
- Biodiversity and wetland impacts: Moderate significance with wetland loss, but residual impact with offset requirements within acceptable limits

18. Recommendation

- EAP recommendation to implement FGD system and authorised Medupi FGD Retrofit Project

19. Discussion

Mathys Vosloo / Bongani Dhlamini

Public Participation Office

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ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

Key Stakeholder Workshop (KSW)

DEA Ref.: 14/12/16/3/3/2/1060

Draft Minutes

CLIENT	:	Eskom Holdings SOC Ltd
CONSULTANT	:	Zitholele Consulting (Pty) Ltd
PROJECT	:	Medupi FGD Retrofit Project EIA
CONTRACT NO.	:	DEA REF.: 14/12/16/3/3/2/1060
PROJECT NO.	:	12949
DATE	:	13 March 2018
TIME	:	14h00-16h00
VENUE	:	Mogol Golf Club, George Wells St., Onverwacht, Lephalale.

PRESENT

Please refer to the attendance register

APOLOGIES

None tendered

ITEM	DISCUSSION POINTS	ACTION, DATE
1	**WELCOME AND ATTENDANCE:** Dr Mathys Vosloo, Zitholele Consulting, welcomed all present and requested that the team and the delegates introduce themselves, including the department or organisation that they are representing. The Agenda proposed for the workshop, as below, was circulated and accepted by the delegates. The agenda, attendance register and presentations given are provided in Appendix A.	
2	**MEETING OBJECTIVES:** • Meeting to focus on Medupi FGD Retrofit Project **ONLY**; any other issues relating to operations of the Power Station will be allowed at the end of the meeting. • To present information regarding the proposed development • To present the EIA and Public Participation Processes followed to date • Provide key stakeholders overview of project activities and applications • Present findings of specialist studies • Present recommendation of the EAP and Way forward.	
3	**Project Background** Dr. Mathys Vosloo presented the project background to the attendees. Mr. Theuns Blom	

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	from Eskom presented an update to the FGD process on Eskom's behalf after the presentation given by Dr. Vosloo.	
4	**Presentation of application process and findings** Dr. Mathys Vosloo presented the EIA process followed, specialist findings, conclusions and recommendations to the attendees.	
5	**DISCUSSIONS** • **Ms Astrid Basson:** Will there no temporary waste disposal sites in Lephalale? Mathys Vosloo: The EIA deals only with the existing disposal facility. Gypsum will be disposed with ash on the existing facility, while salts and sludge will be temporarily stored on site within the Medupi Power Station footprint, before being trucked to an existing disposal facility. Theuns Blom: Eskom is running a project to investigate future disposal facilities for Medupi, which include finding an extension to the existing ash disposal and a new hazardous disposal facility. The intent is to establish a regional hazardous disposal facility or for Eskom to at least be the front runner in providing this solution. This is currently in a pre-feasibility stage and will move towards a feasibility stage by the end of 2018. Emile Marrel: There is already a shortage of space on existing facilities in Lephalale. Eskom is looking at piloting the regional disposal site to cater for regional waste instead of trucking it all the way to Johannesburg. This initiative will be looking at creating employment opportunities for the broader community. Tobile Bokwe: The original planning included a proposed space for the remaining 30 years of disposal, but upon investigation this site was not suitable. Therefore, in order to support the implementation of the FGD, investigation of a new site was proposed as a separate process to streamline the FGD authorization process. • **Ms Astrid Basson:** Are there any plans for using the gypsum in downstream beneficiation to help locals to make use of this opportunity? Theuns Blom: Considering the quality of coal that the power station is burning and the quality of limestone the FGD process is designed for, Eskom is anticipating that it will end up with a gypsum of a quality usable for agriculture. That said, once we have a stable production of gypsum, it will be re-classified as a resource and only at that point can we understand what the gypsum will be most suitable for. Sifiso Mazibuko: You need to wait for all the units to be running in order to get a representative sample of the gypsum to be re-classified. Leon van Wyk: The power station has been designed to allow for future offtake of gypsum. If Eskom comes to a decision to use gypsum then the plant will be ready to implement this future offtake. • **Ms Astrid Basson:** How labour intensive is it to construct the FGD units and will locals have employment opportunities based on skills levels required? Theuns Blom: Eskom is in the process of establishing an execution entity, which will have a set number of Eskom employees and unskilled, semi-skilled and skilled laborers. Eskom is working with the Medupi sustainability department to see how it will manage labour requirements. Eskom is planning to mobilise more than one team during construction of the units which will mean that there will be a shorter construction time but with more labour at peak time, i.e. a group of about 4000 people, which will include un-skilled, semi-skilled and skilled labour. • **Ms Astrid Basson:** What is plan B if MCWAP Phase 2A does not deliver water in time? Theuns Blom: Currently the station already has guaranteed water allocation for the	

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	entire Medupi Power Station and 3 of the FGD units. If you look at timelines it is more than adequate in advance to supply water until MCWAP Phase 2 is operational. Eskom is also having regular engagement with DWS and TCTA regarding the MCWAP delivery, which shows a general support from the government to move the MCWAP project forward. • **Mr. Love Hlekana:** Why is Eskom not driving the water use license application concurrently with the EIA process? Mathys Vosloo: The process has been run concurrently, but due to detailed information requirements the WULA has run behind. Late in 2017 a meeting with DWS regarding the sensitive wetland area indicated that a wetland offset would be required. This has filtered into the staggered submission of the WULA. Felicia Sono: The DWS is now running an online submission system, but a number of activities required by the system is already been undertaken. We will be uploading the existing data in order to move through the different phases of the online submission. One the main application has been completed it will be uploaded into the system in order to meet decision making timeframes. Therefore, Eskom is not looking at the full 300 days from submission of the application as it has uploaded the previous documents as per the requirements of the online submission system. Tobile Bokwe: From a PPP perspective, once the WULA documentation is completed it will be made available to the public for review. The public meetings include aspects of the WULA well so therefore once the WULA is available another public meeting will not be undertaken as the public is made aware of the WULA at this stage to allow discussion on any aspects. • **Ms Elana Greyling:** Has a source of the limestone been determined yet, and if so where will it be sourced from? Theuns Blom: The source of Limestone is going to be from the Northern Cape from where it will be transported via rail to the Vaal Triangle. From the Vaal Triangle it will be trucked to Medupi. Eskom is investigating how best to transport the limestone via rail to the station. Eskom is however, considering using limestone from closer sources in Limpopo, but until such time the business case has been presented and accepted by the Eskom board the primary division cannot approve new suppliers for the limestone. Leon van Wyk: Limestone and lime are very different materials. Lime is a product of limestone once it has been manipulated through calcination. Limestone is available in the area and as a company we go to the worst case in terms of our planning, that is sourcing out of the Northern Cape. Eskom is perusing the option to source the limestone from local sources. It was also quite an effort to redesign the FGD to take lower quality limestone. • **Ms Elana Greyling:** Is it a complicated process to separate the gypsum from the water, sludge and salts, heavy metals, etc? Is there a plant that does that? Leon van Wyk: It is actually very simple to separate the waste. Liquids are separated from the limestone slurry. The fluids go to the hydrocyclones plant which again separate liquids from the solids. The liquids are treated and re-used in the system, while the solids are sent to the disposal facility. • **Ms Elana Greyling:** Can we have a monthly record of emissions from the Medupi Power Station? Peak exceedances were presented, so how peak is the peaks and how does that effect the communities? Emile Marrel: There are two sets of emission standards that are set for emissions. Currently it is the 2015 emission standards. With the spikes a problem that the power station face is varying qualities of coal. The coal in this area has a higher Sulphur content that in the highveld. A specification for the coal is set for the Medupi Power Station and	

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	if we can keep within this spec which levels out at about 1.8% Sulphur content, then the station can confidently remain within the 2015 standards. With the life of mine plan what we find is that the Sulphur content of the coal steadily increases, therefore when coal is used that has a Sulphur content higher than 1.8% it generally causes these spikes in the Sulphur emissions. At this stage, due the power station being under construction we cant consistently blend the coal to achieve an average Sulphur content below 1.8% to remain within the applicable limits. That is where we have these spikes. It is usually only on hourly periods. The average power station emission is well below 3500mg/Nm^3. You are more than welcome to join the EMC where details of the emission profile can be discussed on a quarterly basis. With the commissioning of the FGD the new emission standards will be consistently complied with. Therefore, at this point in time there is very little influence from SO_2 emission on the Lephalale area and surrounding area. • **Ms Elana Greyling:** If FGD is only using 2% of what the Limpopo River dumps in the sea, why is this area called a water scarce area? Emile Marrel: As the MCWAP Phase 2 comes online, more water will become available in the area. Eskom also broadly rely on the planning and implementation of programs by the DWS. The MCWAP Phase 2 conceptually shows how water from a high rainfall area is transferred to an area of low rainfall for equitable use of water by all parties. Mathys Vosloo: The MCWAP Phase 2 also caters for water to the region not only for Eskom. Emile Marrel: MCWAP will also provide water for other industries, mines, municipalities and communities. Eskom is therefore one of the users, it is the largest users but certainly not the only user. Leon van Wyk: A benefit of the MCWAP Phase2 program is that it will free up better quality water for human consumption due to users such as Eskom rather making use of lower quality water through MCWAP Phase2 as opposed to its current use of good quality water through the MCWAP Phase1.	
6	**Closure** The meeting was closed after discussions has been concluded.	

ACTION	FUNCTION	NAME	DATE	SIGNATURE
Prepared				
Reviewed				
Approved				

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ENVIRONMENTAL IMPACT ASSESSMENT, VARIATION TO EXISTING WASTE MANAGEMENT LICENCE, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

PUBLIC MEETING

Tuesday, 13 March 2018 @ 18h00

Mogol Golf Club, George Wells St., Onverwacht, Lephalale

A G E N D A

Facilitator: Mathys Vosloo, Zitholele Consulting

17:30 – 18:00	Registration for the meeting	
18:00 – 18:10	Welcome, Evacuation Procedures, Introductions	M. Vosloo
18:10 – 18:30	Project Background	T. Blom
18:30 – 19:15	Presentation of application process and findings	M. Vosloo
19:15 – 19:45	Discussion	All
19:45 – 20:00	Closing and Way Forward	M. Vosloo

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

Public Meeting

Tuesday, 13 March 2018, 18h00 – 20h00
Mogol Golf Club, George Wells St., Onverwacht, Lephalale

ZITHOLELE CONSULTING

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
MR	Hendrik	Hills	HTC Hills Boerdery		Boer	Leelhoutkloof						
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MR	LEON	VAN WYK	ESKOM	GROUP TECH ENGINEERING	AIR QUALITY MANAGER.	MWP	JHB.	2000	011 800 5631		082 320 2374	VanwykL@eskom.co.za
MR	THEUNIS	BLOEM	ESKOM	GROUP CAPITAL	PROJECT MANAGER	MWP	JHB	2000	011 800 6266			bloemtp@eskom.co.za
MR	Lutendo	Muthuthe	NCC		ENVIRONMENTAL MAN	37 ELOFF GEORGE AVENUE LEPHALALE 0555			082 294 4620			lutendom@ncc-group.co.za
MR	EMILE	MAREE	ESKOM	ESKOM GCD	ENV. MANAGER	MEDUPI	LEPHALALE	0555	082 560 4618		082 560 4618	MareeEM@eskom.co.za

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

Public Meeting

ZITHOLELE CONSULTING

Tuesday, 13 March 2018, 18h00 – 20h00
Mogol Golf Club, George Wells St., Onverwacht, Lephalale

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
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Mr	Thabo	Khoza	Eskom	Environmental	Environmental Officer						072 984 1592	Khozatrh@Eskom.co.za
Mr	Bongani	Dhlamini	Zitholele Consulting	Environmental	EAP	Building 1, Maxwell Office Park, Magwa Crescent West Waterfall City Midrand	Johannesburg	1685	011 207 2060		0784157801	bonganid@zitholele.co.za
Ms	Christina	Makgoba	NCC Environmental Services	Environment	ECO		Lephalale	0557	~~01~~		0124206736	christinam@ncc-group.co.za

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

Public Meeting

ZITHOLELE CONSULTING

Tuesday, 13 March 2018, 18h00 – 20h00
Mogol Golf Club, George Wells St., Onverwacht, Lephalale

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Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
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ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

Public Meeting

DEA REF.: 14/12/16/3/3/2/1060

Minutes

CLIENT	:	Eskom Holdings SOC Ltd
CONSULTANT	:	Zitholele Consulting (Pty) Ltd
PROJECT	:	Medupi FDG Retrofit Project EIA
CONTRACT NO.	:	DEA REF.: 14/12/16/3/3/2/1060
PROJECT NO.	:	12949
DATE	:	13 March 2018
TIME	:	18h00-20h00
VENUE	:	Mogol Golf Club, George Wells St, Onverwacht, Lephalale

PRESENT

Please refer to the attendance register

APOLOGIES

None tendered

ITEM	DISCUSSION POINTS	ACTION, DATE
1	**Welcome and Attendance:** Dr Mathys Vosloo, Zitholele Consulting, welcomed all present and requested that the team and the delegates introduce themselves, including the department or organisation that they are representing. The Agenda proposed for the workshop, as below, was circulated and accepted by the delegates. The agenda, attendance register and presentations given are provided in Appendix A.	
2	**Meeting Objectives:** • Meeting to focus on Medupi FGD Retrofit Project **ONLY**; any other issues relating to operations of the Power Station will be allowed at the end of the meeting. • To provide I&APs overview of project activities and applications; • To present findings of specialist studies; • Present recommendations of the EAP; and • To advise on the way forward.	
3	**Project Background** Dr. Mathys Vosloo presented the project background to the attendees. Mr. Theuns Blom from Eskom presented an update to the FGD process on Eskom's behalf after the presentation given by Dr. Vosloo.	
4	**Presentation of application process and findings** Dr. Mathys Vosloo presented the EIA process followed, specialist findings, conclusions and recommendations to the attendees.	

Zitholele Consulting
Reg. No2000/000392/07

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5	**DISCUSSION** • **Mr Hendrie Hills:** What happens to the dirt water that is used from the WFGD system? **Mr Leon van Wyk:** The system uses water for two reasons, namely for evaporative cooling and process induced water for the reaction, accordingly the evaporative water evaporates to the sky it can be seen as a plume from the chimneys, and the process water is cycled back in to the Zero Liquid Discharge (ZLD) system. • **Mr Hendrie Hills:** What happens to the effluent discharge from the WFGD system? **Mr Leon van Wyk:** The effluent will be treated from a waste treatment plant within the Power Station. • **Mr Lutendo Muthuvha:** Is the Eskom going to use clean water or grey water from the system? **Mr Leon van Wyk:** There no specifics on the water requirement on the system, even processed water can be used. Currently there is a plan to get the processed water from Pretoria via the MCWAP Phase 2A scheme. • **Mrs Susan Pretorius:** What are the characteristics of the ash composition? **Mr Leon van Wyk:** The composition will remain the same accept that there will be an addition of calcium sulphide and or calcium sulphate in the mixture. **Mr Emile Marrel** (Eskom) offered to extend meeting invitations to Mrs Pretorius on their Environmental Management Committee (EMC). • **Mr Lutendo Muthuvha:** Was the cumulative assessment on air quality done? **Dr Mathys Vosloo:** Yes, cumulative impacts were assessed by the air quality specialist through the scenarios that was modelled and also since it's an air quality priority area.	
	Meeting closed and adjourned	

ACTION	FUNCTION	NAME	DATE	SIGNATURE
Prepared				
Reviewed				
Approved				

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Reg. No2000/000392/07

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ENVIRONMENTAL IMPACT ASSESSMENT, VARIATION TO EXISTING WASTE MANAGEMENT LICENCE, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

KEY STAKEHOLDER WORKSHOP

Wednesday, 14 March 2018 @ 08h00

Medupi Power Station Visitor Center, Lephalale

A G E N D A

Facilitator: Mathys Vosloo, Zitholele Consulting

13:30 – 14:00	Registration for the meeting	
14:00 – 14:10	Welcome, Evacuation Procedures, Introductions	M. Vosloo
14:10 – 14:30	Project Background	T. Blom
14:30 – 15:15	Presentation of application process and findings	M. Vosloo
15:15 – 15:45	Discussion	All
15:45 – 16:00	Closing and Way Forward	M. Vosloo

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

Public Meeting

Medupi PS Visitors Center
~~Monday, 12 March 2018, 15h00 - 17h00~~ Wednesday, 14 March 2018, 08:00
~~Ditheku Primary School, 1601 Ramahlody Street, Marapong Ext 2, Lephalale~~

ZITHOLELE

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
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	Piet	Mololiego	WELF			House No 3115 Marapong Ext No4					0648858678	
Ms	NLABIWA JIM	KETLHAPILE	WEJF			Marapong Ext 04 2224	Lephalale				07311 99979	wej-forum@gmail-com
Mr	Dovhani	Mudzielwa-NG	Eskom	GCO-Construction Environmental	SEA	Medupi Power Station	lephalale		014762 2173		0722144 575	mudziel@eskom.co.za
MR	EMILE	MARELL	ESKOM	ESHA GCO	ENVIRONMENTAL MANAGER	MEDUPI	LEPHALALE	0555	014 762 6544		082 560 4648	MarellEM@eskom.co.za
MR	BONGANI	DHLAMINI	ZITHOLELE CONSULTING	ENVIRONMENTAL	EAP	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City Midrand	JHB	1685	011 207 2060	086 674 6121	078415 7801	bongani@zitholele.co.za

Mr/Ms	First Name	Last Name	Company/ Organisation	Department/ Directorate	Job Title	Address	City	Zip / Postal Code	Tel	Fax	Cell	Email Address
Dr	Sihle	Mazibuko	Eskom	GCD	FGD Project Director	Medupi	Lephalale	0555	012-421 3423	—	083 6333 191	mazibusi@eskom.co.za
Dr	Mathys	Vosloo	Zitholele Consulting	Environmental	EAP				011 207 2079		084 748 3018	mathysv@zitholele.co.za.
MR	Thabo	Khoza	Eskom	Environmetal	EO	Medupi	Lephalale	0555	0147626890		072984 1592	Khozatrh@Eskom.co.za

ENVIRONMENTAL IMPACT ASSESSMENT, WASTE MANAGEMENT LICENSE VARIATION APPLICATION, AND WATER USE LICENCE APPLICATION FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

Key Stakeholder Workshop

Medupi PS Gate 1
Visitor Center
Lephalale
8am – 9am

Zitholele Consulting
Mathys Vosloo
14 March 2018

Objectives of the Meeting

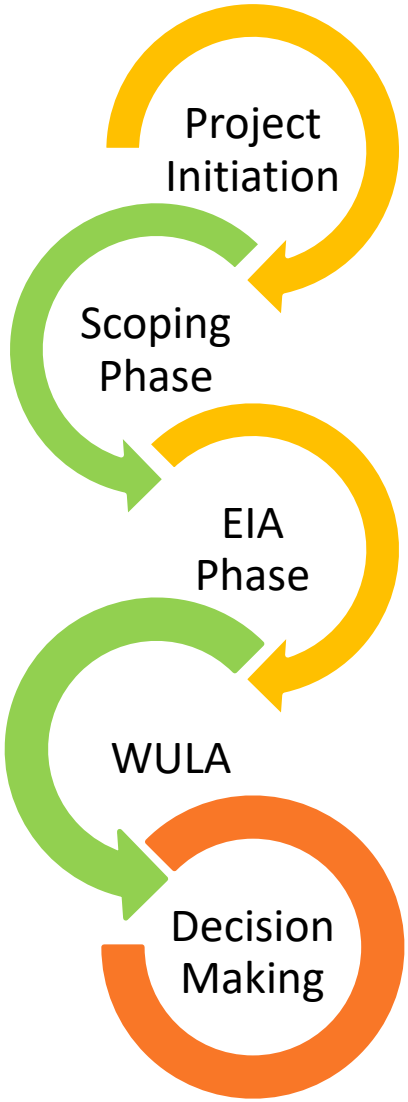
- Meeting to focus on Medupi FGD Retrofit Project only
- Provide key stakeholders overview of project activities and applications
- Present findings of specialist studies
- Present recommendation of the EAP
- Way forward

1. Project Motivation

- Medupi PS Air Emissions Licence (AEL) amended in 2015
  - Continue operation of commissioned units
  - Operate and maintain a Flue Gas Desulphurisation (FGD) plant for SO_2 control
  - Reduce SO_2 to below 500 mg/Nm^2 by 1 April 2025
- Funder requirements

Result in need to retrofit a FGD system to the Medupi PS before 2025.

2. Project Progression



December 2013 – April 2014

May 2014 – July 2015

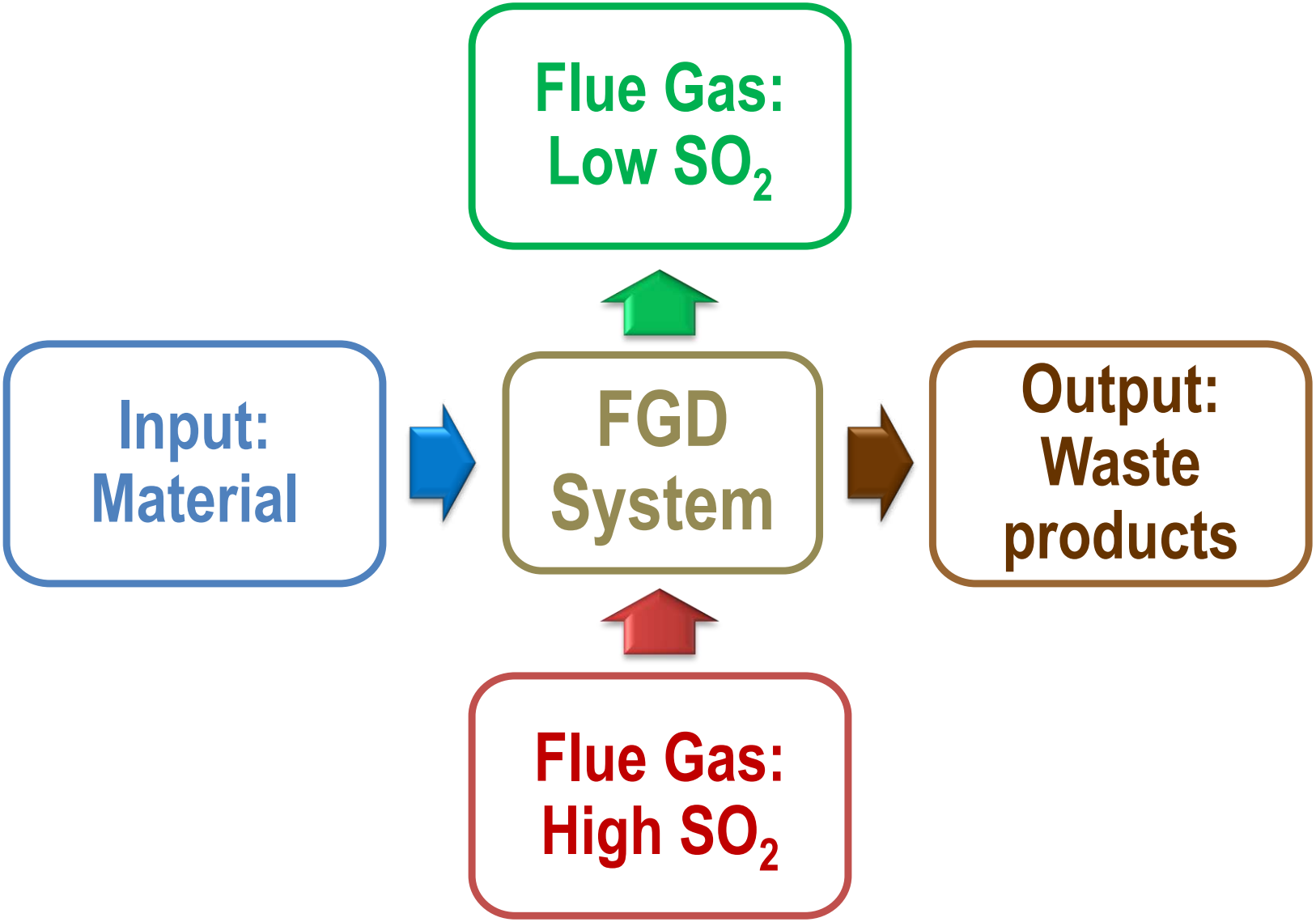
August 2015 – April 2018

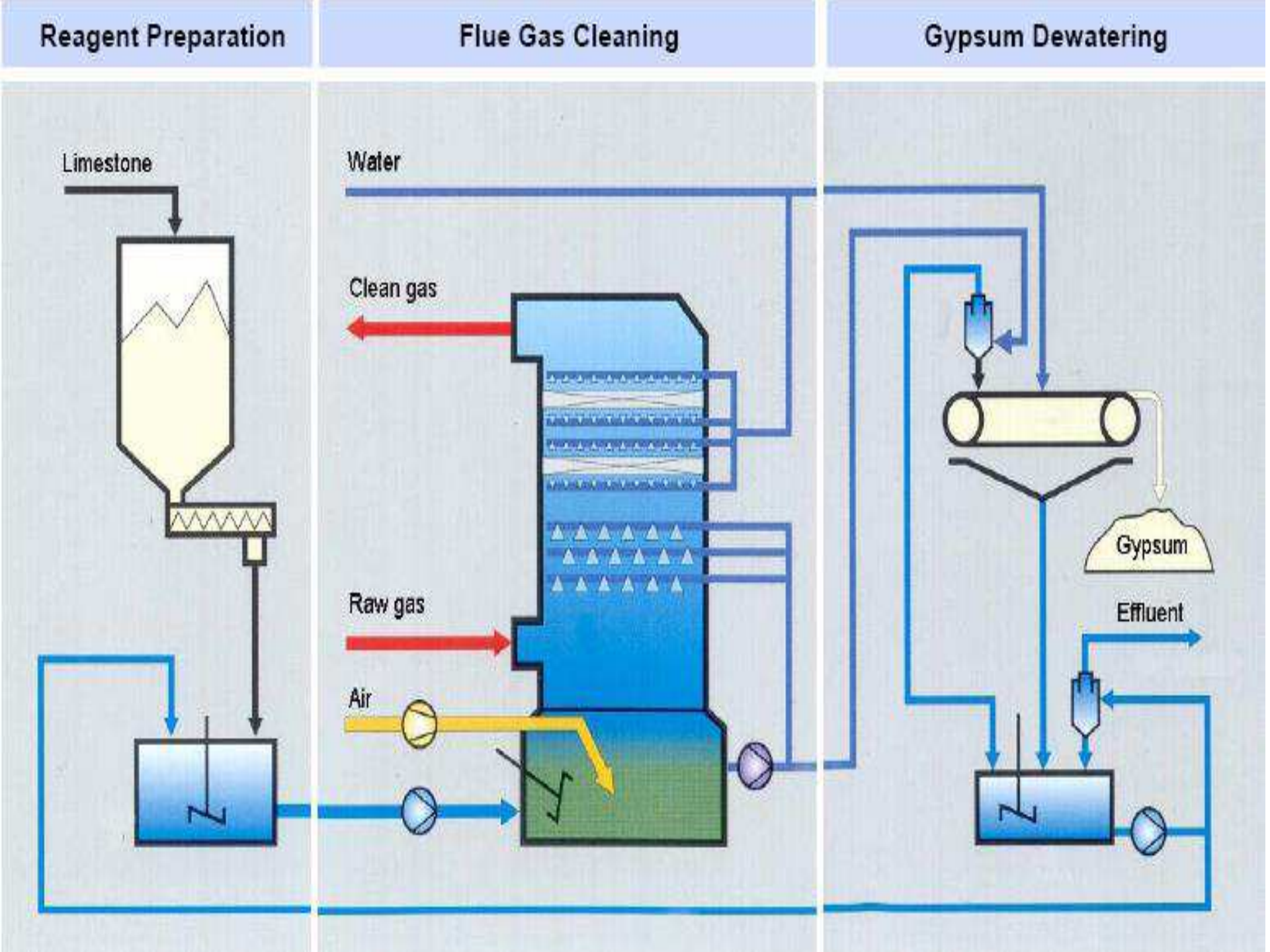
August 2016 – May 2018

May 2018 – August 2018 (EIA)

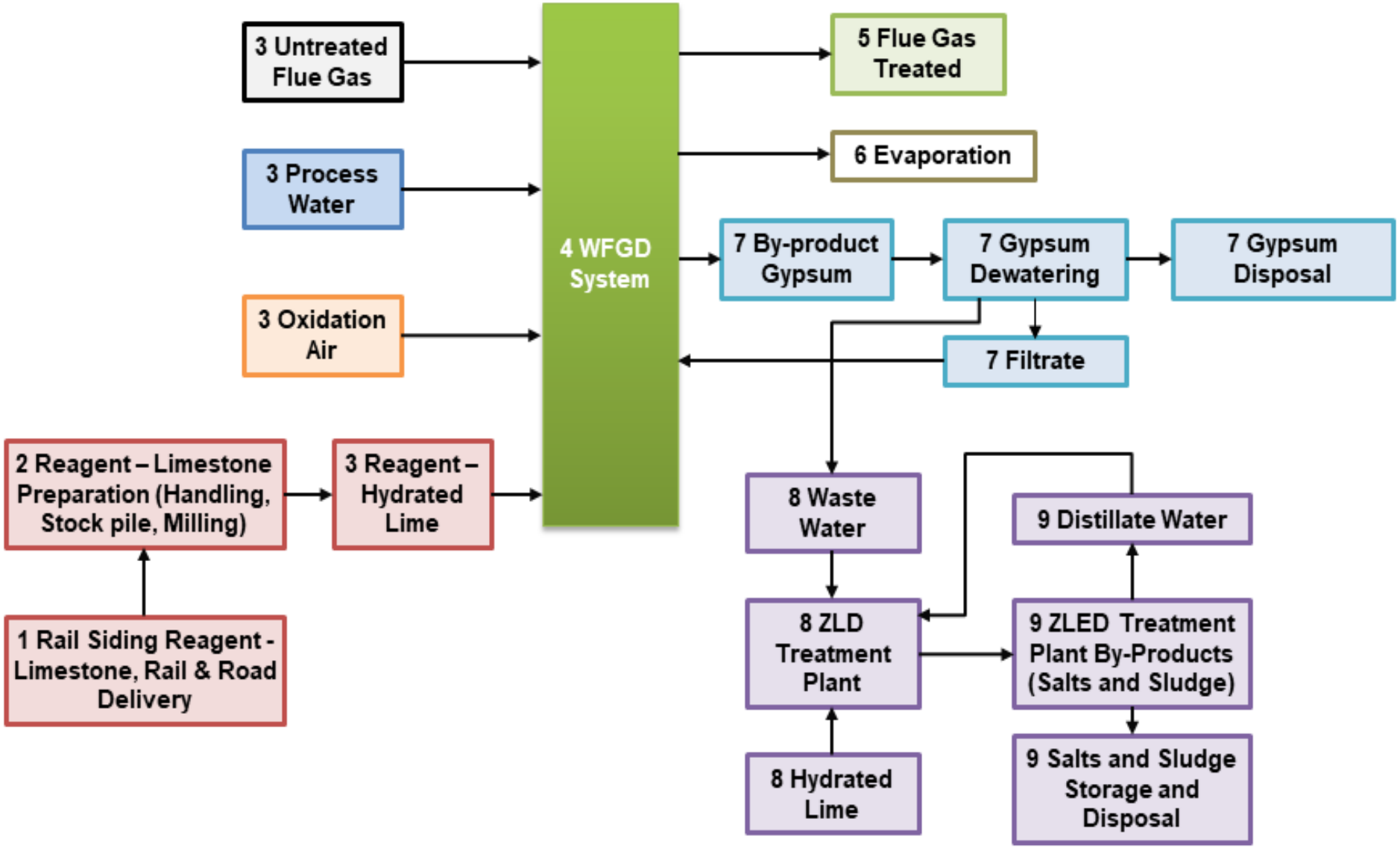
May 2018 – February 2019 (WULA)

3. FGD Simplified




Reagent Preparation
Flue Gas Cleaning
Gypsum Dewatering
Limestone
Water
Clean gas
Raw gas
Air
Gypsum
Effluent

4. FGD Components Diagram



5. Development site

6. Changes in project packaging

Scoping Phase	**Integrated EIA/WML & WULA** FGD, RAIL, LIME, INFRAS, ADF, *on-site* WDF				
Bridging Document, Nov 2016	**Integrated EIA/WML 1 & WULA** FGD, RAIL, LIME, INFRAS	**Integrated EIA/WML 2** *Off-site* WDF	**WML Variation** ADF	**WULA** FGD, RAIL, LIME, INFRAS, ADF	
Bridging Document 2, Nov 2017	**EIA** FGD, RAIL, LIME (*NEMA*), INFRAS	**GN926** LIME (Registration of storage facility prior construction)	**Integrated EIA/WML 2** *Off-site* WDF	**WML Variation** ADF	**WULA** FGD, RAIL, LIME, INFRAS, ADF

FGD = FGD system, **RAIL =** Rail Yard, **LIME =** Limestone / Gypsum handling & storage, **INFRAS =** Associated Infrastructure, **ADF =** Disposal of ash & gypsum on existing Ash Disposal Facility (4-20 yrs), **WDF =** Disposal of ash, gypsum, salts & sludge on new Waste Disposal Facility (21-50 yrs)

7. Legislative requirements – EIA

EIA - National Environmental Management Act (Act 107 of 1998) as amended

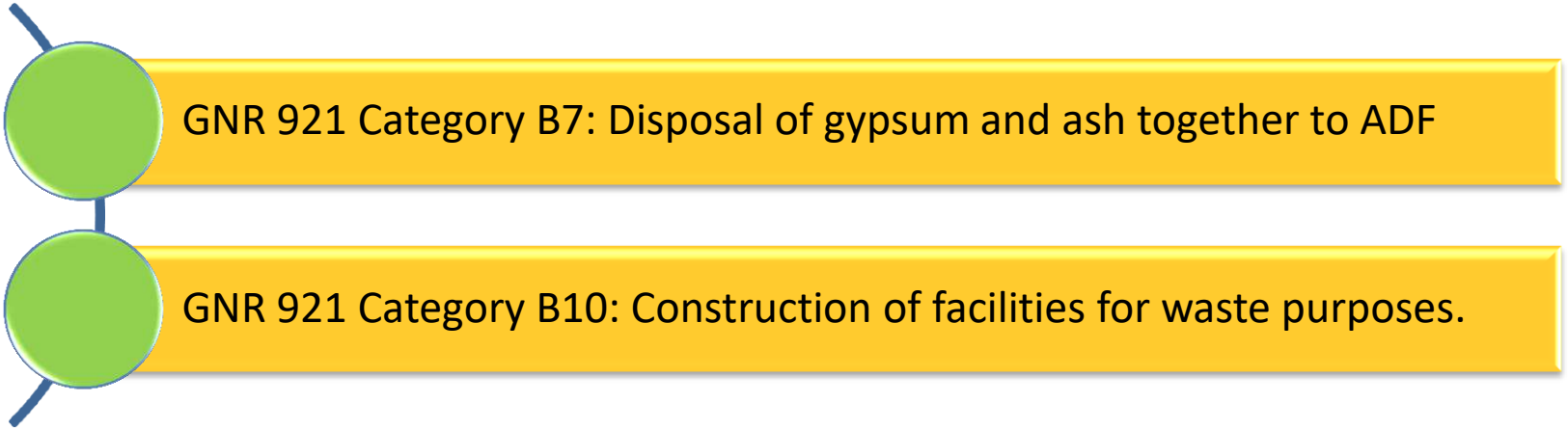
EIA Regulations of 2010 (GNR 543), as amended

- GNR 545 activity 3: Storage and handling of diesel within the FGD footprint and rail yard.
- GNR 545 activity 11: Construction of railway yard for purposes of transport of products and wastes relating to FGD process.
- GNR 545 activity 15: Alteration of undeveloped land for the railway yard of more than 20ha.

Activities 9 and 18 of GNR 544 (Basic Assessment), and 14(a)(i) of GNR 546 also triggered

7. Legislative requirements – WML

WML Variation Application – National Environmental Management: Waste Act (Act 59 of 2008) as amended.



Registration of temporary waste storage facility for storage of salts and sludge i.t.o. Schedule C of GN 921 (list of waste management activities) of the NEM:WA, and GN 926 of 29 November 2013 (Norms and Standards for Storage of Waste).

7. Legislative requirements – WULA

WULA – National Water Act (Act 36 of 1998) as amended.

- 21(c) – Construction activities associated with FGD system and rail yard carried out within the 500 m buffer of the water resources
- 21(i) – Construction activities associated with FGD system and rail yard carried out within the 500 m buffer of the water resources
- 21(g) – disposal of waste in a manner that may be detrimental to a water resource.

Environmental Impact Assessment
DEA REF: 14/12/16/3/3/3/110

FGD Infrastructure (within MPS footprint)
Rail Yard Infrastructure and Buildings
Limestone and Gypsum Handling Facilities
Associated Infrastructure (incl. fuel storage areas)
Waste Water Treatment Plant and Waste Storage Area

8. Alternatives considered (EIA)

1. Location / Layout

None – infrastructure to be fitted to footprint predefined by power station layout and infrastructure

2. Technology

Dry FGD: Slightly lower water consumption that WFGD, cannot fit within existing available space, very high capital and operating costs

Wet FGD: Fit within site space constraints, high efficiency to remove SO_2, uses more water than DFGD

Wet FGD (gas cooler): uses less water than WFGD, layout and space constraints, high maintenance & problematic during operation, reduction in unit power output, high capital and operation cost

8. Alternatives considered (EIA)

3. No-go Option

The no-go option is to continue operation of the Medupi Power Station without the FGD retrofit.

- Medupi PS not be compliant with AEL
- Need to shut down the power station
- Significant impact on economy and stability of electricity supply
- Considered FATALLY FLAWED

9. Key issues identified

- Air Quality
- Waste handling and disposal
- Water allocation and use
- Social and economic impacts of FGD
- Biodiversity and wetland impacts

10. Studies undertaken

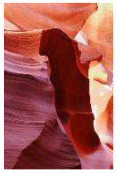

Terrestrial ecology (Biodiversity)


Aquatic and wetland ecology


Socio-economic


Air Quality


Waste classification


Groundwater


Surface water


Heritage, Archaeology


Palaeontology


Traffic


Noise


Geotechnical


Soils and land capability

11. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Geology / Geotechnical	Standard footing/ foundations systems.	**No significant** geotechnical hazards or fatal flaws identified.
Soils and Land capability	Site already disturbed, but loss of soil resources probable.	Residual impact **Moderate to Low.**
Groundwater	Impact on groundwater quality, volume and flow minor for all phases.	**Low** significance, groundwater monitoring to be undertaken.
Surface water	No significant changes in surface water runoff or flooding, no expected increases in pollutant loads.	Residual impact **Low**, implement SWMP and continue surface water monitoring.

11. Specialist conclusions (cont.)

Study area	Conclusion	Residual impact / Impact significance
Biodiversity and Wetlands	Loss of vegetation species, habitat, catchment area and fauna mortality identified . Direct loss of pans and wetlands.	Residual impact **Moderate**, in some cases **High**. Avoid / reduce vegetation clearing and impact on Sandloop tributary FEPA, "Search and Rescue", Wetland offset and rehabilitation plan.
Air quality	Scenarios included baseline air quality, Medupi PS with a/ without FGD. With FGD no exceedances of NAAQS for SO_2, NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors.	Impact significance found to be **Low, i.e. retrofit of FGD positive impact on air quality.** Specialist recommended that the FGD Retrofit Project be implemented.
Noise levels	Noise levels in the area during operation representative of suburban districts, but notable yet local during construction and decommissioning.	Specialist concluded that with noise mitigation, noise levels from the project will be **Low**. Mitigation include management of traffic and construction site.

11. Specialist conclusions (cont.)

Study area	Conclusion	Residual impact / Impact significance
Socio-economic environment	Although some negative impacts identified, **overall impact of the FGD project is overwhelmingly positive**, especially benefits from economic and employment opportunities, local economic development and *quality of life*.	Specialist concluded that significance of positive social impacts generally exceeds the significance of negative social impacts. Specialist recommend implementation of FGD retrofit.
Heritage, Archaeology & Palaeontology	No heritage, archaeological or palaeontological resources / sensitivities identified within the development footprint.	No potential / expected impact exist.
Traffic	Potential traffic delays at major intersections around Medupi PS identified.	Significance of residual impacts regarded as **Low**, recommended upgrade of identified intersections and traffic calming measures.

Variation Application for existing Medupi Waste Management Licence

WML No: 12/9/11/L50/5/R1

Disposal of gypsum and ash on existing disposal facility

Gypsum Handling Infrastructure

Associated Infrastructure, including Conveyor,

transfer houses, temp. gypsum loading area and Gypsum Storage Building

Storage of WWTP salts and sludge i.t.o. N&S for Storage of Waste (GN 926) prior construction

12. WML Variation Application

Variation application included activities:

- Disposal of ash and gypsum together on the existing ADF
- Reduction of ADF footprint, but increase in height from 60m to 72m
- Inclusion of infrastructure associated with the handling and management of gypsum waste, including:
  - Conveyor for transport of gypsum,
  - Transfer houses
  - Temporary gypsum loading area for loading of saleable gypsum onto trucks
  - Gypsum Storage Building for the storage of saleable gypsum via rail

13. Studies undertaken


Visual


Waste classification


Air Quality


ADF Concept Design


Terrestrial ecology (Biodiversity)


Aquatic and wetland ecology


Groundwater


Surface water

Impacts associated with construction of infrastructure as per the findings and conclusions of EIA

14. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Waste Assessment (disposal of ash and gypsum on ADF)	Gypsum is a Type 3 waste, same as Ash. Therefore can be disposed together with ash on disposal facility with Class C barrier system, as is the case for the Medupi ADF.	No additional impact for disposal of ash and gypsum disposed together on Class C barrier system is expected, as apposed to disposal of ash only on the Class C barrier.
Groundwater (disposal of ash and gypsum on ADF)	A specialist opinion on the impact of disposal of ash and gypsum together on groundwater concluded **no significant impact** on the groundwater regime expected.	Class C barrier system itself is a management measure to reduce any groundwater impacts. No significant residual impact expected.
Surface Water (disposal of ash and gypsum on ADF)	No additional impact on surface water runoff or quality has been identified by the surface water specialist	Surface water management system for existing ADF will continue to manage potential surface water quality and quantity impacts.

14. Specialist conclusions

Study area	Conclusion	Residual impact / Impact significance
Visual (Increase in height of WDF)	Original visual assessment for Medupi PS found impact to be Moderate (45-50m facility). VIA for increased height to 72m also Moderate, i.e. equivalent to existing ADF.	Residual impact rated as Moderate significance, same as original assessment.
Air quality (Increase in height of WDF)	Disposal of ash and gypsum together expected to create crust when mixed with water, but could contribute to dust nuisance. Simulations found no exceedances of NAAQS for PM_{10} and $PM_{2.5}$	Increase in height will have **LOW** impact significance.
Biodiversity and wetlands (Increase in height of WDF)	Gypsum is not likely to a have a major toxicological impact on biodiversity / wetlands. Probability of contamination event expected to be **Low**.	Residual impact expected to be of Moderate significance. Dust management and control main method in reducing impact potential.

Water Use Licence Application (WULA)

FGD Infrastructure (within MPS footprint)

Rail Yard Infrastructure and Buildings

Limestone and Gypsum Handling Facilities

Associated Infrastructure (incl. fuel storage areas)

Waste Water Treatment Plant and Temporary Waste Storage Area

Existing Ash Disposal Facility

15. WULA

Water Use	Infrastructure to be licenced
Section 21 (c) - Impeding or diverting the flow of water in a watercourse	Existing waste disposal facility, including the associated PCDs, and Medupi FGD footprint
Section 21 (i) - Altering the bed, banks, course or characteristics of a watercourse	Existing waste disposal facility and Medupi FGD footprint
Section 21 (g) - disposing of waste in a manner which may detrimentally impact on a water resource;	• Gypsum Transfer Houses • Gypsum Storage Building and temporary storage area • Limestone Storage Area • Limestone unloading facility at rail yard • Emergency Limestone unloading area • Pollution Control Dams (also 21(h)) • Existing Disposal Facility footprint • Sludge and Salts handing and storage areas • Dust suppression of disposal facility during construction, operation and rehabilitation

16. Stakeholder Engagement

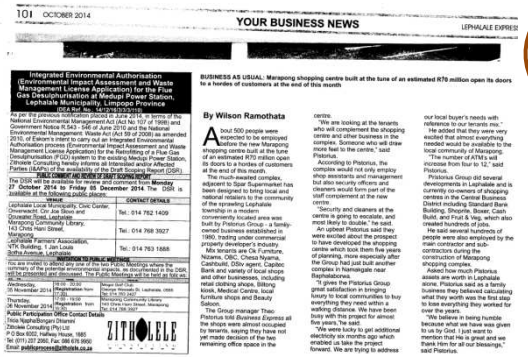
Scoping Phase

EIA Process Advert (06 June 2014) → Site Notices & BID Distribution (06 June 2014) → Draft Scoping Report (27 Oct – 05 Dec 2014 – ext to 09 January 2015)

KSW & Public Meetings (05 & 06 Nov 2014) → FSR (12 June – 13 July 2015)

EIA Process (Mogol Post)

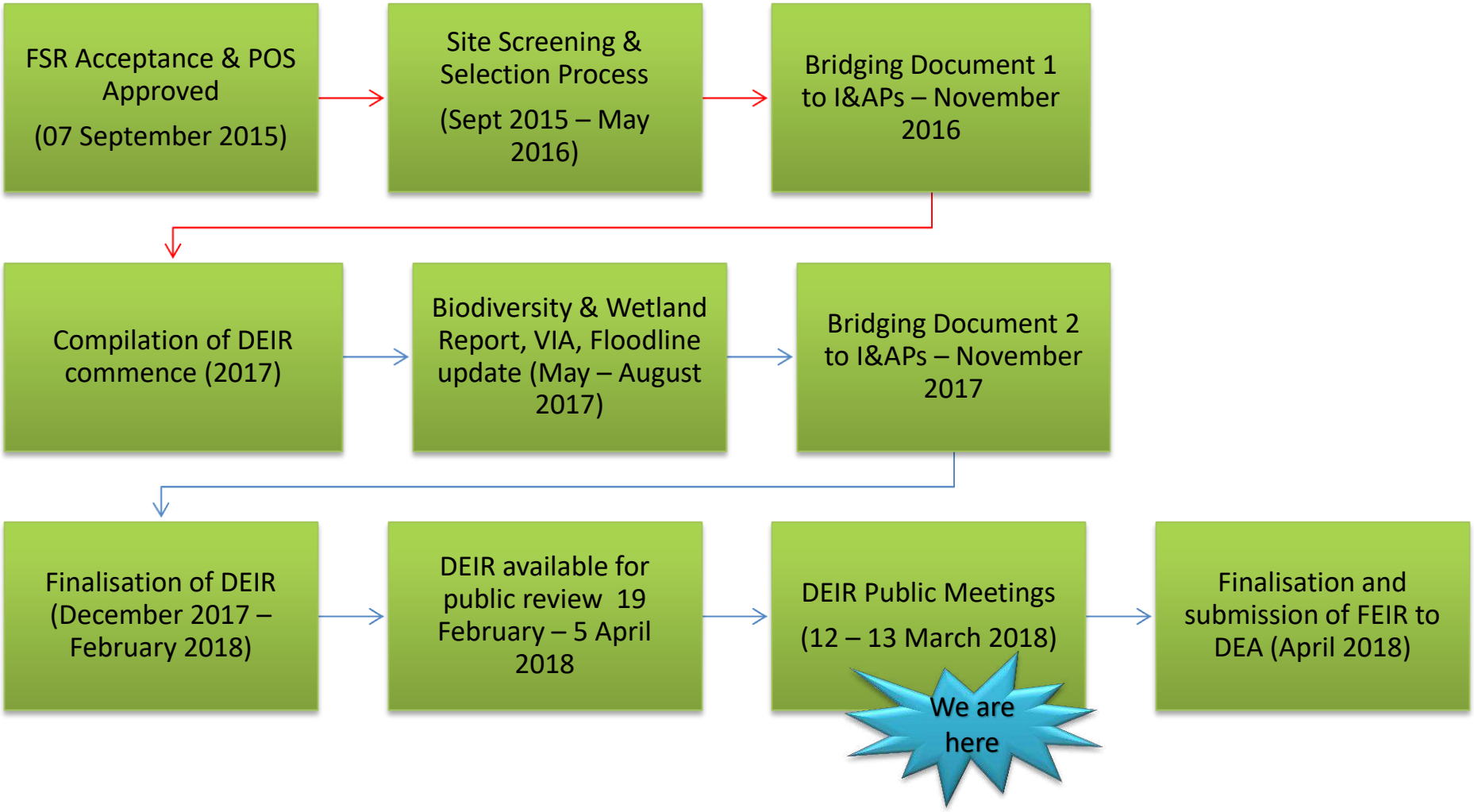
BID Distribution



DSR & PM (Lephalale Express/Mogol Post/Northern News)

16. Stakeholder Engagement

Impact Phase



17. Authority engagement

08 July 2014	• DEA • Intro project • Post application meeting
11 Nov 2014	• DEA Waste Directorate • Project info • Waste disposal methods
02 July 2015	• DEA and DWS • Gypsum disposal method
01 Oct 2015	• DEA • Dynamic info post Scoping Phase
23 February 2016	• DEA and DWS • CBA and NFEPA on site
30 November 2017	• DWS • NFEPA on site, wetland offset requirements and rehabilitation plan

18. Conclusions

- Air Quality: FGD successfully reduce impact on air quality (+ve)
- Waste handling and disposal:
    - Disposal of gypsum with ash on existing ADF – WML Variation Application
    - Storage of Salts & Sludge i.t.o. N&S Storage of Waste (GN926)
- Water allocation and use: Water allocation from MCWAP 1 & 2a
- Social and economic impacts: Residual positive impact
- Biodiversity and wetland impacts: Moderate significance with wetland loss, but residual impact with offset requirements within acceptable limits

18. Recommendation

- EAP recommendation to implement FGD system and authorised Medupi FGD Retrofit Project

19. Discussion

Mathys Vosloo / Bongani Dhlamini

Public Participation Office

Zitholele Consulting

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Halfway House

1685

Email: fgd@zitholele.co.za

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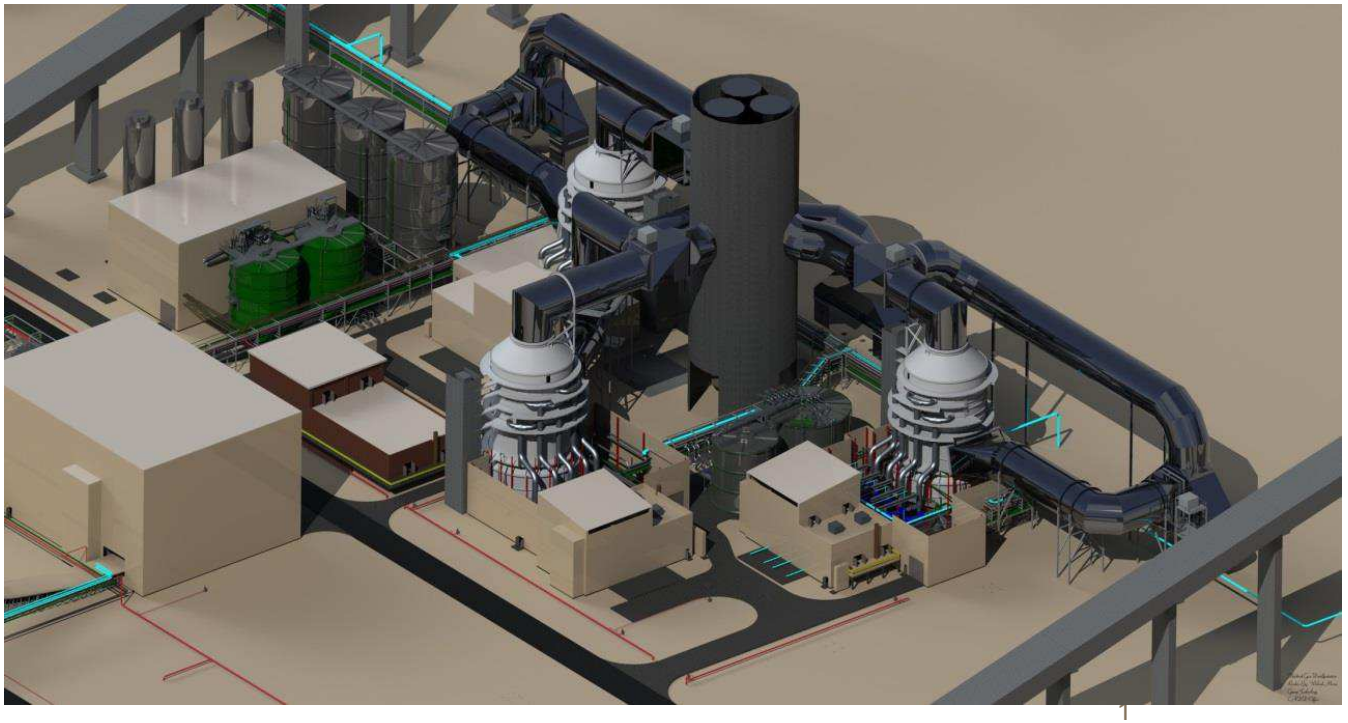
Public Meetings
Medupi Flue Gas Desulphurisation Project

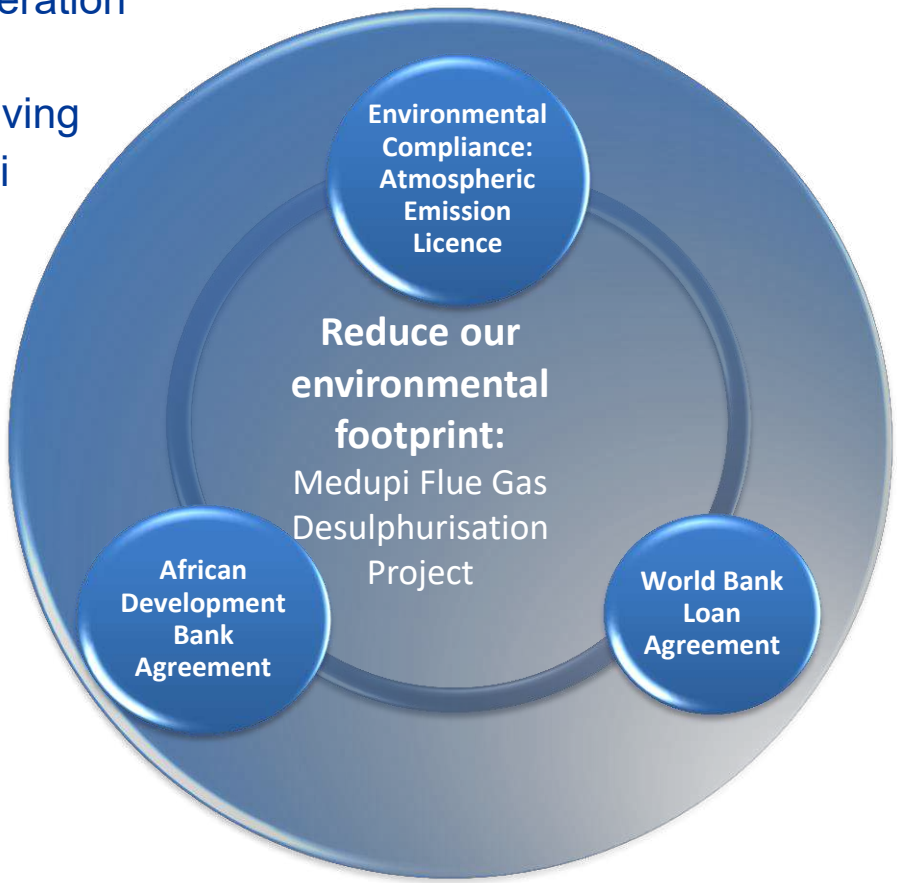
Project Update and Status



Strategic Context and Justification

STRATEGIC CONTEXT

- This project is to retrofit Flue Gas Desulphurisation (FGD) to each of the 6 Medupi units 6 years after each unit was put into commercial operation
- Eskom as a responsible Corporate Citizen have a socio-economic responsibility towards the people living and working in the immediate vicinity of the Medupi Power Station
- The project is linked to the Eskom Air Quality Strategy with the reference ESG 32-1143 of 2011 and Minimum Emission Standard application and World Bank Loan Agreement Conditions (Condition 2), the African Development Bank Loan Agreement (Article IV).



JUSTIFICATION

- Socio-Economic impact responsibility
- The project is needed to ensure compliance to:
  i.) the National Air Quality Act 39 of 2004 and the Minimum Emission Standards for SO_2 and,
  ii.) the conditions of the loan granted to Eskom by the World Bank and African Development Bank for the construction of Medupi Power Station.

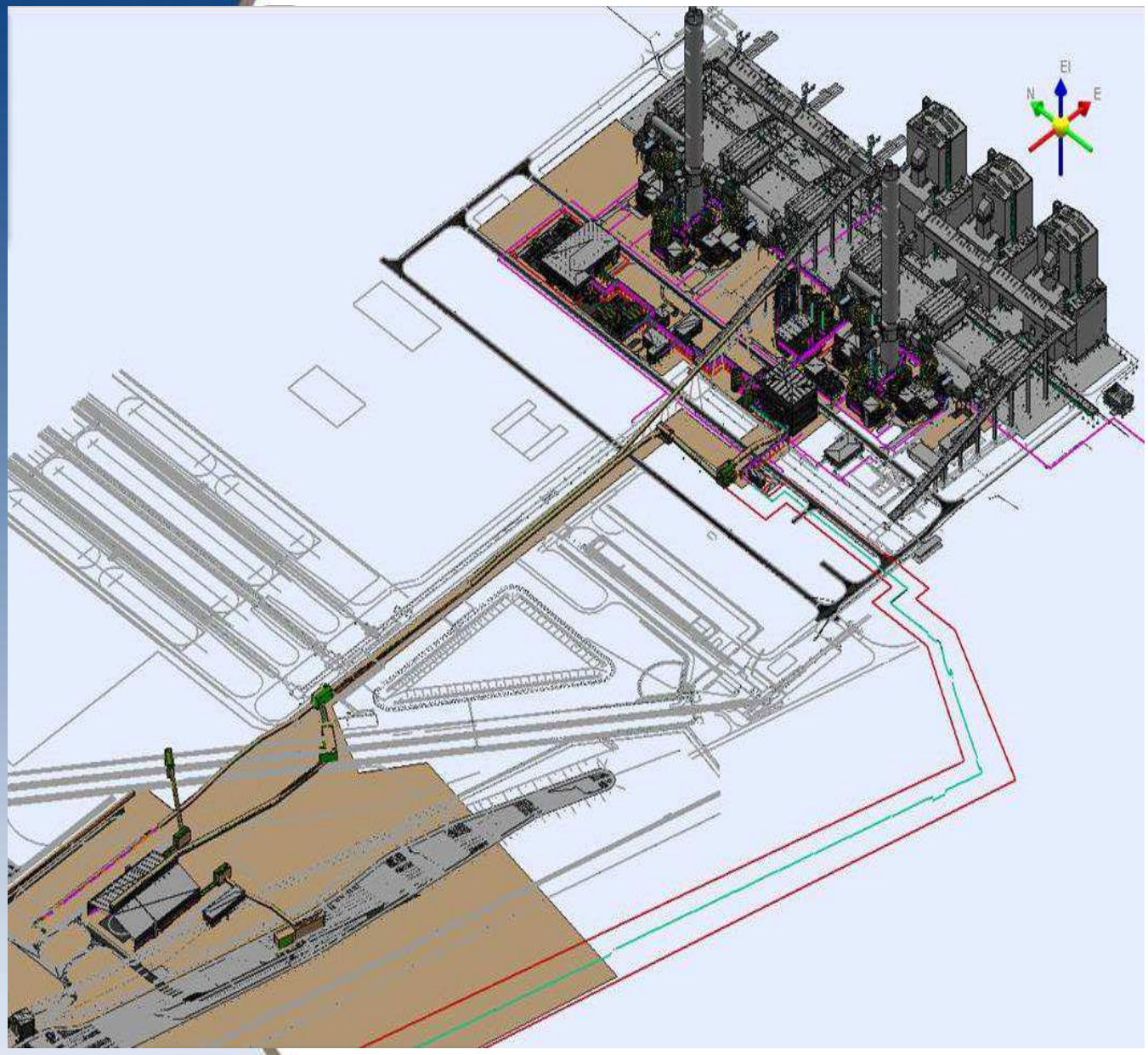
CONTROLLED DISCLOSURE

Medupi Flue Gas Desulphurisation (FGD)

Summary of statements and conclusion

- Schedule optimisation: Eskom actively pursuing schedule acceleration to meet committed dates for retrofit of four FGD units with the potential for the remaining two units under review; normal schedule indicate significant project delays. Not able to align retrofit of FGD with commercial operation of last generation units
- Technology selection: Eskom to continuing with the retrofit installation of wet flue gas desulphurisation technology at Medupi Power Station
- Direct Sorbent Injection: Eskom will not continue with the investigation into direct sorbent injection as a possible interim abatement technology
- Water Reduction Technology: Eskom will not add a flue gas cooler to the Medupi FGD retrofit project – spatial allowance will be made for future considerations

CONTROLLED DISCLOSURE



Eskom

Project Schedule

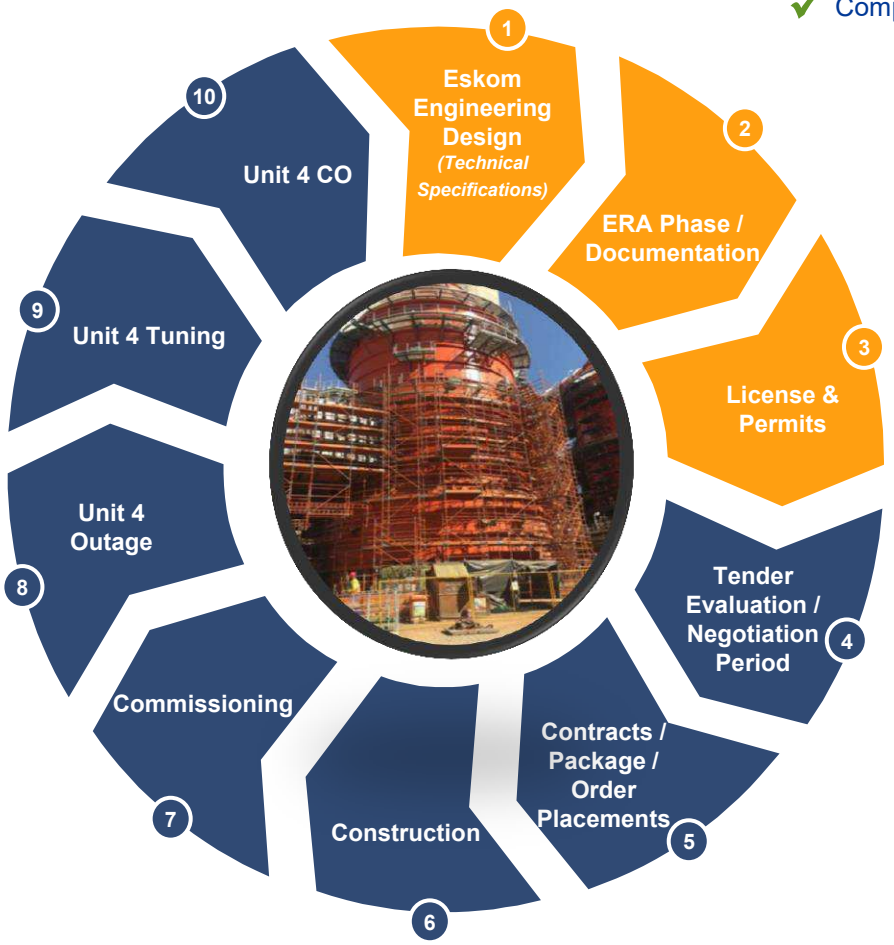
Schedule Delay

- The draft schedule dates for completion of each FGD unit outlined in Table below

Milestone Objective	Committed dates (6yrs after Unit CO)	Project schedule dates - **Jan 2018** (14 mths float
Commercial Operation U6 FGD	August 2021	**December 2027**
Commercial Operation U5 FGD	April 2023	**November 2026**
Commercial Operation U4 FGD	November 2023	**October 2025**
Commercial Operation U3 FGD	August 2024	**May 2026**
Commercial Operation U2 FGD	January 2025	**June 2027**
Commercial Operation U1 FGD	June 2025	**July 2028**

CONTROLLED DISCLOSURE

Project Key Milestones



✓ Complete | Complete (Actual Date) | Target | Current milestone in progress

	Main activities	Underlying activities	Norm Finish Date
1	Eskom Engineering Design *(Technical Specifications)*	Engineering Input for Business Case P1 – Rail, Limestone & Gypsum Storage P2 – Main Works P3 – Limestone Slurry. Dewater Gypsum P4 – Controls & Instruments P5 – Electrical P6 – Waste Water Treatment Plant P7 – Civils	23 Jan 18 21 May18 31 May 18 26 Apr 18 31 May 18 21 May 18 29 May 18 14 May18
2	ERA Phase / Documentation	Limestone Source Information PDRA Independent Project Review GCIMC – Departmental Governance CAPCOM – Divisional Governance Board IFC – Corporate Governance PFMA Sent to DPE	12 Mar18 30 Jul 18 26 Apr 18 04 Sep 18 05 Oct 18 05 Nov 18 18 Dec 18
3	License & Permits	Waste Management License (WML) Environmental Authorisation (EA) Water Usage License (WUL)	**24 Jul 18** **01 Aug 18** **28 Jan 19**
4	Tender Evaluation / Neg. Period	Contracting Strategy Approved Works Information Complete RFPs Issued to Market	02 Jul18 30 Jul 18 16 Sep19
5	Contracts / Package / Order Placements	Contract Placed (P2) Last Contract Placed (P06 on Expedited)	17 Mar 21 17 Mar 21
6	Construction	Manufacturing/ Construction	27 Feb 24
7	Commissioning	Check out/Startup/Commission	07 May 24
8	Unit 4 Outage	Unit 4 Tie In (During Outage)	11 Jun 24
9	Unit 4 Tuning	Tuning & Performance Testing Float	19 Sept 24 14 months
10	All Unit CO	Commercial Operation U4 (Nov 2023) U3 (Aug 2024) U5 (Apr 2023) U2 (Jan 2025) U6 (Aug 2021) U1 (Jun 2025)	29 Oct 25 13 May 26 25 Nov 26 09 Jun 27 22 Dec 27 05 Jul 28

Requested Dates:
U6 Date – Aug 2021
U5 Date – Apr 2023
U4 Date – Nov 2023
U3 Date – Aug 2024
U2 Date – Jan 2025
U1 Date – Jun 2025

CONTROLLED DISCLOSURE

Schedule Delay

- The draft schedule dates for completion of each FGD unit outlined in Table below

Milestone Objective	Committed dates (6yrs after Unit CO)	Project schedule dates - Jan 2018 (14 mths float	Project recovery schedule delivery dates - Jan 2018 (0 mths float)
Commercial Operation U6 FGD	August 2021	**December 2027**	**November 2024**
Commercial Operation U5 FGD	April 2023	**November 2026**	**December 2023**
Commercial Operation U4 FGD	November 2023	**October 2025**	**July 2023**
Commercial Operation U3 FGD	August 2024	**May 2026**	**November 2023**
Commercial Operation U2 FGD	January 2025	**June 2027**	**May 2024**
Commercial Operation U1 FGD	June 2025	**July 2028**	**May 2025**

**** The recovery schedule does not include PPPFA exemption or the revised Constructability schedule. Including them will result in a 9 month delay*

Eskom will not retrofit the WFGD technology in alignment with the commercial operation of the last generation units .

Project Schedule

- The construction of the Medupi FGD plant from start to completion of the first unit is likely to be forty-two (42) months, as benchmarked against international construction norms and experience.

- However, as per previous experiences in Kusile, Medupi and Ingula, Eskom has encountered that the rate of progress of Construction is lower than the International Standards.

- The following limiting factors, potential risks and cost drivers which should be considered specifically for the Medupi FGD Project and have not been allowed for in these programmes. Hence, it is of the opinion that the actual completion period would be approximately fifty (50) months due to the following factors:

  - Main vendor not yet identified – Country, technology, shipping, language and cultural influences
  - Localisation of labour and manufacturing – availability of skills and location of suitable manufacturing facilities
  - Local productivity factors – weather, labour agreements, unions, etc.
  - Particular Conditions of Contract – Legal, Guarantees, Payment terms, SD&L, SHEQ, etc.
  - Variations and claims during the construction process

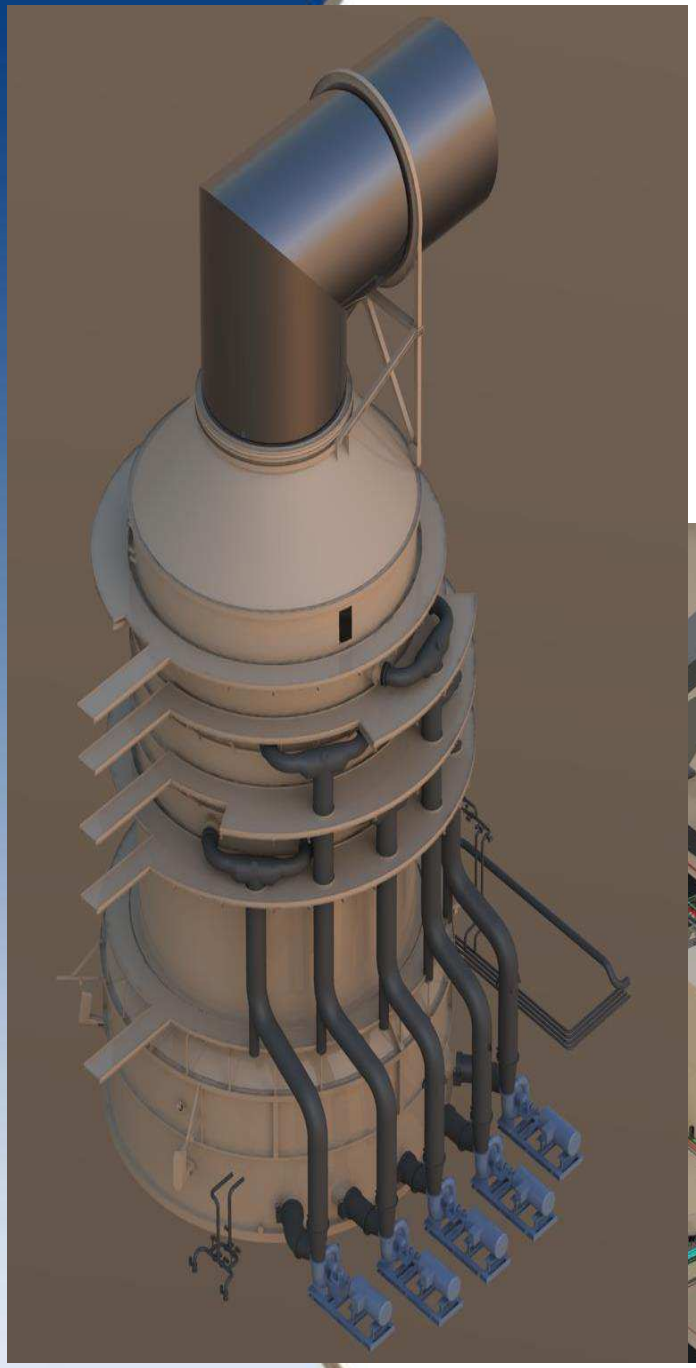
CONTROLLED DISCLOSURE

Project Schedule Cont.

- Since the FGD project is of utmost importance, it is critical that the Project should be completed within thirty-six (36) months. This would imply that the schedule would be expedited. There will be additional cost to achieve a thirty-six (36) months programme linked to an increase in construction resources and this impact needs to be quantified.

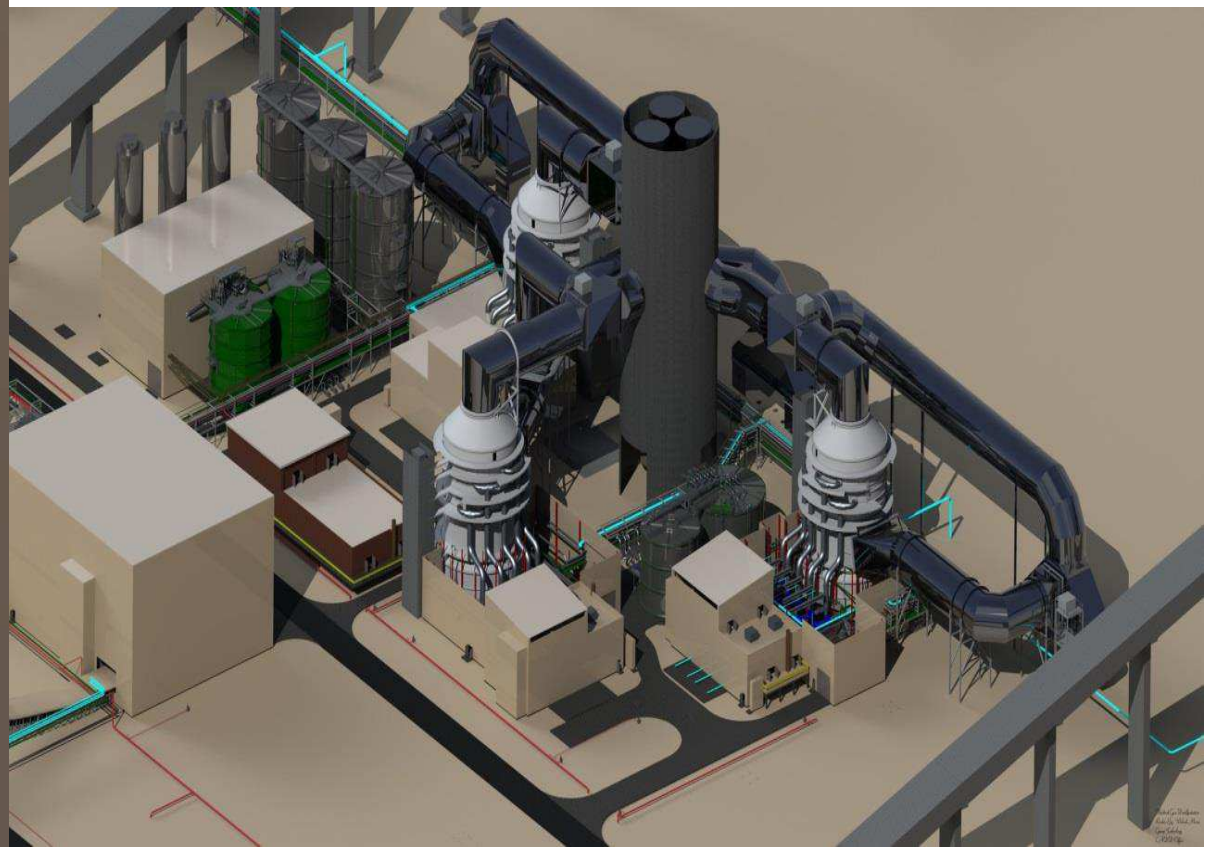
- The undertaking from Eskom is to drive the construction period to a maximum of thirty-six (36) months

CONTROLLED DISCLOSURE

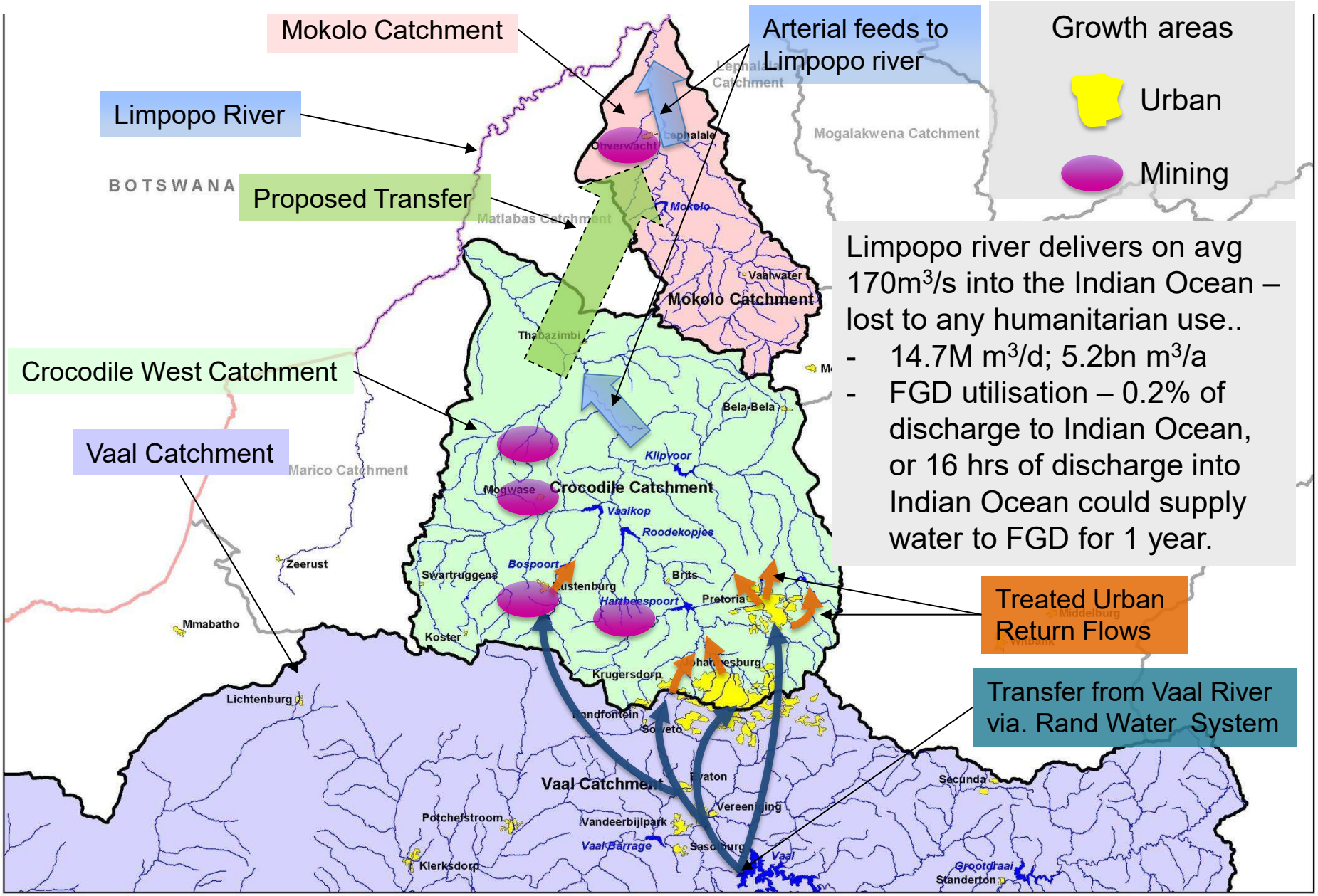


Eskom

Technology discussion



Water Resource Systems



Medupi Flue Gas Desulphurisation (FGD)
Technology selection

- Eskom did a comparable evaluation of available technologies based on performance, operational requirements, and station impact during retrofit
- The application of dry or semi-dry FGD at Medupi poses a number of challenges:
  - Extended outage durations
  - Additional and replacement infrastructure, e.g. new FFP plant
  - A larger footprint than available within the design constraints of the as-built station
  - An increased capital outlay
  - Approximately 3-4 times higher operating expenses due to sorbent cost and transportation
  - Negative environmental impacts of lime as reagent
  - Possibility of more stringent disposal conditions and changes to the waste facility liner
  - Inability to recover saleable gypsum from the waste stream
  - Require significant re-work, should atmospheric emission limits increase
- The evaluation and subsequent reviews confirmed WFGD as the preferred technology. Based on the original technology assessment Medupi has been designed and constructed to be Wet FGD ready.
- Significant plant modifications would be required to accommodate any other technology or any interim abatement solution
- The project is making spatial provision for the fitment of a flue gas cooler at a later date – a flue gas cooler will not be fitted now during the retrofit of the Medupi FGD plant

CONTROLLED DISCLOSURE

Interim Mitigation Proposal – sorbent injection

- The World Bank has requested Eskom to investigate direct in-line sorbent injection as: i.) a SO_2 peak management solution, and ii.) an interim solution to the implementation of the FGD technology under development for retrofit at Medupi.

- Group Technology has draft various documents in response to the request to investigate direct sorbent injection

- IEA Clean Coal Centre highlight the benefits of direct injection as:
  - Consume no water or a minimal amount if the sorbent needs hydrating or the flue gas is humidified to improve performance
  - Lower SO_2 removal efficiency (~40%)
  - Higher SO_3 removal efficiency (80-98%)
  - Lower parasitic power consumption
  - Smaller footprint, easier to retrofit
  - Lower capital cost, but higher operating costs
  - CO_2 emissions (carbonate-based sorbents)

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CONTROLLED DISCLOSURE

Interim Mitigation Proposal – sorbent injection

- The retrofit of direct sorbent injection will be managed as a new project; new designs, new environmental impact assessment required, amendment of waste management license as the constituents of the waste stream collectively referred to as ash would change. The time to implement a direct sorbent injection solution at Medupi would take an estimated 4-5 years.

- Pertinent points that has been mentioned include –
  - Impact on plant performance and guarantees
  - Impact on bulk material handling system requirements
  - availability of space for the implementation of two SO2 reduction projects
  - Increase in erosion rates and fouling due to solid deposits leading to blockages/plugging
  - high cost of lime (as a sorbent)
  - water to be used in the case sorbent needs to be hydrated
  - EIA impacts - unknown impact on the waste from the generation process; additional time needed for new EIA process (12-18 mths)
  - Low capital cost; extremely high operations cost for limited SO2 reduction

Interim Mitigation Proposal – sorbent injection

- The implementation of **sorbent injection** at Medupi Power Station is seen as **questionable due to the technical concerns** relating to the boiler and air preheater. The environmental concerns and timelines need to be addressed as well as the sorbent reactivity and achievable reduction efficiency proven. Furthermore, the technical capability of the current installed plant (i.e. the air heater, FFP, DHP and road infrastructure) needs to be confirmed during a conceptual engineering phase as part of a business case development process – an in-depth engineering study and pilot project would need to be conducted.
- The availability of the **specialised sorbent needed** is a challenge – need **to be engineered**. In addition there are logistical challenges to source and bring the sorbent to Medupi site. A **significant amount of sorbent** will be required for a **limited reduction of SO_2**. An estimate of **20 - 30 truckloads of sorbent per unit per day** is estimated to be required.
- The cost of the specialised sorbent is prohibitively high.
- The construction time of the sorbent injection solution has not been quantified. The execution of the wet FGD retrofit at Medupi is planned to commence in 2018. **Sorbent injection solution improbable to be implemented before the operation of the wet FGD solution**

Eskom continue with its plan to not implement any interim abatement technologies at Medupi Power Station.

Water Reduction Technology – flue gas cooling

2007

Initial basis for WFGD technology selection:
- **Technology maturity**
- **High level of commercialized operation**
- **Low life-cycle cost**

WFGD "ready" Engineering Design

2017/18

Questions surrounding:
- **Maturity of CDS?**
- **Efficient use of raw resources (water, sorbent)?**

Is WFGD (without flue gas cooling) still the most *efficient*, *sustainable* and *broadly (i.e. cost, social, technical) responsible* solution for Medupi?

3-STEP EVALUATION

TECHNICAL
1. SO_2 removal eff.
2. Technology maturity
3. Waste management
4. Water reduction
5. Infrastructure

COST
1. CAPEX
2. OPEX
3. Tariff

RAW RESOURCES
1. Cradle to grave (Sorbent, water, energy)
2. Sorbent Supply
3. Water Supply

CONTROLLED DISCLOSURE

Water Reduction Technology – 3-step Evaluation

Step 1: Technical

TECHNOLOGY MATURITY

FGD technology	SO_2 removal efficiency achievable (%)	Worldwide installed capacity (%)	Water req. (l/kWh)
WFGD	98	80	0.21
SDA/CFB	90-95	10	0.14
DSI	30-60	2	Negligible

WASTE MANAGEMENT

By-product Quantities Generated	Wet FGD	Dry FGD
Gypsum (tonnes/tonne of SO_2)	5.62	
By-product + Ash (tonnes / tonne of SO_2)		7.43
Crystallizer Salts (tonnes / tonne of SO_2)	0.48	0
Pre-treatment Solids (tonnes / tonne of SO_2)	0.92	0

- **WFGD salts & sludge- hazardous waste facility**
- **Gypsum is marketable.**
- **CDS by-product is not marketable & by-product-ash mix must be stored in a lined facility- cannot be isolated from the ash.**

WATER REDUCTION

- Medupi is ZLED and dry cooled (Energy Penalty-1.75% eff_{therm}).
- WFGD + Drying cooling- 0.35 l/kW
- Conventional Wet Cooling- 2 l/kW
- Water can only be reduced on WFGD
- Option 1: Regenerative Type H-EX
  - Large footprint req.
  - Cannot construct at Medupi.
- Option 2: Shell-&-tube cross flow H-EX
  - Acid corrosion- operation under sulphur dew point. Ash does not have a neutralisation effect.
  - Wear corrosion due to abrasive ash. Plugging of tubes due to dust fall out. Ash contamination.
  - Expensive materials (PFA, SS alloys)
  - Maintenance intensive, problematic operation, plant downtime.

CONTROLLED DISCLOSURE

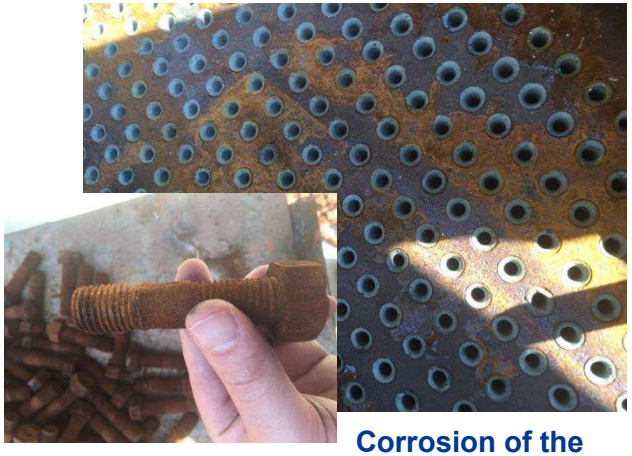
Flue gas cooling benchmarking exercise (3 power stations in Europe and 2 in China)

Side view of a tubular flue gas cooler.

Corrosion of a carbon steel tube.

Wear damage of carbon steel tube.

Water washing system cracking due to corrosion.



Corrosion of carbon steel bolt.

Corrosion of the stainless steel tube sheet.

Discolouration of the PFA tubes due to fly ash contamination.

Fly Ash build-up retrieved from the tubes during maintenance.

All three power stations in Europe advised against the installation of the system .

Flue gas cooling is not a responsible solution for Medupi-not considered further.

CONTROLLED DISCLOSURE

Water Reduction Technology – 3-step Evaluation

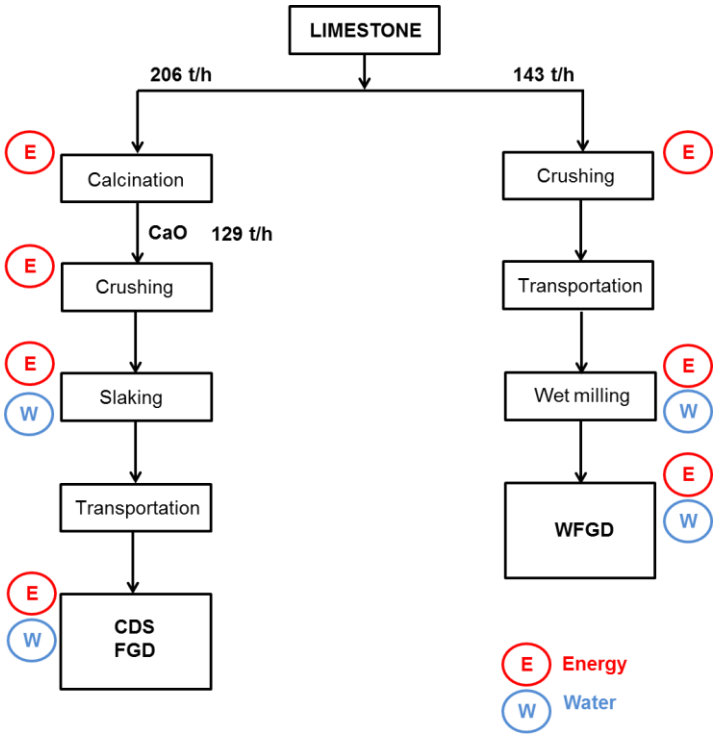
Step 2: Cost Implications

Refer to Appendix A of 474-10175 Medupi FGD Technology Study Report Rev 3.0)

Description	Option 1 Wet FGD	Option 2 Wet FGD + Gas Cooler #	Option 3 Dry FGD
Total Capital Requirements	17,677,732	18,122,432	19,277,632
Total Operating Costs	1,213,335,037	1,170,979,109	1,887,352,330

The incremental difference in terms of the **"tariff increase"** between the wet and CFB-FGD technologies is expected to be approximately **0.45%.**

Step 3: Utilisation of Raw Resources



	WFGD	WFGD (with Cooler 100°C)	CFB-FGD
Total Water (m^3/annum)	6 498 402	4 638 100	3 707 546
Total Power (MW/annum)	247 642	254 533	1 015 367
Power to Water (m^3/annum)	49 450	50 826	202 752
Total Water (m^3/annum)	6 547 852	4 688 927	3 910 298
% of Base Case	100%	72%	60%

SORBENT SUPPLY

WFGD can utilise lower quality limestone available closer to the power station. CDS requires the calcination of high quality limestone that can only be sourced from the Northern Cape.

WATER SUPPLY

Water for the WFGD will be provided from Phase 2A of the Mokolo and Crocodile Water Augmentation Project which is being developed to bring additional water to the Lephalale area from the Crocodile River Catchment

WFGD has the potential to contribute to the broader local socio-economic development- will not be possible with CDS!

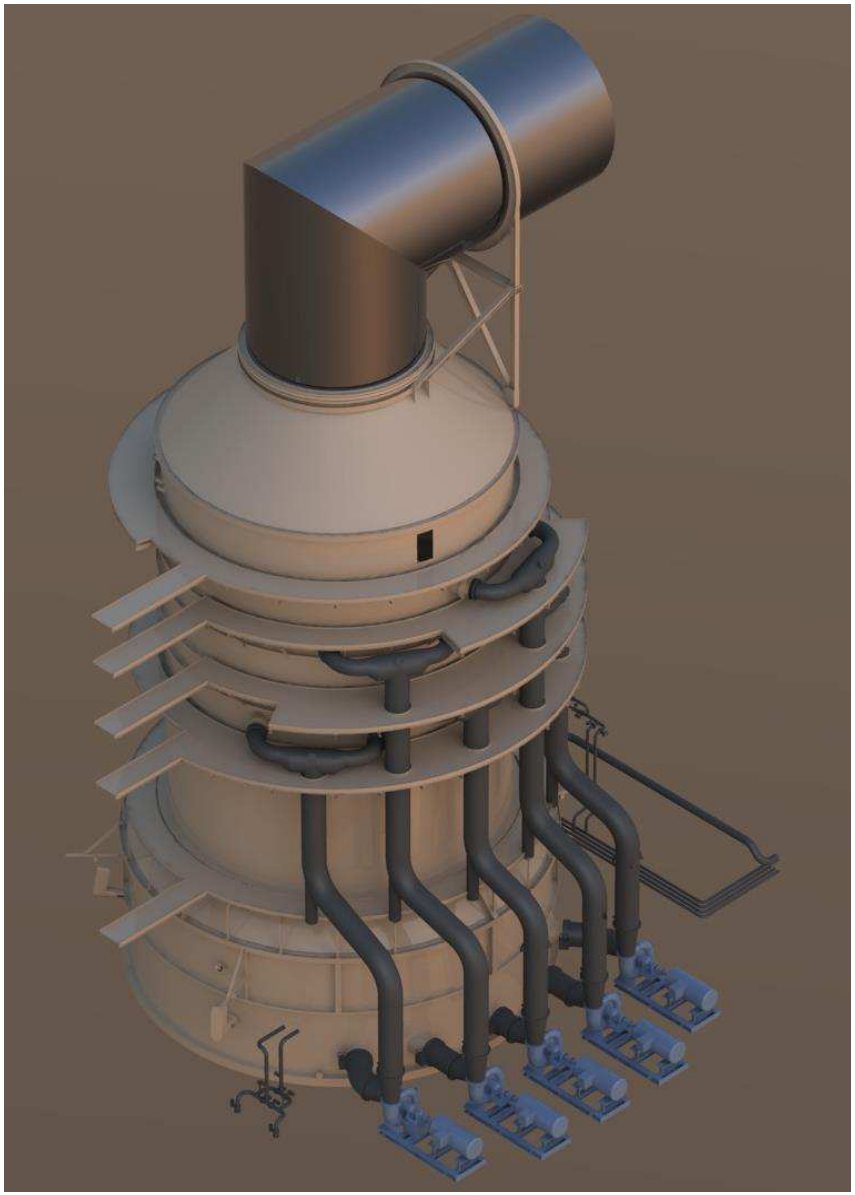
CONTROLLED DISCLOSURE

Technology Discussion

- The Medupi FGD Retrofit Project will not be fitted with any flue gas cooler technology.

- The Eskom detail design of the scrubber island will include elements to enable flue gas cooler readiness for future incorporation once: i.) the technology has matured to a level acceptable by Eskom, ii.) the operational philosophy of the flue gas cooler aligns to Eskom prescripts, and iii.) the maintenance philosophy aligns with that of Medupi Power Station. iv) the business case for such a retrofit can be developed.

Eskom continue with its plan to construct the WFGD technology without the inclusion of a flue gas cooler at Medupi.



CONCLUSION

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ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED RETROFITTING OF A FLUE GAS DESULPHURISATION (FGD) SYSTEM AT MEDUPI POWER STATION, LEPHALALE, LIMPOPO PROVINCE

Key Stakeholder Workshop (KSW)

DEA Ref.: 14/12/16/3/3/2/1060

Draft Minutes

CLIENT	:	Eskom Holdings SOC Ltd
CONSULTANT	:	Zitholele Consulting (Pty) Ltd
PROJECT	:	Medupi FGD Retrofit Project EIA
CONTRACT NO.	:	DEA REF.: 14/12/16/3/3/2/1060
PROJECT NO.	:	12949
DATE	:	14 March 2018
TIME	:	08h00-10h00
VENUE	:	Medupi Power Station Visitor Center, Lephalale

PRESENT

Please refer to the attendance register

APOLOGIES

None tendered

ITEM	DISCUSSION POINTS	ACTION, DATE
1	**WELCOME AND ATTENDANCE:** Dr Mathys Vosloo, Zitholele Consulting, welcomed all present and requested that the team and the delegates introduce themselves, including the department or organisation that they are representing. The Agenda proposed for the workshop, as below, was circulated and accepted by the delegates. The agenda, attendance register and presentations given are provided in Appendix A.	
2	**MEETING OBJECTIVES:** • Meeting to focus on Medupi FGD Retrofit Project **ONLY**; any other issues relating to operations of the Power Station will be allowed at the end of the meeting. • To present information regarding the proposed development • To present the EIA and Public Participation Processes followed to date • Provide key stakeholders overview of project activities and applications • Present findings of specialist studies • Present recommendation of the EAP and Way forward.	
3	**Project Background** Dr. Mathys Vosloo presented the project background to the attendees.	

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4	**Presentation of application process and findings** Dr. Mathys Vosloo presented the EIA process followed, specialist findings, conclusions and recommendations to the attendees.	
5	**DISCUSSIONS** • **Mr Jim Hlabiwa Letwaka:** Issue raised with regards to the pollution control for thegypsum, salt and sludge**.** What is the plan for after the 5 years of trucking the waste to the disposal site has ended. Mathys Vosloo: Gypsum is generated and taken to the disposal facility via the conveyor or. The normal pollution control procedure will be followed for the handling and management of the wastes. Disposal will also conform to the waste control procedure of the existing waste facility at the Medupi Power Station. The temporary storage of the salts and sludge will take place for a period of 5 years. During this time constructed of a new waste disposal facility should be commissioned. Sludge and salt will be transported together to the waste disposal facility. Control measures such as washing the wheels of the trucks will be implemented at the storage facility to avoid pollution, while the service provider's control measures will be implemented once the waste is loaded onto truck and transported to the appropriate waste disposal facility. Emile Marrel: Eskom is investigating the development of a regional waste facility together with local roleplayers. Eskom has scheduled a workshop with roleplayers to discuss the potential for the development of such a regional waste disposal facility. Space constraints seem to affect the proposed disposal facility and space options for access for future recovery of the sludge are being investigate which includes the constructing a regional landfill facility locally for disposal and recycling. Benefits from such a facility include environmental and socio-economic opportunities such as recycling opportunities. • **Mr Jim Hlabiwa Letwaka:** What will the timeframe for construction of the FGD be? Emile Marrel: Construction timelines are benchmarked against international time frames on similar projects. Eskom has internally relooked how they can accelerate the construction program even by employing more people on the construction teams. The planning guys are looking at how to change the sequence of construction to and optimize the construction schedule to fast track and optimize the process. It will take approximately 52-months for construction of each unit, while if we put in multiple teams Eskom should be able to complete a unit in 36 months instead of 52 months. Mathys Vosloo: So, we are looking at a construction period from about 2019 to 2025 for construction of the FGD units. Emile Marrel: The appeal process can also have a huge knock-on effect on timelines if the authorisation is appealed. Emile also explained the water system around the catchment areas from a SA perspective and how it links into the project through the MCWAP Phase 2A project, and how this link with the project is important for compliance reasons. • **Ms Lucy Make:** Eskom has not started with the FGD installment? How long will the authorization take? Mathys Vosloo: No, the commissioning of the FGD units has not commenced yet. In order to start the authorization process currently underway must be completed only then can the construction begin. This process is on a critical pathway and Eskom is already behind on its schedule for implementation. Emile Marrel: In order to start the Department of Environmental Affairs need to give permission for construction to start. We are currently in that process of providing the documentation to the authorities to make a decision for the FGD project to commence. Only once the authorization has been granted can Eskom commence with construction.	

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Mathys Vosloo: The decision-making process will take to about August 2018 to make a decision. Once a decision is made an appeal period must run its course, with construction likely to start a month or two after the appeal period has expired.

- **Ms Lucy Make:** Do you already know where the infrastructure will be placed?

Mathys Vosloo: Yes, Eskom knows exactly where they want to place the infrastructure.

- **Ms Lucy Make:** What is the difference between the existing water in the catchment and MCWAP Phase 2 water?

Emile Marrel: Phase 1 of MCWAP is now complete and unblocks bottlenecks for the supply of water to users. The water from MCWAP Phase 2 is not as pristine as the water in the Mokolo catchment, as it comes from Johannesburg to supply poor quality water for industrial uses. This will free up more water for agricultural use and human consumption.

- **Ms Lucy Make:** How many storage areas will there be for the gypsum and limestone? Will it be stored separately?

Mathys Vosloo: there is only 1 limestone storage area within the railway yard. For Gypsum there is a temporary storage area near the gypsum dewatering plant. If the gypsum is suitable for offtake, gypsum will be stored at 1 storage area within the railway yard. They gypsum and limestone will be stored together, but if gypsum is disposed it will be disposed together with ash on the Ash Disposal Facility.
Ms Lucy Make: The FGD reduces only SO_2?
Mathys Vosloo: Yes, the FGD infrastructure only reduce the SO2 emissions.
Emile Marrel: Other already installed infrastructure, such as fabric filter press, reduce the concentrations of the other gasses and particulates.

- **Ms Lucy Make:** What is the difference between the different technologies?

Mathys Vosloo: The FDG with the gas cooler requires more space and far more expensive as opposed to the wet FDG system which can be modified to be fitted into to the existing infrastructure.
Sifiso Mazibuko: Gas cooler has no long-term technical benefit at this stage to the power station and long-term viability is limited as the wear and tear on the system is a major limiting factor.

- **Ms Lucy Make: What will Eskom do after 20 years if the existing disposal facility is closed?**

Emile Marrel: A separate process will be undertaken to find an additional facility for disposal of ash and gypsum after 20 years. Other options of minimizing disposal of ash and gypsum is also being investigated by Eskom. Disposal of ash in existing mine pits is being investigated for future use, while ash can also be used to form part of other environmental process like treating acid mine drainage.

- **Mr Jim Hlabiwa Letwaka:** I just want to advise on communication with communities in this area. The proper delivery of the message is important and proper structures and channels should be used to engage with the community more meaningfully and for the communities to become more involved. Consultations should be structured to maintain integrity and reduce the chances of appeals. It is advised that community liaison people should be appointed and the ease of language for better interpretation and communication.

Emile Marrel: It is a very important point that you are raising. It is something that we are all struggling with and we are learning from it.
Mathys Vosloo: It is something that we will focus on more specifically. We did put up posters and send out notifications and smsed. The point is taken, thank you for your

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	comments.	
6	**Closure** The meeting was closed after discussions has been concluded.	

ACTION	FUNCTION	NAME	DATE	SIGNATURE
Prepared				
Reviewed				
Approved				