NEC3 Engineering & Construction Contract

Between	**ESKOM HOLDINGS SOC Ltd (Reg No. 2002/015527/30)**	
and	**[Insert at award stage] (Reg No. _____)**	
for	**Medupi Power Station Coal Plant Chute Optimization**	
Contents:		**No of pages**
Part C1	**Agreements & Contract Data**	**[●]**
Part C2	**Pricing Data**	**[●]**
Part C3	**Scope of Work**	**[●]**
Part C4	**Site Information**	**[●]**
CONTRACT No.	**[Insert at award stage]**	

Part C1: Agreements & Contract Data

C1.1 Form of Offer & Acceptance

Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

Medupi Coal Plant Chute Optimization

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

Options B	The offered total of the Prices exclusive of VAT is	**R**
	The first forecast of the total Defined Cost plus the Fee exclusive of VAT is	**R**
	Sub total	**R**
	Value Added Tax @ 15% is	**R**
	The offered total of the amount due inclusive of VAT is[1]	**R**
	(in words)	

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Contractor* in the *conditions of contract* identified in the Contract Data.

Signature(s)				
Name(s)				
Capacity				
For the tenderer:				
Name & signature of witness	*(Insert name and address of organisation)*		Date	
Tenderer's CIDB registration number (if applicable)				

[1] This total is required by the *Employer* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.

Acceptance

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the Employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
Part C2	Pricing Data
Part C3	Scope of Work: Works Information
Part C4	Site Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy signed between them of this document, including the Schedule of Deviations (if any).

Unless the tenderer (now *Contractor*) within five working days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the Parties.

Signature(s)			
Name(s)	Thozama Gangi		
Capacity	General Manager Medupi Power Station		
for the Employer	Eskom Holdings SOC Limited Medupi Power Station Steenbokpan Road Lephalale 0555		
	(Insert name and address of organisation)		
Name & signature of witness		Date	

Note: If a tenderer wishes to submit alternative tenders, use another copy of this Form of Offer and Acceptance.

Schedule of Deviations to be completed by the *Employer* prior to contract award

Note:

1. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
1	**[●]**	**[●]**
2	**[●]**	**[●]**
3	**[●]**	**[●]**
4	**[●]**	**[●]**
5	**[●]**	**[●]**
6	**[●]**	**[●]**
7	**[●]**	**[●]**

By the duly authorised representatives signing this Schedule of Deviations below, the Employer and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the Employer during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

	For the tenderer:	**For the Employer**
Signature		
Name		Thozama Gangi
Capacity		General Manager
On behalf of		Medupi Power Station Eskom Holdings SOC Ltd Steenbokpan Road Lephalale 0555
Name & signature of witness		
Date		

C1.2 ECC3 Contract Data

Part one - Data provided by the *Employer*

1. Please read the relevant clauses in the conditions of contract before you enter data. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data.

2.Some ECC3 options are always selected by Eskom Holdings SOC Ltd. The remaining ECC3 options are identified by shading in the left hand column. In the event that the option is not required select and delete the whole row. Where the following symbol is used "**[●]" -** data is required to be inserted relevant to the specific option selected.]

Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

Clause	Statement	Data
1	**General**	
	The *conditions of contract* are the core clauses and the clauses for main Option	**B: Priced contract with bill of quantities**
	dispute resolution Option	**W1: Dispute resolution procedure**
	and secondary Options	**X1: Price adjustment for inflation**
		X2 Changes in the law
		X5: Sectional Completion
		X7: Delay damages
		X13: Performance Bond
		X16: Retention
		X18: Limitation of liability
		Z: *Additional conditions of contract*
	of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)	
10.1	The *Employer* is (Name):	**Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa**
	Address	**Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg**
10.1	The *Project Manager* is: (Name)	**[●]**

	Address	**[●]**
	Tel	**[●]**
	Fax	**[●]**
	e-mail	**[●]**
10.1	The *Supervisor* is: (Name)	**[●]**
	Address	**[●]**
	Tel No.	**[●]**
	Fax No.	**[●]**
	e-mail	**[●]**
11.2(13)	The *works* are	**Medupi Power Station Coal Plant Chute Optimization**
11.2(14)	The following matters will be included in the Risk Register	• **Adverse weather conditions (Rain, Wind, Heatwave and Hailstorm).** • **Labour strike and community unrest.** • **Normal Construction hazardous working with machinery.** • **Procurement (lead time)** • **Substantial Procurement of material when required.** • **Security of equipment, material and resource.** • **Access constraints and interfaces with others.** • **Interface and integration of works with the running plant and other Contractors.** • **Disease outbreak impact on labour force.** • **Plant access from other Contractors.** • **Working at Heights.** • **Hazardous Gas.** • **Electrocution.** • **Power supply interruptions or failure.** • **Dehydration (hot weather conditions).** • **Coal dust.** • **Fire and Smoke** • **Snakes** • **Any other risk identified during the execution of the works will be updated on the risk register.**
11.2(15)	The *boundaries of the site* are	**Medupi Power Station Coal Plant**
11.2(16)	The Site Information is in	**Part 4: Site Information**
11.2(19)	The Works Information is in	**Part 3: Scope of Work and all documents and drawings to which it makes reference.**
12.2	The *law of the contract* is the law of	**the Republic of South Africa**

13.1	The *language of this contract* is	**English**		
13.3	The *period for reply* is	**One week and 24 hours for emergency**		
2	**The *Contractor's* main responsibilities**	**Data required by this section of the core clauses is provided by the *Contractor* in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data.**		
3	**Time**			
11.2(3)	The *completion date* for the whole of the *works* is	**[**		
11.2(9)	The *key date*s and the *condition*s to be met are:	***Condition* to be met**		***key date***
		1	**Prelim design**	**3 months after award**
		2	**Detail design and signoff**	**6 months after completion**
		3	**Procurement of material**	**3 months after design approval**
		4	**Manufacturing of components**	**6 months of approval design approval**
		5	**Site mobilization**	**Only after 80% of components are manufactured and FATS done**
		6	**Construction and Installation**	**18 months after contract award**
30.1	The *access dates* are:	**Part of the Site**		**Date**
		1	**Medupi Power Station**	**Directly after contract award and site access granted**
		2	**Coal Chute Plant area for installation**	**Only after 80% of components are manufactured and FATS done**
31.1	The *Contractor* is to submit a first programme for acceptance within	**One week of the Contract Award Date.**		
31.2	The *starting date* is			
32.2	The *Contractor* submits revised programmes at intervals no longer than	**Two weeks.**		

35.1	The *Employer* is not willing to take over the *works* before the Completion Date.	
4	**Testing and Defects**	
42.2	The *defects date* is	**52 weeks after Completion of the whole of the *works*.**
43.2	The *defect correction period* is	**2 weeks**
	except that the *defect correction period* for	**Emergency is 24hours**
	and the *defect correction period* for	**Load loss is 24hours**
5	**Payment**	
50.1	The *assessment interval* is	**The 25TH day of each successive month.**
51.1	The *currency of this contract* is the	**South African Rand (ZAR).**
51.2	The period within which payments are made is	30 calendar days after reception of a valid tax invoice for contracts valued below R50 000 0000.00 (Fifty Million Rands) excluding VAT. 60 calendar days after reception of a valid tax invoice for contracts valued R50 000 0000.00 (Fifty Million Rands) excluding VAT and above"
51.4	The *interest rate* is	**the publicly quoted prime rate of interest (calculated on a 365 day year) charged from time to time by the Standard Bank of South Africa Limited (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands.**
6	**Compensation events**	
60.1(13)	Assumed values for the ten-year return *weather data* for each *weather measurement* for each calendar month are:	**As stated in Annexure A to this Contract Data provided by the *Employer*.**
7	**Title**	**There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.**
8	**Risks and insurance**	
80.1	These are additional *Employer*'s risks	**1. None**
		2.
		3.
9	**Termination**	**There is no reference to Contract Data in this section of the core clauses and terms in italics used in this**

		section are identified elsewhere in this Contract Data.		
10	**Data for main Option clause**			
B	**Priced contract with bill of quantities**			
60.6	The *method of measurement* is	**[●] published by [●] and amended as stated in Part C2.1, Pricing Assumptions.**		
11	**Data for Option W1**			
W1.1	The *Adjudicator* is	**the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).**		
W1.2(3)	The *Adjudicator nominating body* is:	**the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body.**		
W1.4(2)	The *tribunal* is:	**arbitration.**		
W1.4(5)	The *arbitration procedure* is	**the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.**		
	The place where arbitration is to be held is	**Johannesburg South Africa**		
	The person or organisation who will choose an arbitrator - if the Parties cannot agree a choice or - if the arbitration procedure does not state who selects an arbitrator, is	**the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.**		
12	**Data for secondary Option clauses**			
X1	**Price adjustment for inflation**			
X1.1(a)	The *base date* for indices is	**The month before the month in which the enquiry closed. Rates are fixed and firm for first 12 Months after first order placement date. There after CPA escalation will apply.**		
X1.1(c)	The proportions used to calculate the Price Adjustment Factor are:	**Proportion**	**linked to index for**	**Index prepared by**
	Design and DEM	**85%**	**Labour Index:**	**SEIFSA**

			Table: G-1 (Mechanical Engineering)	
		15%	**Fixed [non-adjustable]**	
	Total	**100%**		
	<u>Procurement</u>	**85%**	**Material Index: Table Q-1(A) (Corrosion Resistant Hot Rolled Steel Plates)**	**SEIFSA**
		15%	**Fixed [non-adjustable]**	
	Total	**100%**		
	Fabrication	**85%**	**Labour Index: Table C-4**	**SEIFSA**
		15%	**Fixed [non-adjustable]**	
	Total	**100%**		
	Delivery	**85%**	**Transport (Road Freight Costs) Index: Table L-2(B)**	**SEIFSA**
		15%	**Fixed [non-adjustable]**	
	Total	**100%**		
	Construction, Erection & Installation	**85%**	**Labour Index: Table C-3 (Actual Labour Cost)**	**SEIFSA**
		15%	**Fixed [non-adjustable]**	
	Total	**100%**		
	Commissioning	**85%**	**Labour Index: Table: G-1 (Mechanical Engineering)**	**SEIFSA**
		15%	**Fixed [non-adjustable]**	
	Total	**100%**		
	<u>PRELIMINARIES & GENERAL</u>	**85%**	**P&G - Consumer**	**SEIFSA**

			Price (CPI) Index: Table D-4	
		15%	**Fixed [non-adjustable]**	
	Total	**100%**		
X2 X2.1	**Changes in the law**	**There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.** **The law of the project is the law of the Republic of South Africa**		
X5	**Sectional Completion**			
X5.1	The *completion date* for each *section* of the *works* is:	***Section***	**Description**	***Completion date***
			Design and DEM	**As per accepted programme**
			Procurement	**As per accepted programme**
			Fabrication	**As per accepted programme**
			Delivery to site	**As per accepted programme**
			Construction, Erection and installation	**As per accepted programme**
			Commissioning and testing	**As per accepted programme**
X5 & X7	**Sectional Completion and delay damages used together**			
X7.1 X5.1	Delay damages for late Completion of the *section*s of the *works* are:	***section***	**Description**	**Amount per day**
			Design and DEM	**R5000**
			Procurement	**R5000**
			Fabrication	**R5000**
			Delivery to site	**R2000**

			Construction, Erection and installation	**R2000**
			Commissioning and testing	**R2000**
	Remainder of the *works*			**R1000**
	The total delay damages payable by the *Contractor* does not exceed:		**10% of the total prices**	
X13	**Performance bond**			
X13.1	The amount of the performance bond is	**10% of the total of the prices**		
X16	**Retention (not used with Option F)**			
X16.1	The *retention free amount* is	**R (Zero Rand)**		
	The *retention percentage* is	**5% of the total Price for each invoice amount**		
X18	**Limitation of liability**			
X18.1	The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to:	**R0.0 (zero Rand)**		
X18.2	For any one event, the *Contractor*'s liability to the *Employer* for loss of or damage to the *Employer*'s property is limited to:	**the amount of the deductibles relevant to the event**		
X18.3	The *Contractor*'s liability for Defects due to his design which are not listed on the Defects Certificate is limited to	**The greater of** • **the total of the Prices at the Contract Date** **and** • **the amounts excluded and unrecoverable from the *Employer*'s assets policy for correcting the Defect (other than the resulting physical damage which is not excluded) plus the applicable deductible as at contract date.**		
X18.4	The *Contractor*'s total liability to the *Employer* for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	**the total of the Prices other than for the additional excluded matters.** **The *Contractor's* total liability for the additional excluded matters is not limited.** **The additional excluded matters are amounts for which the *Contractor* is liable under this contract for** • Defects due to his design which arise before the Defects Certificate is issued, • Defects due to manufacture and fabrication outside the Site, loss of or damage to property (other than t the *works*, Plant and Materials). • death of or injury to a person and infringement of an intellectual property right.		
X18.5	The *end of liability date* is	**(i) Three (3) years after the *defects date* for latent Defects and**		

		(ii) the date on which the liability in question prescribes in accordance with the Prescription Act No. 68 of 1969 (as amended or in terms of any replacement legislation) for any other matter. **A latent Defect is a Defect which would not have been discovered on reasonable inspection by the *Employer* or the *Supervisor* before the *defects date*, without requiring any inspection not ordinarily carried out by the *Employer* or the *Supervisor* during that period.** **If the *Employer* or the *Supervisor* do undertake any inspection over and above the reasonable inspection, this does not place a greater responsibility on the *Employer* or the *Supervisor* to have discovered the Defect.**
Z	**The *Additional conditions of contract* are**	**Z1 to Z15 always apply.**
Z1	**Cession delegation and assignment**	
Z1.1	The *Contractor* does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer.*	
Z1.2	Notwithstanding the above, the *Employer* may on written notice to the *Contractor* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.	
Z2	**Joint ventures**	
Z2.1	If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Employer* for the performance of this contract.	
Z2.2	Unless already notified to the *Employer*, the persons or organisations notify the *Project Manager* within two weeks of the Contract Date of the key person who has the authority to bind the *Contractor* on their behalf.	
Z2.3	The *Contractor* does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the *Employer* having been given to the *Contractor* in writing.	
Z3	**Change of Broad Based Black Economic Empowerment (B-BBEE) status**	
Z3.1	Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor*'s B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.	
Z3.2	The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Project Manager* within thirty days of the notification or as otherwise instructed by the *Project Manager*.	
Z3.3	Where, as a result, the *Contractor's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor*'s	

	obligation to Provide the Works.
Z3.4	Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are P1, P2 and P3 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.
Z4	**Confidentiality**
Z4.1	The *Contractor* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.
Z4.2	If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Project Manager*.
Z4.3	In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.
Z4.4	The taking of images (whether photographs, video footage or otherwise) of the *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Project Manager*. All rights in and to all such images vests exclusively in the *Employer*.
Z4.5	The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.
Z5	**Waiver and estoppel: Add to core clause 12.3:**
Z5.1	Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Project Manager*, the *Supervisor*, or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.
Z6	**Health, safety and the environment: Add to core clause 27.4**
Z6.1	The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *works*. Without limitation the *Contractor*: accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Site; warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of *works*; and undertakes, in and about the execution of the *works*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the

	foregoing.
Z6.2	The *Contractor*, in and about the execution of the *works*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.
Z7	**Provision of a Tax Invoice and interest. Add to core clause 51**
Z7.1	Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer*'s procedures stated in the Works Information, showing the amount due for payment equal to that stated in the payment certificate.
Z7.2	If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms of core clause 51.2 is then calculated from the delayed date by when payment is to be made.
Z7.3	The *Contractor* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer*'s VAT number 4740101508 on each invoice he submits for payment.
Z8	**Notifying compensation events**
Z8.1	Delete from the last sentence in core clause 61.3, "unless the *Project Manager* should have notified the event to the *Contractor* but did not".
Z9	***Employer's* limitation of liability**
Z9.1	The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand)
Z9.2	The *Contractor*'s entitlement under the indemnity in 83.1 is provided for in 60.1(14) and the *Employer*'s liability under the indemnity is limited.
Z10	**Termination: Add to core clause 91.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":**
Z10.1	or had a business rescue order granted against it.
Z11	**Addition to secondary Option X7 Delay damages (if applicable in this contract)**
Z11.1	If the amount due for the *Contractor*'s payment of delay damages reaches the limits stated in this Contract Data for Option X7 or Options X5 and X7 used together, the *Employer* may terminate the *Contractor*'s obligation to Provide the Works using the same procedures and payment on termination as those applied for reasons R1 to R15 or R18 stated in the Termination Table.

Z12	**Ethics**
For the purposes of this Z-clause, the following definitions apply:	
Affected Party	means, as the context requires, any party, irrespective of whether it is the *Contractor* or

	a third party, such party's employees, agents, or Subcontractors or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,
Coercive Action	means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,
Collusive Action	means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,
Committing Party	means, as the context requires, the *Contractor*, or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractor or the Subcontractor's employees,
Corrupt Action	means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,
Fraudulent Action	means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
Obstructive Action	means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and
Prohibited Action	means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

Z12.1	A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.
Z12.2	The *Employer* may terminate the *Contractor*'s obligation to Provide the Services if a Committing Party has taken such Prohibited Action and the *Contractor* did not take timely and appropriate action to prevent or remedy the situation, without limiting any other rights or remedies the *Employer* has. It is not required that the Committing Party had to have been found guilty, in court or in any other similar process, of such Prohibited Action before the *Employer* can terminate the *Contractor*'s obligation to Provide the Services for this reason.
Z12.3	If the *Employer* terminates the *Contractor*'s obligation to Provide the Services for this reason, the amounts due on termination are those intended in core clauses 92.1 and 92.2.
Z12.4	A Committing Party co-operates fully with any investigation pursuant to alleged Prohibited Action. Where the *Employer* does not have a contractual bond with the Committing Party, the *Contractor* ensures that the Committing Party co-operates fully with an investigation.
Z13	**Insurance**
Z 13.1	**Replace core clause 84 with the following:**

Insurance cover	**84**	
	84.1	When requested by a Party, the other Party provides certificates from his insurer or broker stating that the insurances required by this contract are in force.
	84.2	The *Contractor* provides the insurances stated in the Insurance Table A.

	84.3	The insurances provide cover for events which are at the *Contractor*'s risk from the *starting date* until the earlier of Completion and the date of the termination certificate.
		INSURANCE TABLE A

Insurance against	Minimum amount of cover or minimum limit of indemnity
Loss of or damage to the *work*s, Plant and Materials	The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible, as at Contract Date, where covered by the *Employer*'s insurance
Loss of or damage to Equipment	The replacement cost
Liability for loss of or damage to property (except the *work*s, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the *Contractor*) caused by activity in connection with this contract	<u>Loss of or damage to property</u> <u>*Employer*'s property</u> The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible, as at Contract Date, where covered by the *Employer*'s insurance <u>Other property</u> The replacement cost <u>Bodily injury to or death of a person</u> The amount required by applicable law
Liability for death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law

Z 13.2		**Replace core clause 87 with the following:** The *Employer* provides the insurances stated in the Insurance Table B.
		INSURANCE TABLE B

Insurance against or name of policy	**Minimum amount of cover or minimum limit of indemnity**
Assets All Risk	Per the insurance policy document
Contract Works insurance	Per the insurance policy document
Environmental Liability	Per the insurance policy document
General and Public Liability	Per the insurance policy document
Transportation (Marine)	Per the insurance policy document
Motor Fleet and Mobile Plant	Per the insurance policy document
Terrorism	Per the insurance policy document
Cyber Liability	Per the insurance policy document

		Nuclear Material Damage and Business Interruption	Per the insurance policy document
		Nuclear Material Damage Terrorism	Per the insurance policy document

Z14	**Nuclear Liability**
Z14.1	The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.
Z14.2	The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or resulting from nuclear damage, as defined in Act 47 of 1999, save to the extent that any liabilities are incurred due to the unlawful intent of the *Contractor* or any other person or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
Z14.3	Subject to clause Z14.4 below, the *Employer* waives all rights of recourse, arising from the aforesaid, save to the extent that any claims arise or liability is incurred due or attributable to the unlawful intent of the *Contractor* or any other person, or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
Z14.4	The *Employer* does not waive its rights provided for in section 30 (7) of Act 47 of 1999, or any replacement section dealing with the same subject matter.
Z14.5	The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.
Z15	**Asbestos**
For the purposes of this Z-clause, the following definitions apply:	
AAIA	means approved asbestos inspection authority.
ACM	means asbestos containing materials.
AL	means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
Ambient Air	means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means occupational exposure limit.

Parallel Measurements	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
Safe Levels	means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
Standard	means the *Employer*'s Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles.
SANAS	means the South African National Accreditation System.
TWA	means the average exposure, within a given workplace, to airborne asbestos fibres, normalized to the baseline of a 4hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA.

Z15.1	The *Employer* ensures that the Ambient Air in the area where the *Contractor* will Provide the Services conforms to the acceptable prescribed South African standard for asbestos, as per the regulations published in GNR 155 of 10 February 2002, under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) ("Asbestos Regulations"). The OEL for asbestos is 0.2 regulated asbestos fibres per millilitre of air as a 4-hour TWA, averaged over any continuous period of four hours, and the short term exposure limit of 0.6 regulated asbestos fibres per millilitre of air as a 10-minute TWA, averaged over any 10 minutes, measured in accordance with HSG248 and monitored according to HSG173 and OESSM.
Z15.2	Upon written request by the *Contractor*, the *Employer* certifies that these conditions prevail. All measurements and reporting are affected by an independent, competent, and certified occupational hygiene inspection body, i.e. a SANAS accredited and Department of Employment and Labour approved AAIA. The *Contractor* may perform Parallel Measurements and related control measures at the *Contractor*'s expense. For the purposes of compliance, the results generated from Parallel Measurements are evaluated only against South African statutory limits as detailed in clause Z15.1. Control measures conform to the requirements stipulated in the AAIA-approved asbestos work plan.
Z15.3	The *Employer* manages asbestos and ACM according to the Standard.
Z15.4	In the event that any asbestos is identified while Providing the Services, a risk assessment is conducted and if so required, with reference to possible exposure to an airborne concentration of above the AL for asbestos, immediate control measures are implemented and relevant air monitoring conducted in order to declare the area safe.
Z15.5	The *Contractor*'s personnel are entitled to stop working and leave the contaminated area forthwith until such time that the area of concern is declared safe by either Compliance Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.
Z15.6	The *Contractor* continues to Provide the Services, without additional control measures presented, on presentation of Safe Levels. The contractually agreed dates to Provide the Services, including the Completion Date, are adjusted accordingly. The contractually agreed dates are extended by the notification periods required by regulations 3 and 21 of the Asbestos Regulations, 2001.
Z15.7	Any removal and disposal of asbestos, asbestos containing materials and waste, is done by a registered asbestos contractor, instructed by the *Employer* at the *Employer*'s expense, and conducted in line with South African legislation.

Annexure A: One-in-ten-year-return *weather data* obtained from SA Weather Bureau for [weather station]

If any one of these *weather measurements* recorded within a calendar month, before the Completion Date for the whole of the *works* and at the place stated in this Contract Data is shown to be more adverse than the amount stated below then the *Contractor* may notify a compensation event.

Lephalale (One-In-Ten-Year)

South African Weather Service

Lephalale- (1983-2022)

Comp No: 7888

	One-in-ten-year-return			
Month	Cumulative rainfall (mm)	Number of days with rain more than 10mm	Number of days with min air temp < 0 °C	Number of days with snow lying at 08:00 CAT
JAN	155.8	4	0	No Data
FEB	120.4	5	0	No Data
MAR	108.5	3	0	No Data
APR	56.0	2	0	No Data
MAY	24.4	1	1	No Data
JUN	12.1	0	1	No Data
JUL	5.0	0	6	No Data
AUG	3.2	0	0	No Data
SEP	6.7	1	0	No Data
OCT	66.3	4	0	No Data
NOV	123.7	4	0	No Data
DEC	152.4	5	0	No Data

C1.2 Contract Data

Part two - Data provided by the *Contractor*

Notes to a tendering contractor:

1. Please read both the NEC3 Engineering and Construction Contract (April 2013) and the relevant parts of its Guidance Notes (ECC3-GN)[2] in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on pages 156 to 158 of the ECC3 (April 2013) Guidance Notes.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data
3. Where a form field like this [ ] appears, data is required to be inserted relevant to the option selected. Click on the form field ***once*** and type in the data. Otherwise complete by hand and in ink.

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

Clause	Statement	Data
10.1	The *Contractor* is (Name):	
	Address	
	Tel No.	
	Fax No.	
11.2(8)	The *direct fee percentage* is	**%**
	The *subcontracted fee percentage* is	**%**
11.2(18)	The *working areas* are the Site and	
24.1	The *Contractor's* key persons are:	
	1 Name:	
	Job:	
	Responsibilities:	
	Qualifications:	
	Experience:	
	2 Name:	
	Job	
	Responsibilities:	
	Qualifications:	
	Experience:	
		CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .

[2] Available from Engineering Contract Strategies Tel 011 803 3008, Fax 011 803 3009 or see www.ecs.co.za

11.2(3)	The *completion date* for the whole of the *works* is	To be agreed		
11.2(14)	The following matters will be included in the Risk Register	Adverse weather conditions (Rain, Wind, Heatwave and Hailstorm). Labour strike and community unrest. Normal Construction hazardous working with machinery. Procurement (lead time) Substantial Procurement of material when required. Access constraints and interfaces with others. Disease outbreak impact on labour force. Plant access from other Contractors. Working at Heights. Hazardous Gas. Electrocution. Interface and integration of the works with the running plant and other Contractors. Dehydration (hot weather conditions). Ash dust. Fire and Smoke Snakes Any other risk identified during the execution of the works will be updated on the risk register		
11.2(19)	The Works Information for the *Contractor*'s design is in:			
31.1	The programme identified in the Contract Data is	TBC		
B	**Priced contract with bill of quantities**			
11.2(21)	**The *bill of quantities* is in**			
11.2(31)	**The tendered total of the Prices is**	**(in figures)** **(in words), excluding VAT**		
	Data for Schedules of Cost Components	*Note "SCC" means Schedule of Cost Components starting on page 60, and "SSCC" means Shorter Schedule of Cost Components starting on page 63 of ECC3 (April 2013).*		
B	**Priced contract with bill of quantities**	**Data for the Shorter Schedule of Cost Components**		
41 in SSCC	The percentage for people overheads is:	**%**		
21 in SSCC	The published list of Equipment is the last edition of the list published by			
	The percentage for adjustment for Equipment in the published list is	**Minus %**		
22 in SSCC	The rates of other Equipment are:	**Equipment**	**Size or capacity**	**Rate**

61 in SSCC	The hourly rates for Defined Cost of design outside the Working Areas are	**Category of employee**	**Hourly rate**
	Note: Hourly rates are estimated 'cost to company of the employee' and not selling rates.		
	Please insert another schedule if foreign resources may also be used		
62 in SSCC	The percentage for design overheads is	**%**	

C1.3 Forms of Securities

Pro formas for Bonds & Guarantees

Pro forma Performance Bond – Demand Guarantee (for use with Option X13)

(to be reproduced exactly as shown below on the letterhead of the Contractor's Parent Company)

Eskom Holdings SOC Ltd **Megawatt Park** **Maxwell Drive** **Sandton** **Johannesburg**	Date:	

Dear Sirs

Reference No. **[●]** *[*Drafting Note: Bank reference number to be inserted*]*

Performance Bond – Demand Guarantee: [*Drafting Note: Name of Contractor to be inserted]*

Project [ ] Contract Reference: …… *[Drafting Note: Contractor contract reference number to be inserted]*

1. In this Guarantee the following words and expressions shall have the following meanings: -

    - Bank" - means [●], [●] Branch, (Registration No. [●]); [Drafting Note: Name of Bank to be inserted]
    - "Bank's Address" - means [●]; [Drafting Note: Bank's physical address to be inserted]
    - Contract" – means the written agreement relating to the Project, entered into between Eskom and the Contractor, on or about the [●] day of [●] 200[●] (Contract Reference No. [.]as amended, varied, restated, novated or substituted from time to time; [Drafting Note: Signature Date and Contract reference number to be inserted]
    - "Contractor" – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]. [Drafting Note: Name and details of Contractor to be inserted]
    - "Eskom" - means Eskom Holdings SOC Ltd, a company registered in accordance with the laws of the Republic of South Africa under Registration Number 2002/015527/30].
    - "Expiry Date" - means the date on which the Defects Certificate is issued in terms of the Contract.
    - "Guaranteed Sum" - means the sum of R [●] ([●] Rand);
    - "Project" - means [insert if applicable.].

2. At the instance of the Contractor, we the undersigned _____ and _____, in our respective capacities as _____ and _____ of the Bank, and duly authorized thereto, confirm that we hold the Guaranteed Sum at the disposal of Eskom, as security for the proper performance by the Contractor of all of its obligations in terms of and arising from the Contract and hereby undertake to pay to Eskom, on written demand from Eskom received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.

3. A demand for payment under this guarantee shall be made in writing at the Bank's address and shall:

    - be signed on behalf of Eskom by a Group Executive, Divisional Executive, Senior General Manager, General Manager or its delegate;

- state the amount claimed (“the Demand Amount’);
- state that the Demand Amount is payable to Eskom in the circumstances contemplated in the Contract.

4. Notwithstanding the reference herein to the Contract the liability of the Bank in terms hereof is as principal and not as surety and the Bank’s obligation/s to make payment:
   - is and shall be absolute provided demand is made in terms of this bond in all circumstances; and
   - is not, and shall not be construed to be, accessory or collateral on any basis whatsoever.
5. The Bank’s obligations in terms of this Guarantee:
   - shall be restricted to the payment of money only and shall be limited to the maximum of the Guaranteed Sum; and
   - shall not be discharged and compliance with any demand for payment received by the Bank in terms hereof shall not be delayed, by the fact that a dispute may exist between Eskom and the Contractor.
6. Eskom shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting our liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Contract.
7. Should Eskom cede its rights against the Contractor to a third party where such cession is permitted under the Contract, then Eskom shall be entitled to cede to such third party the rights of Eskom under this Guarantee on written notification to the Bank of such cession.
8. This Guarantee:
   - shall expire on the Expiry Date until which time it is irrevocable;
   - is, save as provided for in 7 above, personal to Eskom and is neither negotiable nor transferable;
   - shall be returned to the Bank upon the earlier of payment of the full Guaranteed Sum or expiry hereof;
   - shall be regarded as a liquid document for the purpose of obtaining a court order; and
   - shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the Courts of the Republic of South Africa.
   - Any claim which arises or demand for payment received after expiry date will be invalid and unenforceable.
9. The Bank chooses domicilium citandi et executandi for all purposes in connection with this Guarantee at the Bank’s Address.

Signed at _____ Date _____

For and behalf of the Bank

Bank Signatory: _____ Bank Signatory: _____

Witness: _____ Witness: _____
Bank’s seal or stamp

Pro forma Retention Money Guarantee (may be used when Option X16 applies)

(to be reproduced exactly as shown below on the letterhead of the Bank providing the Guarantee)

Eskom Holdings SOC Limited **Megawatt Park** **Maxwell Drive** **Sandton** **Johannesburg**	Date:	

Dear Sirs

Reference No. **[●]** *[Drafting Note: Bank reference number to be inserted]*

Retention Money Guarantee: *[Drafting Note: Name of Contractor to be inserted]*

Project [ ] : Contract Reference: *[Drafting Note: Contractor contract reference number to be inserted]*

1. In this Guarantee the following words and expressions shall have the following meanings: -

   - "Bank" - means [●], [●] Branch, (Registration No. [●]); [Drafting Note: Name of Bank to be inserted]Bank's Address" - means [●]; [Drafting Note: Bank's physical address to be inserted
   - "Contract" – means the written agreement relating to the Project, entered into between Eskom and the Contractor, on or about the [●] day of [●] 200[●] (Contract Reference No. ……. as amended, varied, restated, novated or substituted from time to time; [Drafting Note: Signature Date and Contract reference number to be inserted]
   - "Contractor" – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]. [Drafting Note: Name and details of Contractor to be inserted]
   - "Eskom" - means Eskom Holdings SOC Limited, a company registered in accordance with the laws of the Republic of South Africa under Registration Number 2002/015527/30
   - "Expiry Date" - means the date on which the Defects Certificate is issued in terms of the Contract.
   - "Guaranteed Sum" - means the sum of R [●] ([●] Rand); [Drafting Note: Insert amount of Retention Money Guarantee.].
   - "Project" - means the……..

2. At the instance of the Contractor, we the undersigned _____ and _____, in our respective capacities as _____ and _____ of the Bank, and duly authorized thereto, confirm that we hold the Guaranteed Sum at the disposal of Eskom, as security for the proper performance by the Contractor of all of its obligations in terms of and arising from the Contract and hereby undertake to pay to Eskom, on written demand from Eskom received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.

3. A demand for payment under this guarantee shall be made in writing at the Bank's address and shall:

   - be signed on behalf of Eskom by a director of Eskom or his authorised delegate.
   - state the amount claimed ("the Demand Amount');
   - state that the Contractor has failed to carry out his obligation(s) to rectify certain defect(s) for which he is responsible under the Contract (and the nature of such defect(s)) alternatively that the Demand Amount is payable to Eskom in the circumstances contemplated in the Contract.

4. Notwithstanding the reference herein to the Contract the liability of the Bank in terms hereof is as principal and not as surety and the Bank's obligation/s to make payment:

    - is and shall be absolute provided demand is made in terms of this bond in all circumstances; and

    - is not, and shall not be construed to be, accessory or collateral on any basis whatsoever.

5. The Bank's obligations in terms of this Guarantee:

    - shall be restricted to the payment of money only and shall be limited to the maximum of the Guaranteed Sum; and

    - shall not be discharged and compliance with any demand for payment received by the Bank in terms hereof shall not be delayed by the fact that a dispute may exist between Eskom and the Contractor.

6. Eskom shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting our liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Contract.

7. Should Eskom cede its rights against the Contractor to a third party where such cession is permitted under the Contract, then Eskom shall be entitled to cede to such third party the rights of Eskom under this Guarantee on written notification to the Bank of such cession.

8. This Guarantee:

    - shall expire on the Expiry Date until which time it is irrevocable;

    - is, save as provided for in **7** above, personal to Eskom and is neither negotiable nor transferable;

    - shall be returned to the Bank upon the earlier of payment of the full Guaranteed Sum or expiry hereof;

    - shall be regarded as a liquid document for the purpose of obtaining a court order; and

    - shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the Courts of the Republic of South Africa.

    - Any claim which arises or demand for payment received after expiry date will be invalid and unenforceable.

9. The Bank chooses domicilium citandi et executandi for all purposes in connection with this Guarantee at the Bank's Address.

Signed at _____ Date _____ Bank's seal or stamp

For and behalf of the Bank

Bank Signatory: _____ Bank Signatory: _____

Witness: _____ Witness: _____

Part 2: Pricing Data
ECC3 Option B

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option B	
C2.2	The *bill of quantities*	

C2.1 Pricing assumptions: Option B

How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract (ECC3) Option B states:

Identified and defined terms	11 11.2	(21) The Bill of Quantities is the *bill of quantities* as changed in accordance with this contract to accommodate implemented compensation events and for accepted quotations for acceleration.
		(28) The Price for Work Done to Date is the total of • the quantity of the work which the *Contractor* has completed for each item in the Bill of Quantities multiplied by the rate and • a proportion of each lump sum which is the proportion of the work covered by the item which the *Contractor* has completed. Completed work is work without Defects which would either delay or be covered by immediately following work.
		(31) The Prices are the lump sums and the amounts obtained by multiplying the rates by the quantities for the items in the Bill of Quantities.

This confirms that Option B is a re-measurement contract and the bill comprises only items measured using quantities and rates or stated as lump sums. Value related items are not used. Time related items are items measured using rates where the rate is a unit of time.

Function of the Bill of Quantities

Clause 55.1 in Option B states, “Information in the Bill of Quantities is not Works Information or Site Information”. This confirms that specifications and descriptions of the work or any constraints on how it is to be done are not included in the Bill, but in the Works Information. This is further confirmed by Clause 20.1 which states, “The *Contractor* Provides the Works in accordance with the Works Information”. Hence the *Contractor* does **not** Provide the Works in accordance with the Bill of Quantities. The Bill of Quantities is only a pricing document.

Guidance before pricing and measuring

Employers preparing tenders or contract documents, and tendering contractors are advised to consult the sections dealing with the bill of quantities in the NEC3 Engineering and Construction Contract Guidance Notes before preparing the *bill of quantities* or before entering rates and lump sums into the *bill*.

There is no general provision in Option B for payment for materials on Site before incorporation into the *works*. If secondary Option X14 Advanced payment has not been used then the tendering contractor may obtain the same effect by inserting appropriate items in the method related charges where the *method of measurement* allows, or alternatively making allowance in the rates of the *bill of quantities* for the financing of Plant and Materials until they are incorporated in the *works.*

When compensation events arise, the default position is that the Bill of Quantities is not used to calculate the cost effect of the event. Defined Cost and the resulting Fee is used and Defined Cost includes all components of cost which the *Contractor* is likely to incur, including so called P & G items. Rates and lump sums from the Bill of Quantities, or from any other source, may be used instead of Defined Cost and the Fee only if the *Contractor* and *Project Manager* agree. If they are unable to agree, then Defined Cost plus Fee is used.

Measurement and payment

Symbols

The units of measurement described in the Bill of Quantities are metric units abbreviated as follows:

Abbreviation	Unit
%	percent
h	hour
ha	hectare
kg	kilogram
kl	kilolitre
km	kilometre
km-pass	kilometre-pass
kPa	kilopascal
kW	kilowatt
l	litre
m	metre
mm	millimetre
m^2	square metre
m^2-pass	square metre pass
m^3	cubic metre
m^3-km	cubic metre-kilometre
MN	meganewton
MN.m	meganewton-metre
MPa	megapascal
No.	number
sum	Lump sum
t	tonne (1000kg)

General assumptions

- Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance has been made in the quantities for waste.
- The Prices and rates stated for each item in the Bill of Quantities shall be treated as being fully inclusive of all work, risks, liabilities, obligations, overheads, profit and everything necessary as incurred or required by the *Contractor* in carrying out or providing that item.
- An item against which no Price is entered will be treated as covered by other Prices or rates in the *bill of quantities*.
- The quantities contained in the Bill of Quantities may not be final and do not necessarily represent the actual amount of work to be done. The quantities of work assessed and certified for payment by the *Project Manager* at each assessment date will be used for determining payments due.
- The short descriptions of the items of payment given in the *bill of quantities* are only for the purposes of identifying the items. Detail regarding the extent of the work entailed under each item is provided in the Works Information.

Departures from the method of measurement

Amplification of or assumptions about measurement items

The following is provided to assist in the interpretation of descriptions given in the *method of measurement*. In the event of any ambiguity or inconsistency between the statements in the *method of measurement* and this section, the interpretation given in this section shall be used.

C2.2 *the bill of quantities*

Use this page as a summary page or as a cover page to *the bill of quantities*.

Item No.	Activity description	Unit	QTY	Rate
OV 2 SPLIT FEED AND CHUTES (Chutes, split peak, cylinder and power pack)				
1.	Preliminaries and General	Sum	1	R
2.	Design	Sum	1	R
3.	Procurement	Sum	1	R
4	Fabrication	Sum	1	R
5.	Delivery to site	Sum	1	R
6.	Construction, Erection and installation	Sum	1	R
7.	Commissioning and testing	Sum	1	R
8.	DEM	Sum	1	R
STACKER 1 & 2 REAR TRIPPER CHUTES				
9.	Preliminaries and General	Sum	1	R
10.	Design	Sum	1	R
11.	Procurement	Sum	2	R
12.	Fabrication	Sum	2	R
13.	Delivery to site	Sum	2	R
14.	Construction, Erection and installation	Sum	2	R
15.	Commissioning and testing	Sum	2	R
16.	DEM	Sum	1	
SY2 A & B RECEIVING CHUTES				
17.	Preliminaries and General	Sum	1	R
18.	Design	Sum	1	R
19.	Procurement	Sum	8	R
20.	Fabrication	Sum	8	R
21.	Delivery to site	Sum	8	R
22.	Construction, Erection and installation	Sum	8	R

23.	Commissioning and testing	Sum	8	R
24.	DEM	Sum	1	R
T1 A & B TAIL CHUTES				
25.	Preliminaries and General	Sum	1	R
26.	Design	Sum	1	R
27.	Procurement	Sum	2	R
28.	Fabrication	Sum	2	R
29.	Delivery to site	Sum	2	R
30.	Construction, Erection and installation	Sum	2	R
31.	Commissioning and testing	Sum	2	R
T 7 & 8 HEAD AND TAIL CHUTES				
32.	Preliminaries and General	Sum	1	R
33.	Design	Sum	1	R
34.	Procurement	Sum	24	R
35.	Fabrication	Sum	24	R
36.	Delivery to site	Sum	24	R
37.	Construction, Erection and installation	Sum	24	R
38.	Commissioning and testing	Sum	12	R

PART 3: SCOPE OF WORK

Document reference	Title	No of pages
	This cover page	1
C3.1	*Employer*'s Works Information	35
	Total number of pages	

C3.1: EMPLOYER'S WORKS INFORMATION

Contents

1. Description of the works

1.1 Executive overview

Medupi Power Station has experienced numerous production load losses as well as unit trips as a result of very low coal bunker levels, caused by the inability to supply coal to the Medupi coal stockyard and the terrace coal plant. There are various challenges on the coal stockyard with regards to stacking, bypass and reclaiming performance as well as the performance of the terrace link conveyor that has previously, on occasion, limited the amount of coal that is conveyed to the unit coal bunkers.

The scope of this project is for the improvement to specific coal chutes at Medupi Power Station. It mainly involves replacement of existing chute components with redesigned, improved components to ensure enhanced material flow, central loading of downstream belts and minimal coal build-up in chutes. The scope included design, procurement, manufacturing, shipping to site, construction and commissioning of the chutes, bonnets, spoons, and components of the affected chutes.

1.2 Employer's objectives and purpose of the work

The *Employer's* objective is to design, procurement, manufacturing, shipping to site, construction and commissioning of the chutes, bonnets, spoons, and components of the affected chutes.

The following abbreviations are used in this Works Information:

Abbreviation	Explanation
DEM	Discrete Element Modelling
ECM	Engineering Change Management
EDWL	Engineering Design Work Lead
LDE	Lead Design Engineers
SANS	South African National Standard
SHE	Safety Health and Environmental
SHEQ	Safety Health Environmental and Quality
SOW	Scope of Works
tph	Tons per Hour
UHMWPE	Ultra-High Molecular Weight Polyethylene
QCP	Quality Control Plan

1.2.1 Interpretation of incorporated documentation

Wherever the following words or phrases are used in the listed or referred documentation, they are interpreted in this contract as follows:

Word or Phrase	**Interpretation**
Eskom Holdings SOC Limited	The *Employer*.
Accepted or approved by (or to the satisfaction of) the *Project Manager*, Engineer and *Employer*.	Accepted by the *Project Manager* or the *Supervisor*.
A duty, procedure, decision or action of the Engineer, *Employer* or the Superintendent, Eskom's Representative, Site *Supervisor* or Clerk of *Works*.	An action of the *Project Manager* or the *Supervisor* depending on the context. Clause 14 of the Core Clauses determines what the actions of each are. Either may delegate in terms of Clause 14.2

1.2.2 Documents Referenced in Works Information

Numerous documents such as standards and specifications are referenced within this Works Information. All these referenced documents including the normative references must be adhered to while providing the works.

Where a SANS standard referenced has been replaced by a newer standard, the *Contractor* must comply with the latest revision of the standard. Where a SANS standard referenced is composed of several parts, all applicable parts are to be adhered to.

All national and international standards referenced are provided in this document however the *Contractor* must obtain them at his own expense. Documents developed by the *Employer* as referenced in this Works Information are provided to the *Contractor*.

2. Management and start up.

2.1 Management meetings

A **Weekly Site and Technical Meeting** shall be held to deal with technical, quality, SHE, programme performance and project related administrative matters at work activity level. The meeting shall be chaired by the *Supervisor* and attended by the *Supervisor*, SHE, Quality, Environmental Officers and Planner (*Contractor* and the *Employer* representatives).

A **Monthly Progress Meeting** shall be held to deal with technical, programme performance, cost and contract management at a project management level. The meeting shall be chaired by the *Project Manager* and attended by the *Project Manager*, *Supervisor*, Engineers, and SHE, Quality, Environmental Officers and Planner (*Contractor* and the *Employer* representatives).

A **Monthly Measurement Meeting** shall be held to address processing of the *Contractor's* invoices, backup documentation, and monitoring of the activity schedule against the Target Price. The *Contractor* shall present a monthly report at this meeting which will include graphs of actual progress against tendered progress as well as cumulative actual cost against cumulative tendered cost as per the tendered programme. The format of this monthly report as well as the level of detail of its contents shall be agreed with the *Project Manager*.

Before each successive Monthly Measurement Meeting (i.e. on a weekly basis), the *Contractor* shall submit to the *Supervisor* all current backup documentation for acceptance. Backup documentation shall include, but not limited to, all calculation sheets, completed activities, drawings, etc.; acceptance of completed work payment purposes, including confirmation of attainment of each criteria set out either in the specification or any other document which this contract prescribes.

Following the Monthly Measurement Meeting, the *Contractor* shall present a detailed final schedule, including the necessary backup documentation, to the *Supervisor* for review and acceptance. Once accepted by the *Supervisor*, the *Contractor* will submit it to the *Project Manager*. This will then be used by the *Project Manager* to assess the amount due in terms of Clause 50 of the ECC.

The final format and layout of the monthly schedule as well as the level of detail of backup information required are to be agreed between the *Project Manager* and the *Contractor*. Clause 52 of the ECC shall apply in terms of accounts to be kept by the *Contractor* to verify the above monthly schedule of actual costs. All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting.

2.2 Documentation control

2.2.1 Documentation to be provided by the Employer

The *Contractor* will be provided with one signed copy of the Contract, which includes contract agreement with the documents which would make up the Contract as identified in the form of agreement.

Document Identification

All documents issued shall be numbered, dated and registered on the project document management system, maintained by the *Contractor* and conforming to the *Contractor's* Quality Management Plan. The documents shall be available at the recorded locations as noted in the document management system.

All documents supplied by the *Contractor* are subject to the *Employer*'s acceptance. The *Contractor* includes the *Employer*'s drawing number in the drawing title block. This requirement only applies to design drawings developed by the *Contractor* and his Sub*Contractor*s. Drawing numbers are assigned by the *Employer* as drawings are developed. The Contractor shall establish a document tracking system to record the dates for the supply and receipt of all design drawings, calculations and requests for information. The Contractor will

be issued with a series of project drawing numbers which shall apply to all drawings including those from Subcontractors. These numbers will then be used for reference throughout the project.

2.2.2 Document Submission

Within three (3) weeks of the starting date, the *Contractor* complies with the Vendor Document Submittal Schedule regarding documentation submission.

All project documents must (electronic and hard copies) be submitted to the *Project Manager* using a Transmittal Note and shall comply with the Project / Plant Specific Technical Documents and Records Management Work Instruction (240-76992014).

2.2.3 Email Subject

When using the e-mail to submit, the *Contractor* shall include on the email subject as a minimum, the (Station Project Name_Discipline_Subject). Large electronic files shall be delivered as an ORIGINAL plus a USB Memory Stick or Flash Drive to the *Project Manager* or where possible a Large File Transfer Facility can be used for documents submission.

2.2.4 Electronic Data Control

The *Contractor* shall carry out a daily backup of all electronic information contained on his computer system. Electronic backup information shall be kept in an appropriate format, suitably labelled, segregated and stored in an environment that will not adversely affect its condition.

2.2.5 Incoming and Outgoing Correspondence

The *Contractor* shall number and date all incoming and outgoing correspondence as per agreed communication matrix.

2.2.6 Daily Records

The *Contractor* must keep daily records of daily diaries for work performed and submit them to the *Supervisor* on a daily basis.

2.2.7 Drawings Format and Layout

The creation, issuing and control of all Engineering Drawings shall comply with the Engineering drawing Standard, 240-86973501. As a minimum, the *Contractor* shall submit to the *Project Manager* one hardcopy and an electronic copy and drawings may not be “Right Protected” or encrypted.

3. Health and safety risk management

3.1 OHS requirements

The *Contractor/Supplier* shall at all times comply with the Eskom’s Occupational Health and Safety (OHS), legal and other requirements as amended for the duration of the contract. In addition, the *Contractor* shall comply with the requirements contained in the OHS Specification/requirements. Eskom reserves the right to terminate the contract, if the *Contractor/Supplier* has built up a history of poor performance or non-conformance in relation to matters of occupational health and safety and legal compliance. **No work may begin until the Health and Safety file has been approved by the individual Business Unit's OHS personnel. For the length of the contract, the contractor shall adhere to the respective Business Unit's OHS, legal, and other requirements, as amended**

3.2 Continuous Improvement

- Contractors are required to conduct the following as part of the continuous improvement initiatives:
- Visible Felt Leadership by top management
- Identify critical tasks and monitor those tasks through Planned Job Observations
- Behavioural based safety, if the contractor does not have its own procedure, Eskom procedure can be used as a guide
- Contractor 16.1 shall present the lost time injury (LTI) incidents at Business Unit / Power station General Managers meeting within 7 days of the incident.

3.3 Contractor/supplier Management Key Performance Indicators (KPI's)

- Maintain Health and Safety file and compliance to the health and safety plan
- Always maintain good housekeeping
- Implement and monitor near miss programme
- Comply to BSO, Visible Felt Leadership and Planned Job Observation programmes
- Zero Fatalities
- At any given point, the OHS performance must be within the lost time injury (LTI) tolerance level as amended
- All incident investigations shall be completed within 30 days of the occurrence of an incident.
- Close audit findings as per the recommended time frames
- Close Non-conformance as per the recommended time frames

3.4 Contract completion and sign off

On completion of the project, Eskom team (led by the Contract custodian/ Project Manager) involved in the project together with the Contractor shall conduct the final audit/inspections to identify the gaps prior to the contractor leaving site or completing the project. Before the final invoice is paid/processed, the Contract custodian/Project Manager shall ensure that the below requirements are met:

- Close all incidents and audit findings.
- Clean the respective yard and ensure good housekeeping where the contractor was working.
- Contractor shall submit safety statistics and a safety file to Eskom BU Safety department for closeout and filling.
- Completion of a closeout report (Annexure D form as per 32-726) to close the contractual work
- Once the above issues have been addressed, the Contract custodian/Project Manager shall verify and sign off prior to releasing the final payment.

3.5 OHS 37(2) Agreement

- The function of the 37(2) Agreement is primarily to indemnify Eskom from any acts or omissions by its contractors/suppliers and its employees in contravention of the OHS Act. This means that contractors/suppliers are deemed to be employers, their employees are not deemed to be employees of Eskom and acknowledges that is solely responsible for its employees, its appointed contractors, agents and the like, while performing work for or on behalf of Eskom. Every site where the contractor is performing work, a 37(2) agreement shall be signed by the site contract custodian and the contractor/supplier representative 16(1)/2 appointee.

3.6 Compensation of injuries and diseases (COID)

Eskom is required by law to ensure that their contractors/suppliers have registered with the compensation fund and are in good standing. The Main contractor and all his/her appointed contractors shall be registered with an appropriate compensation fund and have available a valid letter of good standing (LoG) from such commissioner. The obligation lies with the contractors to ensure that the LoG remain valid throughout the contract period. A copy of the LoG must be filed in the contractor OHS files.

Note: **Contractors without the valid letter of good standing shall not be permitted to work on Eskom Generation site or project. Contractors must obtain the letter of good standing prior to expiry of the existing one**

3.7 The Supplier shall comply with the following requirements governing health and safety in Eskom and South Africa:

a) Basic Conditions of Employment Act No 75 of 1997.
b) Occupational Health and Safety Act and Regulations No 85 of 1993.
c) National Road Traffic Act 93 of 1996.
d) 32-37 Eskom Substance Abuse Procedure.
e) 240-62196227 Life- Saving Rules.
f) 32-727 SHEQ Policy
g) 240-62946386 Vehicle and Driver Safety Management Procedure
h) 32-520 Risk Assessment procedure
i) COIDA Act

3.8 Vehicle Safety Management

The Service Provider must comply to the following requirements when planning the route to Medupi Power Station for delivery:

a) It is the responsibility of the driver to ensure:
- Their passengers wear seat belts whilst the vehicle is in motion.
- Comply with all traffic road rules, safety, direction, and speed signs.
- Ensure that vehicle loads are properly secured prior to moving off.
- Ensure that vehicles are not overloaded.

b) Service Providers are required to conduct the route risk assessment prior to travelling/driving.
c) No drivers or operators may text, talk on cell phones or two-way radios whilst driving.
d) All drivers shall have a valid medical fitness certificate.
e) The First aid box with valid contents and fire extinguishers must be included in the vehicle, be services annually and inspected monthly. Drivers must be trained on how to use the First aid box and fire extinguishers.
f) Two triangles must be included in the vehicle and the emergency number be displayed at the back of the vehicle.
g) Each Project site that is enclosed by demarcation will have system/ process to manage vehicle access to site.
h) Contractor must maintain their vehicles in a roadworthy condition and a vehicle license must be valid at all times and this is applicable to yellow plant.
i) Drivers of light vehicles must avoid stopping or parking in the vicinity of machines. At least 30 (thirty) meters must be left clear between such a vehicle and such a machine.
j) Contractor vehicles can be subject to inspections by the Client/Agent's representative. Vehicles which are not roadworthy will not be permitted to be used on site.
k) Drivers/operators shall be responsible for the travel-worthiness of all loads conveyed by them. Precautions shall be taken to secure all loads properly. Loads projecting from vehicles shall be securely loaded and in daytime a red flag and during darkness a red light or red reflective material shall be attached to the extreme end of such projecting materials.

4. Environmental constraints and management

The mitigation requirements are recorded in the Environmental Management Plan (EMP). The *Contractor* shall acquaint himself fully with the contents of the EMP to ensure that the *Contractor* is fully aware of the requirements of the EMP and its implications on the works. The *Contractor's* rates tendered shall cover all costs that will be incurred to comply with all requirements of the EMP. Special attention is drawn inter alia to the following aspects:

- Site demarcation: The *Contractor* shall demarcate his/her camp site, be restricted to that specific area and take full responsibility to restore the area to its original condition before the contract commenced
- Sanitation: The *Contractor* shall provide an appropriate enclosed temporary sanitation facility not a bucket system
- Dust control: The *Contractor* shall be responsible to apply effective dust control measures.
- Re-vegetation: The *Contractor* shall be responsible for re-vegetation or re-planting of removed or damaged plant at the location given by Environmental department.
- Fire prevention: It shall be the responsibility of the *Contractor* to prevent veld fires at all times during the contract.

The following documents shall be submitted and accepted by the environmental department before commencement of work as part of Environmental file:

4.1 ISO14001:2015 Environmental Management System:

- SHEQ/Environmental Policy
- Aspects and impacts register
- Communication procedure
- Internal Audit procedure
- Objectives and targets (plan to track performance, either monthly or weekly)
- Emergency preparedness procedure or work instruction
- Non-Conformance, Corrective action, and preventive action.
- Roles and Responsibilities of the employees (also stating their roles in terms of environmental management)

4.2 Waste Management plan:

- Register of possible waste to be generated by the project (Template)
- Waste segregations procedure
- Waste Minimisation Procedure
- Records of waste quantities disposed (Template)
- Legislation requirements

4.3 Environmental Management Plan:

- Handling of HCS (If applicable)
- Site establishment
- Water management
- Environmental human resources
- Environmental training
- Environmental incident reporting procedure.

5. Quality assurance requirements

All Quality Management System requirements shall comply with the Supplier Quality Management Specification 240-105658000 QM-58 Category 2

- The supplier shall complete and sign **Form A** (Enquiry/Contract/Quality Requirements for QM
- 58 and ISO 9001).
- The supplier shall submit objective evidence of a developed and implemented QMS that
- complies with ISO 9001 or any applicable standard of quality management system (the latest
- applicable revision). The following documents (approved copies) shall be submitted:
- Quality Management System manual or a document that have defines and describes the QMS and its scope
- Quality Policy
- Quality Objectives
- Control of documented information
- Records required by ISO 9001 standard (List of Records)
- Internal audit procedure
- Control of non-conformity outputs
- Nonconformity and Corrective action procedure
- The QMS should drive all the supplier's business management processes to ensure that all of
- Eskom's requirements are fully met on a consistent basis.
    - The supplier shall submit the latest copy of an internal management system audit reports. The audit reports must include, if applicable, nonconformity identified, and the resulting remedial (correction and/ or corrective action reports).
    - The supplier shall submit a **draft contract quality plan** that is specific to the scope of work as described in the tender documents. The plan must address the minimum requirements as per ISO 10005.

The *Contractor* shall be responsible for the quality of and testing of materials, workmanship and production processes used in completing the works. Within fourteen (14) calender days after Contract Date, the *Contractor* shall submit to the *Project Manager* the Quality Management Plan for quality control and quality assurance of the *work*s.

Where the *Contractor* maintains an accredited Quality Control System, details of the level of the *Contractor's* self-certification procedures shall be adopted in respect of supplied materials shall be agreed with the Quality Representative or *Supervisor* prior to commencement of work. Where no accredited Quality Control System exists, the *Contractor* shall plan all quality management procedures, carry out all quality control testing as required and shall make available records of such testing for the Quality Representative or *Supervisor's* acceptance.

The *Contractor* shall submit full details of the proposed quality management system and procedures for acceptance by the Quality Representative or *Supervisor*, who shall have full access to all records, Site trials and tests. The *Contractor* shall ensure that monitoring and measuring equipment are calibrated and verified to confirm serviceability prior to usage, records of such shall be kept on Site.

The *Contractor* shall submit prior start of site activities, a method statement together and the quality control plan or inspection plan and test plan for review and acceptance by the *Supervisor.*

The *Contractor* shall comply with QM58 requirements for the duration of the Contract. On completion of the project, the *Contractor* shall submit data books (Packs) before the Completion Certificate can be issued. The Data Packs shall be in accordance with the Data Packs Specification provided in this Works Information.

6. Programming Management

6.1 General

The *Contractor* submits a Resource Loaded Detailed Level 4 single integrated programme which includes of his *Subcontractor*s, Suppliers with interface points between the different *Subcontractor*s and the *Contractor* clearly identified. The *Contractor* shall manage the interfaces between his *Subcontractor*s and Others working on the same Site.

6.2 Computerised Planning and Reporting

The programme shall be submitted in Primavera P6 Schedule (XER) format for ease of transfer and presentation. The *Contractor* obtains this software and makes use of it for planning and control of the works.

6.3 Project Calendar

The project calendar includes working days (Monday to Friday) and excludes non-working days which are weekends (Saturday to Sundays) and Public Holidays. The *Contractor's* programme and any subsequent revisions shall take into account non-working days. If and when the *Contractor* deems any period in a calendar year as a non-working days, e.g. pay weekends, etc. all such shall be declared up front and agreed with the *Project Manager* in the first construction program for acceptance by the *Project Manager*. Failure to declare these days shall render any later declaration as null and void and the *Contractor* shall provide the works as per the accepted first programme.

6.3.1 Sequencing of the works

The *Contractor* shall sequence the works as per *Contractor's* accepted programme.

6.3.2 Additional Programme Requirements

The *Contractor* shall use the Critical Path Method (CPM) technique for programme and planning and shall submit the programme basis document to the *Project Manager*. The programme basis document describes the programme and planning methodology, format, project execution philosophy, resource assumptions, qualifications and any other items that may have a substantive impact on the schedule. The programme layout takes into account the Key Dates provided above and the Work Breakdown Structure (WBS). The following levels of programme are to be used for this project for dynamic integrated project control:

- Management level programme (Level 1)
- Project level programme (Level 2)
- Control level programme (Level 3)
- Discipline speciality programme (Level 4)

The *Contractor* submits a Resource Loaded Level 4 Detailed Programme with the tender documentation. The Level 4 Detailed Programme is to be submitted within one month of contract award for review and acceptance by the *Project Manager*.

6.3.3 Management Level Program (Level 1)

The management level programme is used to establish work goals and overall time frames for the works. It is a statement of project objectives recorded in graphic form. The management level programme defines and establish goals or major milestones key dates. The duration of major operations and their relationship to one another. Identified Long Lead material items. Responsibility assignments for accomplishing project objectives.

6.3.4 Project Level Program (Level 2)

The project level programme is prepared representing the significant work activities and deliverables associated with the works. The end product is a time scaled bar chart schedule developed through use of a logic network. This programme is separated by work areas, by Phase and by WBS. A "rolled up" programme from the control level programme is produced. It is separated by each work activity and by Phase (for example: Engineering, Procurement, Construction and Commissioning)

6.3.5 Control Level Program (Level 3)

The work within each work area is broken down by Engineering Discipline, Procurement of Tagged equipment and Bulks, Construction, and Commissioning & Start-up. The control level programme is resource-loaded. It forms the basis for progress measurement, progress curves and histograms for each discipline within a work area.

6.3.6 Discipline Speciality Program (Level 4)

This level typically represents day-to-day tasks which are work activity based and become summarised in the Level 3 activities. Resource information for manpower, Plant, Material and Equipment and reflected in the resource histograms is to be provided by the *Contractor*. Staffing Histograms are to be submitted based on “equivalent personnel”. Available work hours take into account 4 and 5 week months and statutory holidays that may occur. Staffing histograms is updated with actual data for each reporting period and re-forecasted as required should significant deviations occur.

6.3.7 Submission of Revised Programmes and Progress Reporting

The *Contractor* submits one electronic copy in Primavera P6 (XER) format, of each revised programme and progress report to the *Project Manager* for acceptance. The *Contractor* submits revised programme on monthly basis or as instructed by the *Project Manager*. The monthly reports shall comply with the progress reporting requirements as stated below.

6.3.8 Weekly Status Reports

A weekly status report is submitted by the Contractor to the Project Manager. This report is less formal than the monthly report and is used as a tool for the day-to-day management of the project. Contents of a weekly report will include the following items:

- The updated Primavera programme
- Programme summary narrative
- Progress and performance summaries
- Sectional Completion and Key Milestone status

6.3.9 Monthly Progress Report

The contents of the report may vary from month to month depending upon the phase of the project and/or the items of management focus. However, the basic framework of the report consists of the following:

- Executive summary (narrative identifying major movement within the reporting period)
- Revised Programme indicating, actual progress of work against last Accepted Programme
- A one-month look ahead work window
- Activities completed, activities in progress during current reporting period and Critical Path activities report
- Key issues and risks of concern and mitigation actions
- Cost and Cash flow and Cost curve 'S-curve'.
- Early warning and Compensation Event Register
- Report selecting all of the activities of the *Employer* and Others - (computer generated).
- Resource Schedule Histogram
- Forecast Rate of payment schedule updated with actual progress
- Statement and report on works ahead and behind progress
- Procurement plan for all Resources (labour, equipment, plant and material) in Excel Format. The plan shows mobilisation per month, equipment, people, plant and materials for the duration of the contract
- VDSS

7. Contractor's management, supervision and key people

The appointment of key personnel shall be in terms of Clause 24 of the ECC. The *Contractor* as a minimum shall nominate a Director / Senior Manager, a Contract Manager and a Site Manager, subject to the acceptance of the *Project Manager*.

The Contractor is also required to submit an organogram of all key persons including his SubContractor's at tender stage and after contract award. The organogram submitted must include the following key persons as a minimum subject to the acceptance of the Project Manager after contract award.

- *Project Manager*
- Site Construction Manager (Full-time on site)
- Engineer
- SHE Officer (Full-time on site)
- *Supervisor* (Full-time on site)
- Quality Officer (Full-time on site)
- Planner

8. Payment

Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* submits a tax invoice showing the amount due for payment equal to that stated in the *Project Manager's* payment certificate. The invoices must be sent to Finance Shared Service email address invoiceseskomlocal@eskom.co.za

The *Contractor* shall address the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:

- Name and address of the *Contractor* and the *Project Manager*
- The contract number and title
- *Contractor's* VAT registration number
- The *Employer*'s VAT registration number 4740101508
- Description of service provided for each item invoiced based on the Price Schedule
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT

8.1 Schedule of Actual Costs and Accounts

The *Contractor* shall submit a detailed monthly schedule of his actual costs with all the necessary backup information at the monthly measurement meeting, for review by the *Supervisor*. The various schedule items as detailed in the Schedule of Cost Components, shall be submitted in a spreadsheet format, itemized in terms of People, Equipment, Plant and Materials, charges, and manufacture and fabrication. Schedule items shall be grouped into work area activities as outlined in the *activity schedule*, with such work area activity groupings referenced against the *activities schedule* item numbering.

Before each successive monthly measurement meeting (i.e. on a weekly basis), the *Contractor* shall submit to the *Supervisor* all current (or cumulative to that assessment date) backup documentation for acceptance. Backup documentation shall include, but not limited to: all calculation sheets, citing each completed task and item in the Bill of Quantities, drawings, etc.; acceptance of completed work payment purposes, including confirmation of attainment of each criteria set out either in the specification or any other document which this contract prescribes.

Following the monthly measurement meeting, the *Contractor* shall present a detailed final schedule (with revisions agreed to at the monthly measurement meeting incorporated), including the necessary backup documentation, to the *Supervisor* for final checking.
Once accepted by the *Supervisor*, he will submit it to the *Project Manager*. This will then be used by the *Project Manager* to assess the amount due in terms of Clause 50 of the ECC.

The final format and layout of this monthly schedule as well as the level of detail of backup information required are to be agreed between the *Project Manager* and the *Contractor*. Clause 52 of the ECC shall apply in terms of accounts to be kept by the *Contractor* to verify the above monthly schedule of actual costs.

8.2 Records and Returns
This Section relates to the preparation and submission of records and returns by the *Contractor*, to be submitted to the *Supervisor* in a form that is acceptable to him.

- At Start Up of the works
- Prior to First Commencement of a Particular Work Activity
- On Completion of a Work Activity or Part Thereof
- Daily
- Weekly
- Monthly
- On Completion of the works

9. Training workshops and technology transfer

Training of the *Employer*'s operating, maintenance, and engineering personnel on the operation of the systems shall be provided by the *Contractor*. Training shall consist of both basic and advanced training and shall focus on skills development. The *Contractor* shall submit the training manuals, guides and schedules for the review and acceptance by the *Project Manager*.

The *Contractor* shall prepare five (5) training sessions for Operating, Maintenance and Engineering as a group. The operating personnel is working shifts and therefore the *Contractor*s shall on the training schedule make an allowance for five training sessions in order to cover all the operators. At the completion of the training, plant operating personnel shall be able to apply knowledge of plant process

dynamics and control system behaviour to be able to control the plant through normal operating regimes, as well as to withstand abnormal and unanticipated operating conditions. In order to concentrate fully on operating tasks and decision making, the operators shall be fluent in the use of the Human Machine Interface (HMI). This includes display hierarchy, its contents, navigation links and paths, and dynamic behaviour of the HMI.

10. Site location

Medupi Power station is situated approximately 20 km west of the Town Lephalale in the Waterberg region of the Limpopo Province and approximately 350 km North of Johannesburg.

11. Plant Layout

The work will be conducted on the Medupi Power Station Coal Plant. A schematic of the coal plant layout is shown in Figure 1 below. The areas where chutes requires improvements is indicated in the red squares below.

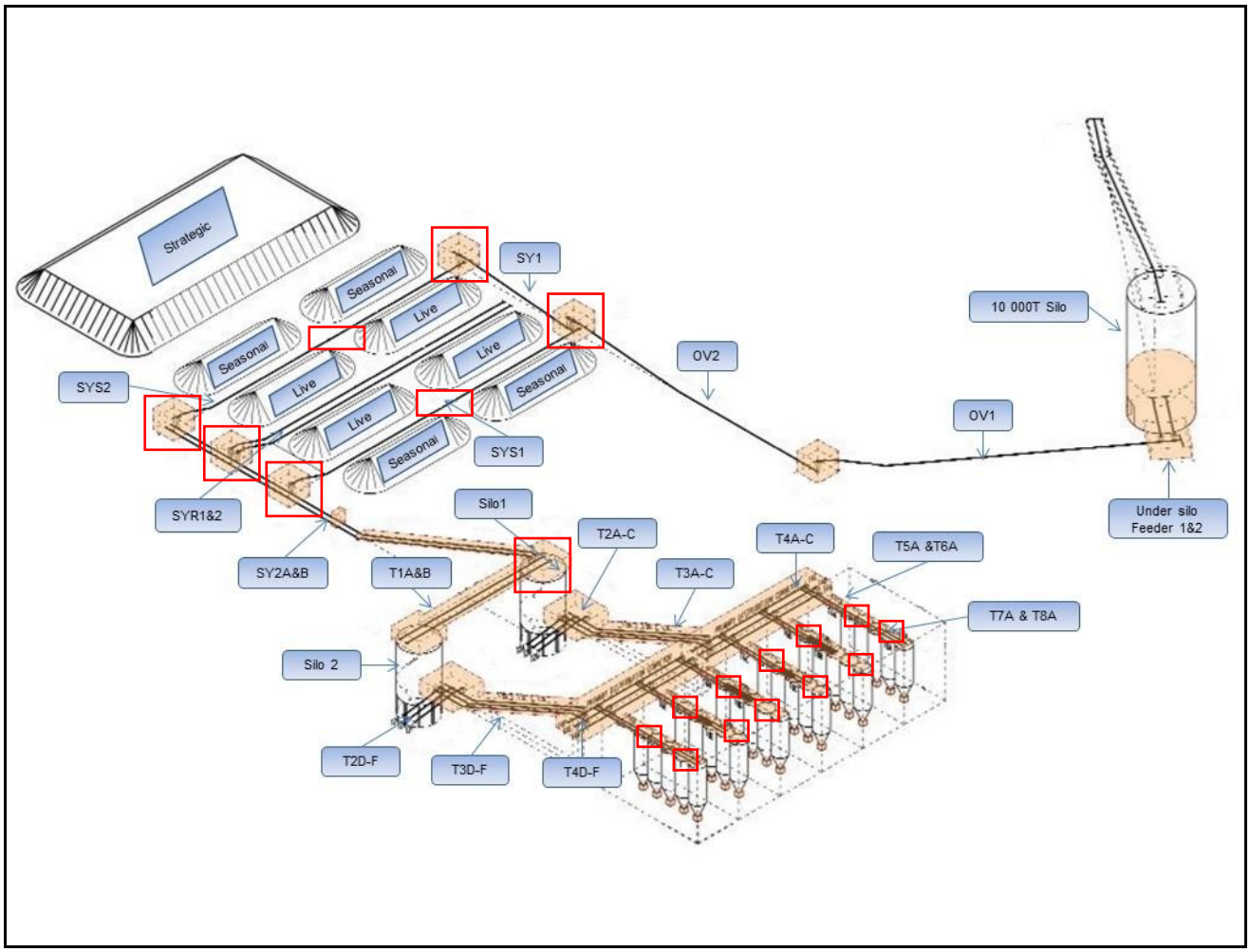

Figure 1: Medupi Coal Plant Overview Schematic

11.1 Conveyor Belt Capacities

The conveyor belt capacities, speeds, lengths and widths for the Medupi Coal conveyors are indicated in **Table 1** below.

Table 1: Medupi Coal Conveyor Belt Technical Data

Conveyor Description	Conv No.	Conveyor capacity [tph]	Conveyor Speed [m/s]	Conveyor belt speed range [%]	Conveying length [m]	Conveyor Belt Class	Belt Width [mm]
Under Silo Feeders	BF1&2	4000	1.25	12.5 - 100	22.3	1600 4-ply	2400
Overland Conveyor 1	OV1	4000	3.1	30 - 100	4220	ST 1600	2100
Overland Conveyor 2	OV2	4000	3.1	30 - 100	1171	ST 1000	2100
Stacking / Bypass Link Conveyor	SY1	4000	2.86	30 - 100	126.9	ST 500	2100
Stockpile Stacking Conveyors 1&2	SYS1&2	4000	2.86	30 - 100	932.2	ST 1000	2100
Live Stockpile Reclaim Conveyors 1&2	SYR1&2	3400	3.35	30 - 100	822.5	ST 800	1800
Terrace Link Conveyors	SY2A&B	3400	3.35	30 - 100	680.6	ST 1000	1800
Over Silo Conveyors	T1A&B	3400	3.35	30 - 100	339.4	ST 500	1800
Under Silo Shuttle Feeders	T2A-F	1150	0.87	0 - 100	24	1000 4-ply	1800
Incline Conveyors	T3A-F	1150	2.8	15-100%	338.6	ST 800	1200
Primary Distribution Conveyors	T4A-F	1150	2.8	15-100%	250	500 3-ply	1200

Secondary Distribution Conveyors	T5/6A-F	1150	2.8	15-100%	60	500 3-ply	1200
Reversible Shuttle Conveyors	T7/8A-F	1150	2.8	15-100%	21	500 3-ply	1200

12. Scope of Work

12.1 General Requirements for the Works

1. Increase availability and reliability of coal supply by doing improvements to specific coal chutes on the stockyard, terrace, and terrace-link conveyors.
2. Detailed designs and manufacturing drawings of the chute improvements to be supplied to Medupi.
3. Design, manufacturing, construction, and commissioning of the chute improvements/replacement parts using new materials.
4. The improved chute components to be integrated into the existing chute structures and to be bolted in or on in a relatively short time, when the plants are down for normal maintenance. The aim is to minimise supply disruption during implementation of the changes.
5. Where the weight of new components to be installed has significantly increased, compared to the existing components, as a result of the changes, structural calculations and verification would be required to ensure compliance with SANS specifications for structural design. If required, strengthening of structures needs to be done as part of the implementation process. These structural improvements, where required, should comply to SANS specifications for structural design.
6. The chute bonnets and spoons should ensure guided flow of the coal, ensuring central loading of the receiving belts under all conveyor speeds and material loading conditions. Central loading means that no receiving conveyor/s directly downstream of the modified chute will misalign as a resulting of the loading profile from the new chute components, onto the receiving belt.
7. The guided flow chutes should be self-cleaning during normal operation and should not require regular cleaning of build-up in the chutes.
8. The material impact areas on the chutes should be lined with 92% Alumina ceramic tiles.
9. A defect correction period of 12 months will be required on all chute changes implemented

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12.2 OV2 Split Feed Requirements to SYS1 and SY1

1. Design, manufacture and install a new bonnet for OV2 moveable head chute, indicated in ‘blue’ in **Figure 2** below. The bonnet shall have a continuous smooth curve and shall be lined with smooth ceramic tiles. The redesign shall include increased structural stiffening on the bonnet to ensure that tiles do not come loose due to impact loading and flexing of the bonnet under any condition.
2. Design, manufacture and install a hydraulic cylinder on the bonnet of OV2 head with hand a operated power pack. The cylinder would take the place of the spindle nut to enable horizontal adjustment of the bottom section of the bonnet. Operation of the powerpack should adjust the bottom of the bonnet to enable adjustment of the split ratio to SYS1 and SY1, by operating the hydraulic cylinder, when the moving head is in the split position as indicated in **Figure 2**.
3. The spilt ratio should be adjustable 80:20 % to both receiving chutes and a manual position indication should be installed to indicate the approximate split position.
4. The hydraulic cylinder should have a safety factor of 20, to ensure a long service life under high impact loading. The attachment points of the cylinder to the chute as well as to the bonnet shall also be reinforced to ensure that it does not break under impact loading.
5. When the hydraulic cylinder is fully extended, the bottom of the bonnet should not interfere with any of the stationary structures below during moving of the head or the primary scraper.
6. Design, manufacture and install a replaceable ceramic lined peak for the SYS1/SY1 split chute (Indicated in ‘yellow’ in figure **Figure 2** below) that can be bolted on and off the existing structure for easy replacement. The current split peak is welded in and will have to be cut out for the replacement.
7. Design, manufacture and install bolt-on chutes with easily replaceable bolt-on sections (at high wear and impact area) for SYS1 and SY1 top fixed spoon of the receiving chute (indicated in ‘red’ in **Figure 2**). The spoons shall have a continuous smooth curve and shall be lined with smooth ceramic tiles. Drawing 0.84/10183 shows the general arrangement of these chutes in the transfer house.

8. Design, manufacture and install a new spoon chute for SYS1 bottom receiving adjustable spoon chute. The chute are indicated in 'green' in **Figure 2** below. The spoon shall have a continuous smooth curve and shall be lined with smooth ceramic tiles. It shall ensure central loading of SYS1 under all load conditions, including low material flow conditions.
9. Replace skirting rubbers brackets on all SY2A and B receiving chutes to lower skirting rubber position on the belt. See Figure 3 below for the current arrangement.
10. Design, manufacture and install brackets at skirting rear end to ensure rubber skirting is self-readjusting after possible slipping out of position due to conveyor belt excessive misalignment.
11. Design, manufacture and install a new western side chute plate for the top section of the chute to SY1 receiving chute (indicated in 'purple' in **Figure 2** below). The plate shall be bolt-on with increased structural stiffening. The plate should be lined with smooth ceramic tiles in the impact and flow area.
12. Supply a spare cylinder and replaceable peak.

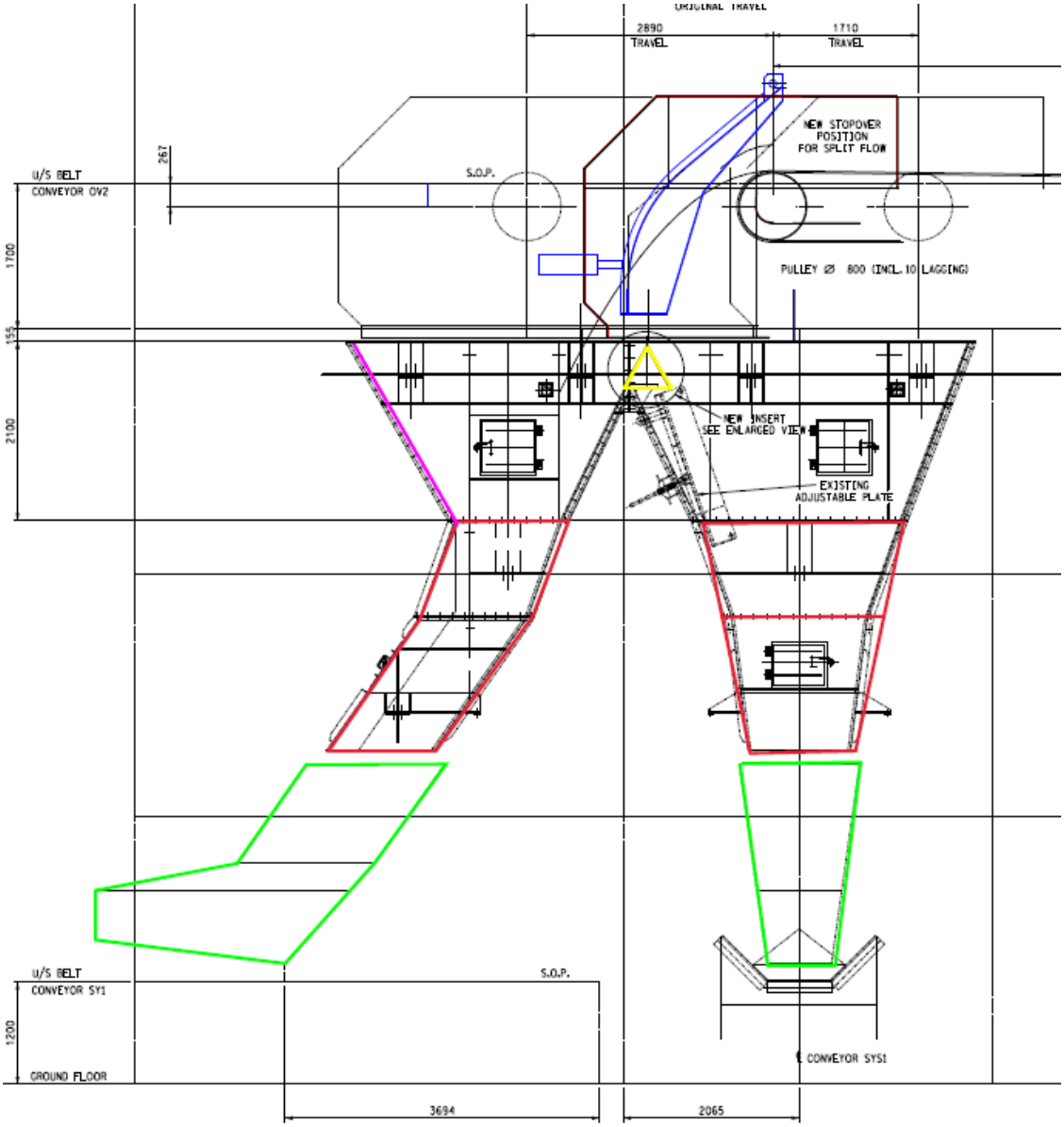

Figure 2: OV2 Feed to SYS1 and SY1

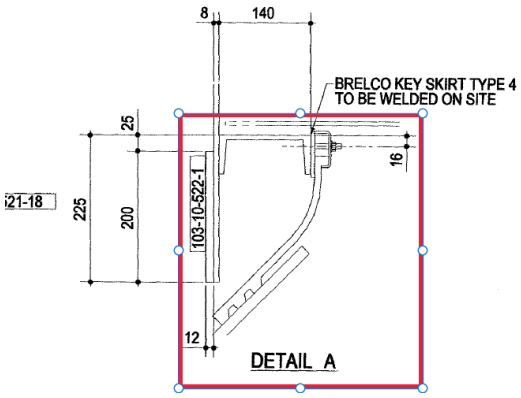

Figure 3: Current skirt detail

12.3 SYS1 and SYS2 Stacker Bypass Guided Flow (0.84/10200)

1. Design, manufacture and install new guided flow chute components for the stacker bypass to ensure central loading of SYS1 and SYS2 after the stacker bypass.
2. It is envisaged that the complete chute with bonnet and spoons will have to be redesigned and replaced to allow for proper guide flow chutes to be installed (this shall be confirmed by DEM modelling of the entire chute). See **Figure 4** with the chutes highlighted.
3. Any newly designed sections of the chute shall have sufficient access provided for easily access to any internal part of the chute for cleaning with spades.
4. This is required for both stacker 1 and stacker 2.
5. Existing mounting positions of the chute shall be used as far as reasonable.
6. Replace skirting rubbers brackets on the bypass chutes to lower skirting rubber position on the belt.
7. Design, manufacture and install brackets at skirting rear end to ensure rubber skirting is self-readjusting after possible slipping out of position due to conveyor belt excessive misalignment.
8. Install new Brelko key type skirting rubbers (or equivalent).

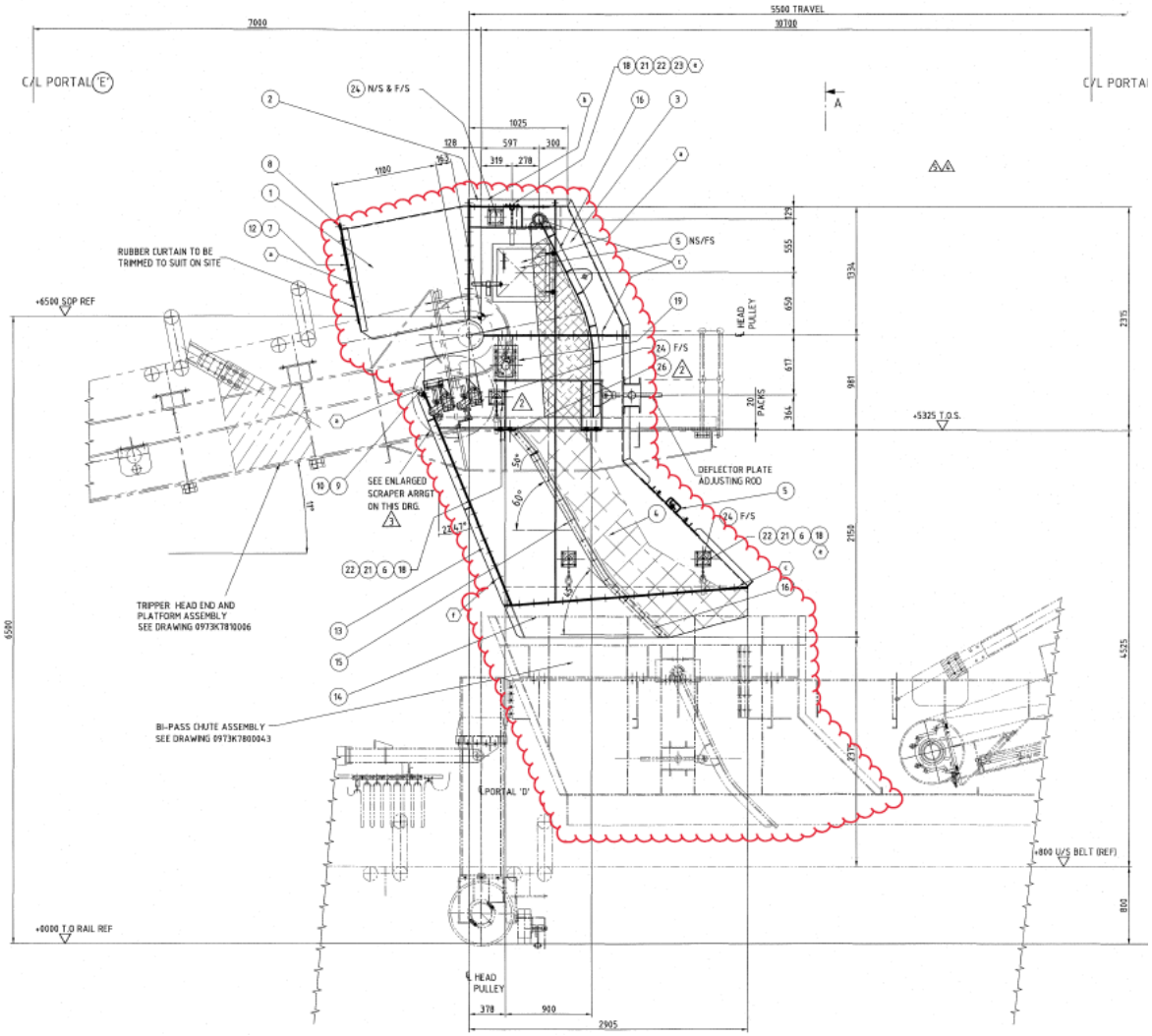

Figure 4: Stacker rear tripper in bypass position

12.4 SY2A and B Guided Flow Chutes (0.84/10501 sht. 11, 12&13, 0.8410233 sht. 8)

1. Design, manufacture and install new guided flow chutes for the 8 receiving chutes from the stockyard conveyors onto SY2A and B to ensure central loading of SY2A and B. There are currently no spoons on the stationary receiving chutes which result in the skew loading of the conveyor as the speeds on the feeding belts change. See Figure 5 below.
2. It is envisaged that the feeding chutes with bonnets will have to be redesigned and replaced to allow for proper guide flow within the chute (this shall be confirmed by DEM modelling). See Figure 5 with the material flow at the currently installed bonnets in red and blue.
3. Replace skirting rubbers brackets on all SY2A and B receiving chutes to lower skirting rubber position on the belt. See Figure 3 below for the current arrangement.
4. Install new Brelko key type skirting rubbers (or equivalent) on all receiving chutes on SY2A and B.
5. Design, manufacture and install brackets at skirting rear end to ensure rubber skirting is self-readjusting after possible slipping out of position due to conveyor belt excessive misalignment.

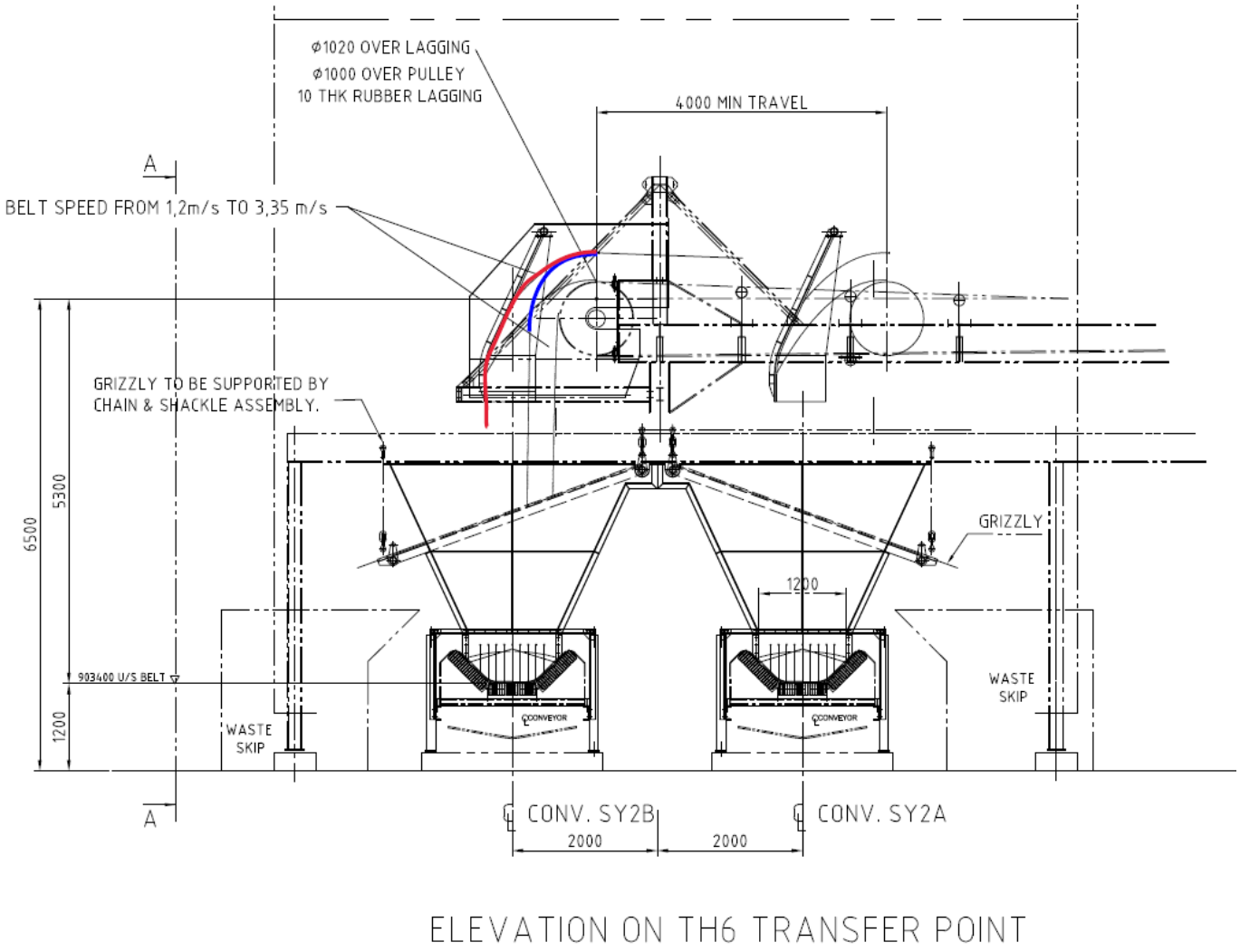

Figure 5: SY2A & B receiving chutes.

12.5 T1A and B Receiving Chutes

1. Align the impact idlers section to ensure that they are all on the same horizontal plane at the tail of T1A and B (0.84/10321 sht. 48)
2. Design, manufacture and install steel skirting that slightly opens up in clearance between the belt towards the discharge to ensure that coal does not spill when feeding the North silo and the belt simultaneously (tail chute overflows). The skirt shall be adjustable to accommodate for wear on the skirts. Install additional rubber or any other measure deemed necessary to prevent spilling during simultaneous feed, if required. (0.84/10322 sht. 17, extract in Figure 6 below)
3. Modify the adjusting gates (4 off) to reduce the open area and position it closer to the belt to ensure the throughput is reduced to 30% of the total capacity when the belt is running at minimum speed of 30% and a maximum of 100 % when the belt is running at full speed. (0.84/10183 sht 3, Figure 7 & Figure 8 below)
4. Install new, stronger hooking points on the adjusting gates.
5. Commission T1A&B simultaneous feed to confirm full range of throughput and split feed is achievable.

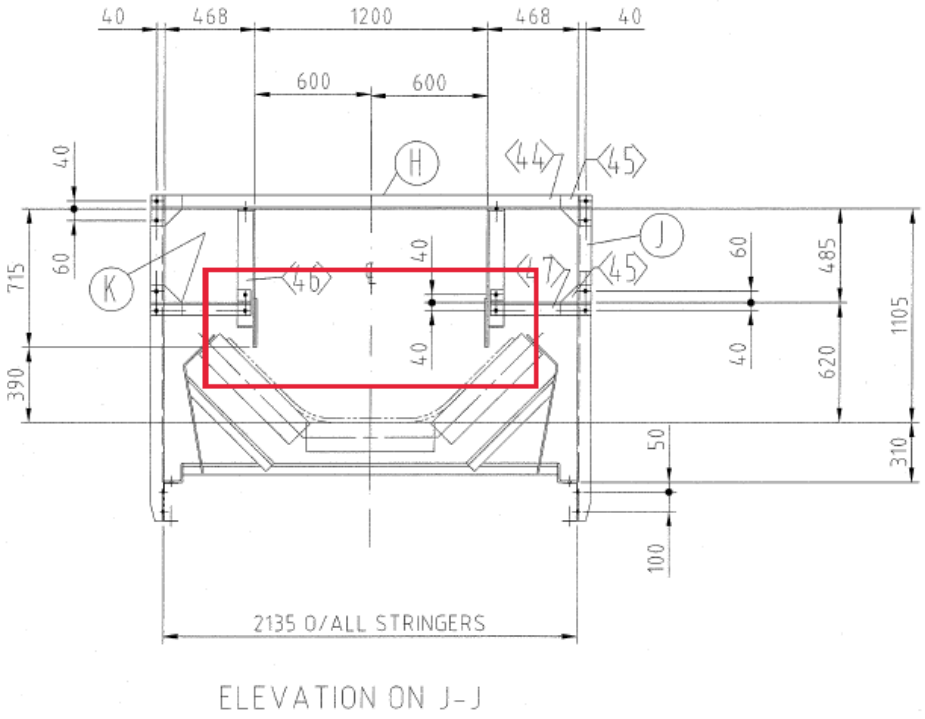

Figure 6: T1A & B current steel skirts

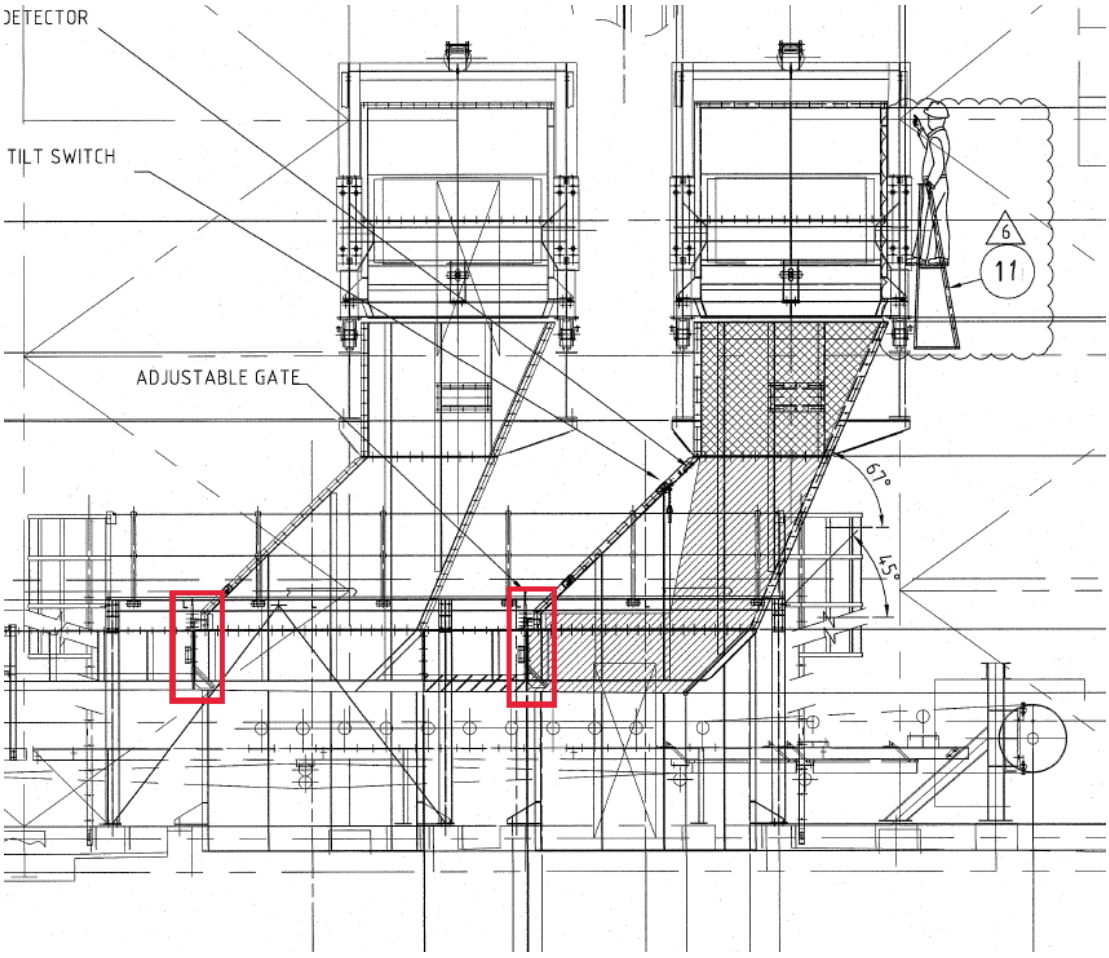

Figure 7: Position of T1A & B adjusting gates

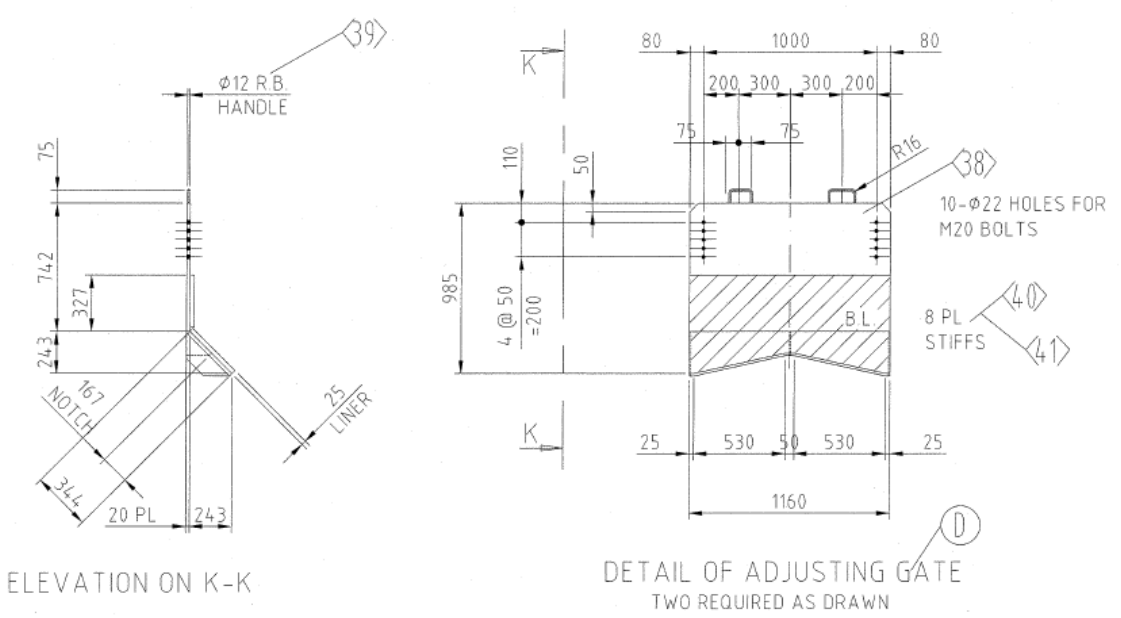

Figure 8: Current adjusting gate on T1A & B

12.6 T7 and T8 head and tail chutes

1. Remove the 4 zippers (pontoon like skirting opening devices) on each head and tail chute of the T7/8 conveyor (12 off). Indicated in 'red clouds' in Figure 9 below.
2. Remove the front section of the head and tail chute where the material impacts. Indicated in pink in Figure 9.
3. Also cut out the edges of the V-section at the rear section of the chutes, to enable the removal of the split section in the middle of the head and tail chutes.
4. Design, manufacture and install an extension to the front of the head and tail chutes. Indicated in 'blue' in Figure 9. The extension should endeavour to minimise material impacting the front part of the chutes, the possible impact area shall be lined with ceramic tiles.
5. The extension chute shall be designed stiff enough to prevent tiles and linings dislodging due to excessive impact loading or pressure from chute blockages under all conditions.
6. The top open section and extension should be enclosed with plates. The enclosure should also have an angled section in the front with a large inspection door, hinged at the top. The complete angled section should also be bolted on to allow for removal, to enable large objects stuck on the grizzlies to be removed by unbolting of the angled section.
7. Manufacture and weld in a V-shaped section with bottom flange at the rear plate of the head and tail chutes, where the spilt section was cut out.
8. Remove the zipper skirting guides on the sides of the head and tail chutes which are not used anymore, indicated in green in the figure.

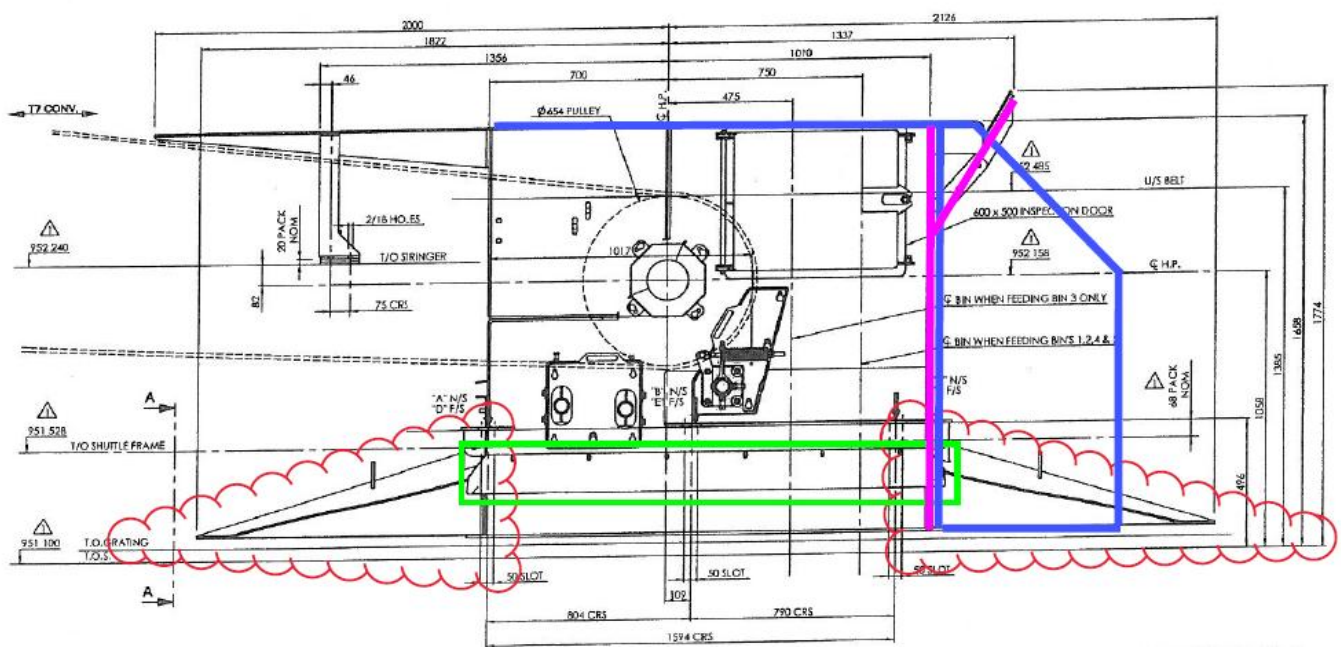

Figure 9: T7&8 head and tail chutes

12.7 Coal properties

The Medupi Coal is characterised by high fines and relatively high moisture and ash content. This make the coal flow challenging and it is relatively cohesive throughout it's as-received condition from the mine. The Contractual Coal quality specification is indicated in Table 2 below.

Table 2: Medupi contractual coal quality specification

Quality Parameter	Unit	Measurement Period	Measurement Basis	Expected Quality	Distress Point	Rejection Point	Impact Coefficient (% per unit)
Calorific Value	MJ/kg	24h	Dry	20.5	19	18	0.474
Ash Content	% by weight	24h	Dry	35	37.5	39	0.169
Abrasive Index	mg Fe/kg	24h	Dry	315	475	625	0.02
Total Moisture (low)	% by weight	8h	AR	11	5	3	0.2
Total Moisture (high)	% by weight	8h	AR	11	12	13.5	0.2
Total Moisture (peak)	% by weight	1h	AR			14	None
Hardgrove Index		24h	Dry	52	45	35	None
Ash Initial Deformation Temp (reducing atmosphere)	° C	24h	Dry	1350	1270	1250	None
Volatile Matter (low)	% by weight	24h	Dry	22-28	20.5	20	None
Volatile Matter (high)	% by weight	24h	Dry	22-28	30	32.5	None
Sulphur Content	% by weight	24h	Dry	1.3	1.8	2.2	None
Size >45mm	% by weight	24h	Dry	5	7	10	None
Size< 6.7mm	% by weight	24h	Dry	60	65	75	None

Medupi also has actual contractual Coal qualities recorded per shift for the past 10 years and this information will be provided.

Various tests were also conducted on Medupi Coal for various investigations and these include:

- Bulk Solids flow testing in August 2015 for ConsulTauri Design (Pty) Ltd using Greentechnical (Pty) Ltd[8].
- Flocculant Investigation for ThyssenKrupp using Vietty Slurrytech in October 2020.[9]
- Flow Properties of Medupi P/S Coal for Thussynkrupp using Tundra Bulk Solids Africa.[10]

These test reports will be provided.

The contractors can also request samples from Eskom Medupi Power Station for they own testing and analysis, if required.

12.8 Design Requirements

All drawings shall comply to the Engineering Drawing Standard – Common Requirements 240-86973501

The Contractor shall include the Employer's drawing number in the drawing title block. Drawing numbers shall be assigned by the Employer as drawings are developed.

All drawing cross references on drawings shall use the Employer's drawing numbers.

The Contractor shall submit all drawings, including manufacturing drawings, in PDF and DGN format.

Drawings that the Contractor submits for review and acceptance purposes shall have the compiler(s) and approver(s) signatures.

All drawings submitted for final approval shall be signed by an applicable Professionally Registered Engineer.

The Contractor shall use the Medupi Plant Zero Datum for all drawings and models.

The Medupi Plant Zero Datum (Drawing Number 0.84-364) according to the WGS84/L027 World Coordinate Reference System shall be provided to the Contractor.

The Contractor will not mobilise on site until all the designs have been accepted and released for installation by the Employer, and the bulk of the components are manufactured and ready for installation.

12.9 DEM modelling

The Contractor will conduct DEM modelling on the following chutes during the design phase:

- OV2 head chute in split feed to SYS1 and SY1 at:
    - 4000 t/h (100% speed).
    - 3000 tph (100% and 75% speeds).
- OV2 to SYS1 at:
    - 4000 (100% speed).
    - 2400 (60% speed).
    - 1200 tph (100% and 30% speeds).
- Stacker bypass at:
    - 3400 (85% speed).
    - 2400 (60% speed).
    - 1000 tph (at 85% and 30% speeds).

- SYS1/2 chute feeding SY2A/B at:
    - 3400 tph (100% SY2A/B speed and 85% SYS1/2 speed).
    - 2400 tph (100% SY2A/B speed and 60% SYS1/2 speed).
    - 2400 tph (70% SY2A/B speed and 60% SYS1/2 speed).
    - 1200 tph (100% SY2A/B speed and 30% SYS1/2 speed).
- SYR1/2 chute feeding SY2A/B at:
    - 3400 tph (100% speed)
    - 2400 tph (100% SY2A/B speed and 70% SYR1/2 speed).
    - 1000 tph (100% SY2A/B speed and 30% SYR1/2 speed).

This will be used as a design tool from early in the design phase to optimise chute positions and profiles, the initial analyses may be executed with a fairly “rough” element count (as compared to the actual material) to allow rapid and cost-effective modelling during the early phase of the design. The final DEM models shall mimic the actual coal properties (with high fines content and high adhesive and cohesive properties) as far as reasonable and practical. The final designs of these chutes will not be approved without the DEM models illustrating that the flow is guided and that central loading is achieved for all scenarios.

12.10 Design life

The remaining life of the power station is approximately 40. Based on this approximation, the design life for the non-wearing components is therefore 40 years.

12.11 Standardisation and interoperability

The newly installed chute components should be standardized on identical or similar conveyors/chutes to allow for interchangeability and standardization of future spares holding.

The additional chutes and components should, as far as practically possible, be bolted onto the existing structures to allow quick installation and replacement.

12.12 Functional interfaces

- Where existing chutes have blocked chute detectors or other instruments passing through or in close proximity, provision should be made to accommodate or relocate them when new components are designed and installed.
- Where blocked chute detectors or other instruments are in close proximity of new components to be installed, care should be taken to remove these instruments before continuing with removal and installation of chute components.

12.13 Constraints

- The design of the new conveyor chute components that interface with existing plant, should endeavour to minimise the downtime of individual conveyor belts as far as possible and not result in downtown of multiple conveyors.
- Medupi is a production plant and availability of conveyors to affect changes is highly dependent on the availability of standby or redundant plant. Planned downtime of conveyors can be cancelled on short notice if other plant failures are experienced.

12.14 Transfer Chutes and Skirting

12.14.1 Transfer chutes

1. Transfer chutes shall be designed specifically to handle coal with a high fines fraction (approximately 60 % below 6.7 mm) and high moisture content. The chutes shall be designed to ensure no blockages under any and all conditions.
2. Transfer chutes shall be designed to handle the required capacities without any build up and blockages. In the case of an emergency trip on one belt (either feed or receiving belt), the chute shall be self-cleaning on restarting of the system.
3. Transfer chutes shall be fully enclosed, water and dust tight and designed for ease of maintenance with adequate inspection doors to ensure all areas can be easily accessed for cleaning.
4. Transfer chutes shall operate without blockage and shall be designed to load the coal centrally onto the receiving conveyor belt. Guided flow transfer chutes shall be used in all transfer points. Guided flow transfer chutes shall include the following salient features:
    a. A carefully designed deflection plate (bonnet or hood) that will enable the guided transfer of coal from one conveyor to another receiving conveyor in a controlled manner.
    b. The bonnet shall be designed in a manner that will ensure sliding rather than impact, hence minimising further particle degradation and creation of further fugitive dust.
    c. The Bonnet should start as wide as the pulley and then gradually narrow to consolidate the coal towards the centre of the bonnet to ensure that coal that comes in off-centre from the feeding belt, it is centralised when discharging from the bonnet.
    d. The angle of incidence of the incoming stream relative to the bonnet shall be between 3 and 8 degrees. The curvature of the bonnet should be such that this angle is maintained as far as possible within these limits when the belt speed is varied in the range specified in **Table 1.**
    e. In addition to the bonnet, a carefully engineered radial ladle (spoon) shall be installed just above the receiving belt and below the bonnet. The coal shall be placed onto the receiving conveyor via the bottom ladle in a manner that will eliminate any spillage, without causing any misalignment and with a velocity component in the direction of the belt and with a magnitude similar to that of the receiving belt.
    f. The ladle/spoon should also start wide (wider than the discharge of the bonnet/hood from above) and then narrow towards the discharge of the spoon to further consolidate the coal and ensure central loading of the coal onto the receiving belt.
    g. The spoon shall ensure central loading irrespective of the speed and loading profile of the feeding belt.
    h. The bonnet shall be adjustable in both a vertical and horizontal direction to enable careful trimming of the incoming stream. A manual adjusting mechanism shall be provided for adjustment of the lower section of the bonnet. This adjustment will enable positioning the coal stream as high up as possible on the bottom ladle. The bottom adjustment arrangement shall not protrude into the normal access way around the feeding chute.
    i. Both the bonnet and the spoon should be lined with smooth, 92% alumina ceramic tiles and the valleys should be lined with specially engineered (shaped) profiled ceramic tiles, to suite the curvature and valley angles of the bonnet or spoon. No sharp corners should be present in the valleys.
    j. The leading edge of the ceramic tiles should not protrude above the trailing edge of the preceding tile/s. This can be verified by running a business card gently in the direct of flow through the bonnet or spoon. If the business cards get stuck, the protrusion is too high and needs to be corrected. Similarly, there should be no protrusion of the tiles when checked across any horizontal plane in guided flow chutes.
5. Chute sections that only handle dribble should be lined with Ultra-High Molecular Weight Polyethylene (UHMWPE) liners. Surfaces shall provide a smooth transfer of material. Liners shall be sized to facilitate handling but each segment shall not exceed 20 kg in mass.
6. All chute angles shall be designed in such a manner that will allow for self-purging of the chutes when conveyor system stops.

7. In addition, access at head ends and tail ends of conveyors and other locations of the conveyor where spillage can occur shall be designed to allow spillage to be easily returned onto the conveyor belt.
8. All chutes shall be designed to provide sufficient cross-sectional area to transfer twice the design discharge capacity.
9. The chutes shall be designed in such a manner that will minimise wear to liners, skirting and conveyor belting.
10. Chute plates shall be constructed in flanged sections connected with M16 minimum diameter galvanized bolts. Sections requiring removal for maintenance shall be fitted with lifting eyes or lugs located in convenient positions.
11. The internal surfaces of all chutes shall be free of all welding slag, ledges or other protrusions which may contribute to coal build-up in the chute. Generous fillets and radii shall be used at all corners, and details of these shall be submitted to the Employer. The flanges shall be matched to achieve a smooth internal joint.
12. The minimum valley angle in chutes shall be 65°.
13. Chutes shall be constructed from mild steel plates with a minimum thickness of 8 mm. Dust covers shall be 5 mm minimum thickness. Head frames integral with the chute shall have a minimum plate thickness of 16 mm.
14. Large hinged inspection doors shall be provided to enable the inspection of bonnets and spoons as well as the cleanout of coal blockages. Similar doors shall be provided adjacent to all belt cleaning devices and chute blockage detectors or other items of plant located inside chutes, for the purpose of inspection and maintenance. The size of inspection door openings shall not be less than 600 mm x 600 mm and those provided for maintenance access or cleanout purposes shall not be less than 800 mm x 500 mm.
15. Doors and covers shall be hinged unless otherwise approved by the Engineer.
16. Access platforms and ladders shall be provided to all inspection doors not accessible from walkway level to the satisfaction of the Engineer.
17. The chute shall be designed in such a manner as to permit easy personnel access into the chute where possible.
18. All access doors shall be securely latched and sealed and capable of being opened, by one person, without the use of tools. Inspection doors, latches or nuts should be attached to the chute to prevent these components from being dropped or getting lost over time.
19. Discharge head boxes shall be fitted with access panels over the full width of the headbox top to allow for inspection and cleaning of the chutes.
20. All doors shall open, close and seal to the satisfaction of the Engineer. Doors or covers shall be of robust construction and free from warping.
21. Detectors shall be provided in the head chute to detect blockage and initiate tripping of the conveyor. The exact location for these detectors shall be determined by the Contractor during commissioning.
22. The external surfaces of the chutes shall be protected against corrosion in accordance with SSZ-45-17 REV.2. The internal surfaces of the chutes shall also be painted with inorganic zinc silicate paint.
23. A rubber dust curtain shall be provided at the point of entry and exit of the chute by coal. The dust curtain shall have split ends to allow unrestricted movement of coal on the belt.
24. Seal rubber used in the chute joints shall not have a shore hardness on the A scale higher than 40-45.
25. Where seal rubber is used, the joining surfaces shall be sand blasted prior to the use of adhesives. The adhesive application procedure for the rubber components shall be submitted to the Engineer.
26. All replaceable liner plates shall have part numbers stamped and numbered as per Contractor's submitted drawings.
27. Where liner plates are welded onto the chutes, the Contractor shall grind the welds, such that a smooth flush surface is produced within the chute. The Contractor shall return all welded surfaces of the bin liners to a 2B finish, including removal of all splatter from the liner plates.
28. Where liners are bolted to a bin or in a chute or hopper, the liner plates shall be installed within an edge tolerance of 2 mm to each other. The liner plates, when installed, shall be staggered such that coal flow cannot run continuously between liner plate edges down the chute.

12.14.2 Skirts

1. The skirt boxes at loading points of all conveyors shall be provided with abrasion resistant steel faces. These abrasion resistant steel faces shall be VRN500 or equivalent.
2. Where applicable, adjustable rubber skirts shall be provided with quick release clamping devices. The Contractor shall submit details of the skirt system offered to the Engineer.
3. Skirts shall extend a minimum of 1000 mm behind the transfer point and a minimum of 4000 mm forward of the transfer point as a minimum.
4. The Contractor shall be responsible for selecting the skirt length to suit the conveyor configuration, speed and coal characteristics. The length of loading skirts shall be sufficient to ensure that the coal stream is settled on the belt and shall prevent any backward running of coal and dust emission behind the loading chute. Any adjustment or modification required during commissioning to attain correct product control shall be carried out by the Contractor.
5. Seal rubber shall be grooved and not be of a durometer higher than 40-45 Shore A scale.
6. The rear of the grooved rubber skirt, where the belt enters the chute should be lifted at least 10 mm off the belt. This is to prevent the rubber skirt from being cut if the belt has misaligned severely and if the skirt is off of the misaligned belt, or in the case of severe belt edge damage.
7. In addition to the above, if there is any joint in the grooved rubber skirting, the skirts should overlap at the joint by at least 40 mm and the skirt at the rear should always be at the bottom of the front skirt. to prevent skirt damage of the skirt on the front side of the joint in the conditions described above.
8. The distance between the bottom of the skirtboard and the top of the belt shall be so as to prevent large pieces of coal from jamming.
9. All skirt dust covers shall be constructed from 5 mm mild steel plate.

12.15 Tests on Completion

After approval of the design documentation but before installation, the contractor submits a commissioning procedure/s for the chutes which included pre-commissioning activities as well as commissioning and performance testing activities for approval by the Employer. No installation of any chute component will be allowed before the overall commissioning procedure or a commissioning procedure specifically for that chute is approved by the Employer.

12.15.1 Pre-Commissioning

1. After manufacture and erection, the Contractor shall satisfy himself that the equipment is complete in all respects and shall carry out the necessary pre-commissioning inspection on the plant, (supplied by the Contractor).
2. The contractor will ensure that the plant is setup and adjusted to the design positions and further ensure that where applicable the moveable heads stop in the design positions.
3. Where applicable, the Contractor shall request the Employer to move the plant to the desired positions to test and verify that there are no clearance problems with the stationary plant and chutes. The bonnet of OV2 will be moved through its full range to verify the movement and clearance with surrounding chutes and scrapers.
4. During this period the Engineer shall carry out visual inspection on the plant and witness the tests.

12.15.2 Commissioning

1. After the above pre-commissioning and functional tests, the chutes shall be commissioned with material.
2. The chutes shall be tested in the loaded condition at a range of loads, to confirm that the chutes and downstream plant performs according to the specification. The following shall be tested and confirmed:
    a. The central loading of downstream conveyor/s and that no misalignment trips are experienced on the downstream conveyor/s.
    b. No spillages occur around the affected chutes.
    c. No blockages or build ups occur in the affected chutes.

d. The performance of the OV2 split ratio adjustment system and the repeatability of the results.
e. The evaluation of conveyor transfer balance when tripped at full capacity and speed (no over spilling at transfer points during conveyor run-down).
f. The ability of the chute to clear itself after starting up after an emergency stop.

3. The commissioning of each chute shall constitute at least 30 days of continuous unassisted operation of the chutes of which the last 7 days shall be completely trouble free. If the operation is not trouble free, commissioning shall continue until the plant functions correctly before it is accepted. During this time the chutes shall be monitored for correct functioning and any build-up, in the bonnets and spoon areas.
4. The contractor will conduct inspection with the Employer's chute cleaning personnel twice daily to monitor for spillages and build-up in the chutes during the commissioning period. All build-ups will be reported on a dedicated commissioning communication group.
5.

12.15.3 Acceptance tests

1. In the last week of trouble-free operation as defined in the commissioning section above, the Contractor shall provide a report with recordings of instantaneous tonnage, time stamped photographical evidence of conveyor loading profile on various load conditions as well as time stamped photographical evidence of the chutes and any build-up. The report shall further indicate any chute related issues and stoppages as well as any chute cleaning activities required.
2. During the last 7 days of trouble-free operation, the Engineer should be present as far as practically possible, during the taking of photographical evidence for loading and build-up.
3. This report will be used to confirm that the contractor meets the performance requirements of the chutes, and it will be submitted to the Employer for review and also make provision for the Employer to sign for acceptance, if in agreement.

13. Procurement

13.1 Sub-Contracting

No *Subcontractor* shall be appointed without the written acceptance of the *Project Manager*, refer to Clauses 11 and 26 of the ECC. The *Contractor* shall manage his Sub*contractor*s to ensure that the works are carried out in accordance with:

- The Accepted Programme
- The conditions of contract
- The Works Information

13.2 Plant and Materials

13.2.1 Spares and consumables

The *Contractor* is required to provide the spares are per the technical specification.

13.3 Commissioning and Testing

The *Contractor* shall be responsible for commissioning, acceptance or and performance testing of all the Works. The *Contractor* shall submit the following documentation for review and acceptance by the *Project Manager* prior to commissioning of the Works.

- Commissioning plan
- Commissioning procedure

Acceptance or and performance testing procedure. All commissioning and testing activities shall be conducted in line with the approved designs and contract. All commissioning and testing activities shall be witnessed by the Supervisor.

14. Construction

14.1 Temporary works, Site services & construction constraints

14.1.1 Restrictions to access on Site, roads, walkways and barricades

Temporary works shall be any work or infrastructure and or establishment which the *Contractor* requires in order to provide the *works*; which includes, inter alia his facilities, connection to existing water, sewer, electricity, etc. All such temporary works shall be adequately decommissioned, restoration to natural environment and the area made good on completion of the *works* to the acceptance of the *Project Manager.*

14.1.2 People restrictions on Site; hours of work, conduct and records

The *Contractor* is required to keep records of his people on Site, including those of his Sub*Contractor*s which the *Project Manager* or *Supervisor* has access to, at any time.

14.1.3 Working Areas

The extent and outline of the working area that may be used by the *Contractor* in carrying out the *works* shall be agreed with the *Supervisor*. Reference may be made to the Drawings for a general overview of the layout and extent of the works.

14.1.4 Facilities, Samples and Inspections

The *Contractor* shall arrange facilities where appropriate, to allow for the provision of samples, to the acceptance of the *Supervisor*. The *Supervisor* will carry out routine site inspections of finished work as well as of work in progress. The *Contractor* shall allow access to the works for such routine inspections.

14.1.5 Photography and Progress Photographs

In terms of the Contract, the *Contractor* is not required to provide the *Project Manager* or the *Supervisor* with photographs of work progress. The *Contractor* is not allowed to take photographs of the *works* or parts thereof without prior written authorisation by the *Project Manager.*

14.1.6 Liaison with Statutory Authorities

The *Contractor* shall be responsible for liaising with and ensuring compliance with the requirements of the appropriate statutory authorities in carrying out the *works*.

14.2 Site Establishment

14.2.1 *Contractor's* Camp/ Laydown

The *Contractor* must make his own arrangements for laydown and or site camp areas.

14.2.2 Power Supply to the Site

Employer will provide the source of power supply, the *Contractor* will then connect for their site offices as part of their establishment.

14.2.3 Water

Employer will provide potable water for domestic consumption on Site.

14.2.4 Other Facilities and Services

The *Contractor* shall provide all facilities and services required for completion of the *works* as detailed in the Works Information.

14.2.5 Existing Services

Within the locality of the *works*, there are existing services (telecommunication, sewage, water pipes and electrical cables) which the *Contractor* shall take extreme care to prevent any damages during the execution of the *works.* The *Contractor* shall liaise with the *Supervisor* before work commences to identify existing services and shall be responsible to expose and protect all existing services where directed.

14.2.6 Recording of Weather

The *Contractor* shall provide a rain gauge and maximum-minimum thermometer and shall erect them compliance with the requirements of the South African Weather Bureau. The *Contractor* shall record and keep a record of the daily rainfall and maximum-minimum temperatures and submit the records to the *Supervisor* on a daily basis. The *Contractor* shall arrange with the *Supervisor* for witnessing of the weather recording.

14.2.7 Operational maintenance after Completion

The *Contractor* is required to provide Operation and Maintenance Manuals for all of the *works*, for acceptance by the *Supervisor.*

15. Plant and Materials Standards and Workmanship

15.1 Materials, Workmanship and Products

15.1.1 Materials and Workmanship

New plant and materials are to be used for *works*. Plant and Materials to be permanently installed in to the works are not to be used for any temporary purposes on site.

PART 4: SITE INFORMATION

Document reference	Site Information	No of pages
	This cover page	1
C4	Site Information	37
	Total number of pages	2

Part 4: Site Information

Core clause 11.2(16) states

“Site Information is information which

- describes the Site and its surroundings and
- is in the documents which the Contract Data states it is in.”

In Contract Data, reference has been made to this Part 4 of the contract for the location of Site Information.

16. General description

The Medupi Power Station is located on an 883ha-site near Lephalale, in the Waterberg district of Limpopo, approximately 350km north of Johannesburg, South Africa. The plant site lies close to the border between South Africa and Botswana. **this project is for the improvement to specific coal chutes at Medupi Power Station. It** mainly involves replacement of existing chute components with redesigned, improved components to ensure enhanced material flow, central loading of downstream belts and minimal coal build-up in chutes. The scope included design, procurement, manufacturing, shipping to site, construction and commissioning of the chutes, bonnets, spoons, and components of the affected chutes.

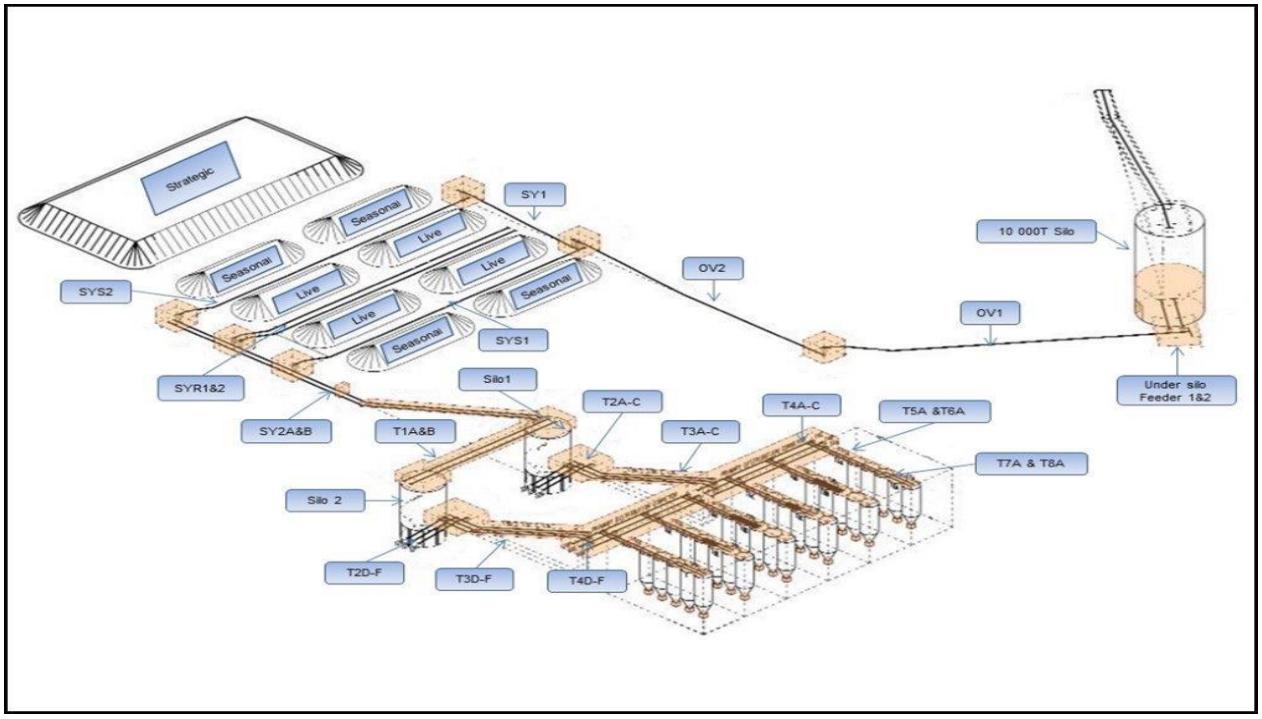

Figure 1: Medupi Coal Plant Overview Drawing

17. Existing buildings, structures, and plant & machinery on the Site

Existing coal structures:
a) 10KT Silo
b) Overland conveyor 1 & 2
c) Transfer House 1-7
d) Coal stock yard (with belts SYS1 &SYS2)
e) 2 x 1KT Silos
f) Drive House gantries
g) 2 x Incline Coal conveyors
h) Coal plant substation