

CONTRACT NO : RFP046/2025  
CONSTRUCTION OF PHASE 1 ROOIWAL WWTW

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## **PART 3: ELECTRICAL AND MECHANICAL EAST WORKS BOQ**

**CITY OF TSHWANE**  
**CONTRACT NO : RFP046/2025**  
**CONSTRUCTION OF PHASE 1 ROOIWAL WWTW EAST WORKS**  
**ELECTRICAL AND MECHANICAL FINAL SUMMARY**

ITEM	DESCRIPTION	AMOUNT
1	PRELIMINARY AND GENERAL	
2	PROVISIONAL SUMS	
3	ELECTRICAL WORKS	
4	MECHANICAL WORKS	
	SUBTOTAL (A)	
	The following sums will be under the sole control of the Engineer and may be deducted in part or full.	
	ADD CONTINGENCY 10%	
	SUBTOTAL (B)	
	Contractor to allow 5% for CIDB Built Programme	
	SUBTOTAL (C)	
	EPWP TRAINING	
	Allow for EPWP Training	R1,000,000.00
	SUBTOTAL Excl VAT	
	ADD VAT (15%)	
<b>TOTAL CARRIED TO FORM OF OFFER</b>		

**CITY OF TSHWANE**  
**CONTRACT NO : RFP046/2025**  
**CONSTRUCTION OF PHASE 1 ROOIWAL WWTW NORTH AND WEST WORKS**  
**ELECTRICAL AND MECHANICAL FINAL SUMMARY**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	<p><b><u>SCHEDULED ESTABLISHMENT, OVERHEADS &amp; INCIDENTAL COSTS</u></b></p> <p><b>NOTES</b>  The supply, installation, testing, commissioning and a 52 week defects liability period in accordance with this bill of material, Local Supply Authority's by-laws &amp; regulations, National Building Regulations, detailed electrical specification, SANS 10142-1: 2003 (Code of Practice), Occupational Health and Safety Act, General Conditions of Contract and drawings listed in the detailed</p> <p>1.The rates and/or prices for items scheduled in this Section under the headings - ONCE-OFF ESTABLISHMENT COST - DE-ESTABLISHMENT COST and - ONGOING OPERATIONAL AND OVERHEAD COST include everything to cover the Contractor's direct costs, overheads, profit and expenses required for all risks, liabilities and obligations in terms of this contract. (excluding VAT) 2.The rates and/or prices for items scheduled in this section under the heading "INCIDENTAL EXPENDITURE PROVISIONS" must be priced in this framework tender. The Contractor hereby agrees that these rates will be used for compensation event cost calculation and pricing where applicable instead of Defined Cost, unless otherwise decided by the Employer, at the Employer's sole discretion. Any items not priced are deemed to be included 3.Lump sum prices in this section are fixed for the contract, and are not subject to adjustment in compensation event assessments.</p>				
1	<b><u>ONCE-OFF ESTABLISHMENT COST</u></b>				

	(Claimable for payment upon completion of all related activities associated with each item)				
	<b><u>Contractual Requirements</u></b>				
1.1	Compliance with all clauses of the Contract and Works Information	Sum	1		
1.2	Compliance with the law, regulations and by laws	Sum	1		
1.3	Compliance of tender participation goal in respect of local resources as per items in annexure 5	Sum	1		
1.4	Compliance with the stipulations of the Environmental Specification	Sum	1		
1.5	Insurance and liabilities	Sum	1		
1.6	Performance bond	Sum	1		
	<u>Establish Facilities on the Site</u>				
	<u>Facilities for Project Manager</u>				
1.7	Air conditioned office accommodation with suitable tables and chairs for meetings to be held on the site	Sum	1		
1.8	Contract name board - Refer to WCG Guidelines	Sum	1		
	<u>Facilities for Contractor</u>				
1.9	Offices (shared with Project Manager)	Sum	1		
1.10	Workshops	Sum	1		
1.11	Laboratories	Sum	1		
1.12	Ablutions and latrine facilities	Sum	1		
1.13	Tools and equipment	Sum	1		
1.14	Water supply	Sum	1		
1.15	Electricity supply	Sum	1		
1.16	Communication	Sum	1		
	<b>DE-ESTABLISHMENT COST</b>				

	Costs for complete removal of site establishment and restoration of the site to the Project Mangers satisfaction at the end of the contract:		1		
1.17		Sum			
2	<b>ONGOING OPERATIONAL AND OVERHEAD COST</b>				
	<u>Claimable for payment as a time-related cost during execution of the contract</u>				
	<b>Contractual Requirements</b>				
2.1	Compliance with all clauses of the Contract and Works Information	Sum	1		
2.2	Compliance with the law, regulations and by laws	Sum	1		
2.3	Compliance of tender participation goal in respect of local resources as per items in annexure 5	Sum	1		
2.4	Insurance and liabilities	Sum	1		
2.5	Performance bond	Sum	1		
2.6	Facilities for Project Manager				
2.7	Air conditioned office accommodation with suitable tables and chairs for meetings to be held on the site	Sum	1		
2.8	Facilities for Contractor				
2.9	Offices (shared with Project Manager)	Sum	1		
2.10	Workshops	Sum	1		
2.11	Laboratories	Sum	1		
2.12	Ablutions and latrine facilities	Sum	1		
2.13	Tools and equipment	Sum	1		
2.14	Water supply	Sum	1		
2.15	Electricity supply	Sum	1		
2.16	Communication	Sum	1		
2.17	Provisional sum for salary for the Resident Engineer	sum	1	R2,673,000.00	R2,673,000.00
2.18	Profit and attendance on item 2.17	%		R2,673,000.00	

2.19	Company and head office costs	Sum	1		
3	<b>INCIDENTAL EXPENDITURE PROVISIONS</b>				
	<u>The quantities listed are included for tender evaluation purposes only, and do not reflect actual quantities envisaged for the project.</u> <u>The rates offered shall apply for compensation event pricing for the duration of the contract where applicable</u>				
	All compensation event costs related to people are allocated according to the breakdown of categories below (or nearest matching category, if no exact description match). The following rate adjustments will apply for after hours work: Weekdays after hours and Saturdays - Rate X 1.5 Sundays and Public Holidays - Rate X 2				
3.1	Contract/Project Manager	Days			Rate
3.2	Site Manager	Days			rate
3.3	Safety Officer	Days			rate
3.4	Site Foreman (General Supervisor)	Days			rate
3.5	Foreman (Supervisor)	Days			rate
3.6	Administrative clerk	Days			rate
3.7	Skilled Artisan	Days			rate
3.8	Semi-Skilled Artisan	Days			rate
4	<b>PROJECT SPECIFIC PRELIMINARIES</b>				
4.1	Workshop Drawings	Sum	1		
4.2	As built Drawings	Sum	1		
4.3	Training of Staff	Sum	1		
4.4	Operating and Maintenance Manuals	Sum	1		
4.5	One year Maintenance Guarantee	Sum	1		
5	<b>Occupational Health and Safety</b>				
5.1	<u>General safety obligations</u>				

5.1.1	Mandatory Signage / Road signs	Sum	1		
5.1.2	Safety Poster including Acts & Regulations	Sum	1		
5.1.3	Safety office / shed or container for the duration of the contract	Sum	1		
5.1.4	Allowance for toilets (Gender specific)	Each	3		
5.1.5	Lay down & storage areas	Sum	1		
5.1.6	Employee eating area	Sum	1		
5.1.7	Hand washing & sanitizing stations	Sum	1		
5.1.8	Compliance with the Occupational Health and Safety Act, Construction Regulations and Health and Safety Specification for the duration of the contract	Sum	1		
5.2	<b>Safety Planning</b>				
5.2.1	Safety file and Risk Assessment	Sum	1		
5.2.2	Health and safety plan	Sum	1		
5.2.3	Medical assessment of employees (Entrance & Exit) & Vaccines for for employees working within sewer	Sum	1		
5.2.4	Fall Protection Plan	Sum	1		
5.2.5	Traffic Management Plan	Sum	1		
5.3	<b>Safety Personnel</b>				
5.3.1	Construction safety officer (Full time)	Month	12		
5.3.2	Work overalls - Reflective Conti suits (Min 2 pairs each)	Each	50		
5.3.3	Safety Shoes	Each	50		
5.3.4	Gum Boots	Each	50		
5.3.5	Hardhats	Each	50		
5.3.6	Reflective vests	Each	50		
5.3.7	Ear Plugs (100's)	Box	10		
5.3.8	Ear Muffs	Each	50		

5.3.9	Full body Safety Harness (Double lanyard)	Each	2		
5.3.10	Life Lines	Each	2		
5.3.11	Dust / Cloth Masks (100s)	Box	100		
5.3.12	Eye protection (Safety Glasses)	Each	60		
5.3.13	Hand Protection (Gloves) 100pcs	Bulk	50		
5.3.14	Barricade Netting (1 x 50m)	Sum	1		
5.3.15	Edge protection material & equipment	Sum	1		
5.3.16	Fire Extinguishers (9kg)	Each	2		
5.3.17	First Aid box (GR3 kit). Including refill kits required.	Each	2		
5.3.18	Spill kit (120litre)	Each	2		
5.3.19	Lock out items (locks, tags,safes, etc..)	Sum	1		
5.3.20	Emergency air siren	Each	2		
5.3.21	Rescue equipment	Sum	1		
	<b>Total Preliminaries</b>				



**CITY OF TSHWANE**  
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**CONSTRUCTION OF PHASE 1 ROOIWAL WWTW NORTH AND WEST WORKS**  
**ELECTRICAL AND MECHANICAL FINAL SUMMARY**

	Description	Unit	Qty	Rate	Total
	Bill No 3: Provisionals and Generals				
<b>3</b>	<b>Provisionals</b>				
3.1	Provision for Fire Safety Related Work	sum	1	R200,000.00	R200,000.00
3.2	Provision for Ventilation Related Work	sum	1	R350,000.00	R350,000.00
3.3	Provision for Building Related Work	sum	1	R2,500,000.00	R2,500,000.00
3.4	Provision for Access ,dewatering and drainage related Services Related Work	sum	1	R800,000.00	R800,000.00
3.5	Provision for Cleaning,sludge and Waste Disposal Work	sum	1	R1,200,000.00	R1,200,000.00
3.6	Lightning Protection System	sum	1	R35,000.00	R35,000.00
3.7	MV Equipment & Switchgear Repair & Upgrade	sum	1	R125,000.00	R125,000.00
3.8	Refurbishment of 16 X Highmast Light Structures & Kiosks	sum	1	R320,000.00	R320,000.00
3.9	Provisional sum for salary of CEO and travel assistance of Project Steering Committee Members appointed by Employer	sum	1	R96,000.00	R96,000.00
3.10	Profit and attendance on item 3.9	%		R96,000.00	
17	Provision for Repairs and moving of existing services to be confirmed onsite	sum	1	R1,600,000.00	R1,600,000.00
	Subtotal Provisionals				

CITY OF TSHWANE  
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CONSTRUCTION OF PHASE 1 ROOIWAL WWTW NORTH AND WEST WORKS  
ELECTRICAL SUMMARY

SCHEDULE	DESCRIPTION	TOTAL	TOTAL
		LABOUR	MATERIAL
Schedule 1:	East Works Electrical	R 0.00	R 0.00
Total Labour and Material			
TOTAL CARRIED FORWARD TO FINAL SUMMARY PAGE			R 0.00

**CITY OF TSHWANE**  
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**CONSTRUCTION OF PHASE 1 ROOIWAL WWTW NORTH AND WEST WORKS**  
**ELECTRICAL**

ITEM	DESCRIPTION	UNIT	EST QTY	PRICES			
				UNIT	RATES	TOTAL	TOTAL
				LABOUR	MATERIAL	LABOUR	MATERIAL
<b>3</b>	<b>Schedule No 3 EAST WORKS</b>						
3.1	300A, 30kA three pole circuit breaker and cradle to be installed into existing mini substation.	No	1			R -	R -
3.2	Manufacture, supply, off loading and installation of the Inlet Works IP66 Stainless Steel MCC including commissioning as detailed in the specifications and drawings.	No	1			R -	R -
3.3	Manufacture, supply, off loading and installation of the Inlet Works IP66 Stainless Steel MCC including commissioning as detailed in the specifications and drawings to cater for 2 x Mechanical Screens, 2 x Conyeros, PLC, Local DB& 2x Compressors )	No	1			R -	R -
3.4	Refurbish and rewire of the existing MCC in Plant Room including commissioning as detailed in the specifications and drawings.	No	1			R -	R -
3.5	DIFFERENTIAL ULTRASONIC LEVEL DETECTOR: (Inlet Works in & Outflow)						
a	FDU92 level sensor including 20m of cable.	No	2			R -	R -
b	304 stainless steel support bracket for the sensor head.	No	2			R -	R -
c	FMU90 ultrasonic level transmitter.	No	2			R -	R -
d	Programming of the ultrasonic level transmitter.	No	2			R -	R -
e	FEB for the transmitter including terminals, surge arrestors, circuit breaker & stainless steel pedestal.	No	2			R -	R -

3.6	Refurbish and rewire of the existing Clarifier Bridge electrical works mechanism including commissioning by rewiring and reequipping with new motors, emergency Stop/Start Stations, Welding Plug	No	1		R	-	R	-
3.3	LV CABLE PVC/SWA/PVC copper conductor cables strapped to cable ladders. (trenches, sleeves and cable terminations measured elsewhere):							
a	95mm <sup>2</sup> x 4 core (MCC / DB supply)	m	280		R	-	R	-
b	70mm <sup>2</sup> Kwena earthing conductor	m	280		R	-	R	-
c	16mm <sup>2</sup> x 4 core ( panel)	m	30		R	-	R	-
d	6mm <sup>2</sup> x 4 core (compressor cable)	m	30		R	-	R	-
e	6mm <sup>2</sup> x 4 core (welding socket)	m	10		R	-	R	-
f	1.5mm <sup>2</sup> x 3 core (emergency stop cable)	m	30		R	-	R	-
3.4	LV CABLE TERMINATION: PVC/SWA/PVC Exe corrosion guard cable glands (IP68) complete including conductor & earth termination, lugs, tapes, drilling etc							
a	95mm <sup>2</sup> x 4 core (MCC / DB supply)	No	2		R	-	R	-
b	70mm <sup>2</sup> Kwena earthing conductor	No	2		R	-	R	-
c	16mm <sup>2</sup> x 4 core (control panel)	No	2		R	-	R	-
d	6mm <sup>2</sup> x 4 core (compressor cable)	No	6		R	-	R	-
e	1.5mm <sup>2</sup> x 3 core (emergency stop cable)	No	4		R	-	R	-
3.5	CABLE EXCAVATION:							
a	Pickable material	m <sup>3</sup>	50		R	-	R	-
b	Soft Rock	m <sup>3</sup>	20		R	-	R	-
c	Hard Rock	m <sup>3</sup>	20		R	-	R	-
d	Backfilling & Compaction	m <sup>3</sup>	90		R	-	R	-
3.6	CABLE ROUTE MARKERS: The supply and installation of concrete cable route markers	No	10		R	-	R	-
3.7	CABLE LADDER AND TRAY: OL55 duplex coating (exterior polyester) 3CR12 cable ladder including all accessories mounted to concrete slabs / walls.							
a	100mm cable ladder	m	20		R	-	R	-
b	100mm 90° bends	No	4		R	-	R	-
c	100mm duplex coating (exterior polyester) 3CR 12 cable tray.	m	20		R	-	R	-
3.8	LOCAL EMERGENCY STOP STATIONS:							

a	Surface mounted IP65 emergency stop push buttons.	No	12			R	-	R	-
b	Stainless Steel support stands for the above item.	No	12			R	-	R	-
3.9	Surface mounted 35A, 5 pin 3 phase welding socket including male plug. (to be mounted brick wall)	No	1			R	-	R	-
3.1	LIGHTING AND SMALL POWER GALVANISED CONDUIT:								
a	Surface mounted 20mm galvanised conduit including couplings, galvanised saddles and all accessories.	m	110			R	-	R	-
c	Surface mounted round galvanised 20mm conduit boxes including galvanised cover plate.	No	12			R	-	R	-
3.1	PHOTO CELL:								
a	Royce Thompson photo cell including conduit box.	No	1			R	-	R	-
3.1	WIRING PVC insulated copper conductors drawn into galvanised conduit:								
a	1.5mm2	m	200			R	-	R	-
b	2.5mm2	m	300			R	-	R	-
3.1	EARTH WIRING BCEW drawn into galvanised conduit:								
a	2.5mm2	m	180			R	-	R	-
3.1	LUMINAIRES To be mounted to suspended ceilings and to brick walls:								
a	2 x 36W IP65 vapour proof LED luminaire complete Driver.	No	6			R	-	R	-
b	2 x 36W IP65 vapour proof LED Emergency Maintained luminaire complete Driver.	No	4			R	-	R	-
3.2	LIGHT SWITCHES Industrial surface mounted 16A single lever two way switch.	No	2			R	-	R	-
TOTAL CARRIED FORWARD TO SUMMARY						R	-	R	-

**CITY OF TSHWANE**  
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**CONSTRUCTION OF PHASE 1 ROOIWAL WWTW NORTH AND WEST WORKS**  
**MECHANICAL SUMMARY**

SUMMARY	
Bill No 1-East Heating System	R0.00
Bill No 2-Mechanical Refurbishment Work	R0.00
<b>Total Carried forward to Mechanical and Electrical Bill</b>	<b>R0.00</b>

Item	Description	Unit	Qty	Rate	Total
	BILL NO 1:DIGESTER PLANT HEATING SYSTEM REFURBISHMENT				
1	Digesters				
1.001	Supply and Install 1200x900x12mm Stainless Steel Gr 304/316 Checker Plate inspect hole lid complete with lifting handles,pre-drilled mounting holes,high tensile bolts Remove existing 1200 x 900mm cast iron neck at the inspection hole and replace with a stainless steel 12mm x	ea	R 1.00	R -	R -
1.002	GR304/316 Stainless steel including welded flanged lip to fit new lit with pre-drilled holes.This should include removal and recasting concrete with the neck	ea	R 1.00	R -	R -
1.003	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket Supply and Install 500dia x12mm mild steel steam injection	ea	R 1.00	R -	R -
1.004	hole lid complete with pipe extension to connect to the 65mm steam supply line.Retain the existing neck,replace all bolts and gasket.	ea	R 1.00	R -	R -
1.005	Replace Steam Injection line into the digester:65mm x sch80S	m	R 7.00	R -	R -
1.006	Replace all AC Piping from the methane gas outlet to the valve chamber with welded stainless steel GR304/316 :125mm x sch80S	ea	R 15.00	R -	R -
1.007	Remove ,recast and replace existing methane gas outlet cast iron neck and replace with stainless steel GR304/316 neck complete with lip flanges with pre-drilled holes and gasket to mount new lid:1100mm x 12mm	ea	R 1.00	R -	R -
1.008	Supply and Install new stainless steel dome lid for methane gas outlet dome complete with pre-drilled holes,bolts,washers and a flanged outlet to mount methane gas piping	ea	R 1.00	R -	R -
1.009	Remove existing and replace pressure and vacuum breather valve complete with 125mm inline deflagration flame arrester	ea	R 1.00	R -	R -
1.01	Derust and repaint all hand railings at the Digester plant including those liding to the ground level	sum	R 1.00	R -	R -
1.011	Shorten existing 225mm cast iron scum removal/overflow piping to required level	ea	R 1.00	R -	R -
1.012	Supply and Install 225mm mechanical flange adapter to create a flange connection to the cast iron piping	ea	R 1.00	R -	R -
1.013	supply 225mm loose removable flange with gasket,bolts ,nuts and washers (to be used during crust removal)_	ea	R 1.00	R -	R -
1.014	Supply and instal steel handrails to fully enclose the digester tank valve chamber (5m x 7m)	ea	R 1.00	R -	R -
1.015	Refurbish 125mm methane gas isolating valve in the valve chamber	ea	R 1.00	R -	R -
1.016	Replace all 125mm AC Methane gas piping with welded stainless steel Sch80S Gr 304/316 piping including properly coupling the piping to underground AC Piping to the boiler plant	m	R 7.00	R -	R -
1.017	Supply and Install new thermocouple with Analogue gauge for local readout	ea	R 1.00	R -	R -
	Digester 8 Subtotal to Bill Summary				R -
1.2	Digester 9				
1.201	Supply and Install 1200x900x12mm Stainless Steel Gr 304/316 Checker Plate inspect hole lid complete with lifting handles,pre-drilled mounting holes,high tensile bolts Remove existing 1200 x 900mm cast iron neck at the inspection hole and replace with a stainless steel 12mm x	ea	R 1.00	R -	R -
1.202	GR304/316 Stainless steel including welded flanged lip to fit new lit with pre-drilled holes.This should include removal and recasting concrete with the neck	ea	R 1.00	R -	R -
1.203	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R 1.00	R -	R -

1.204	Supply and Install 500dia x12mm mild steel steam injection hole lid complete with pipe extension to connect to the 65mm steam supply line.Retain the existing neck,replace all bolts and gasket.	ea	R	1.00	R	-	R	-
1.205	Replace Steam Injection line into the digester:65mm x sch80S	m	R	7.00	R	-	R	-
1.206	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.207	Replace all AC Piping from the methane gas outlet to the valve chamber with welded stainless steel GR304/316 :125mm x sch80S	ea	R	15.00	R	-	R	-
1.208	Remove ,recast and replace existing methane gas outlet cast iron neck and replace with stainless steel GR304/316 neck complete with lip flanges with pre-drilled holes and gasket to mount new lid:1100mm x 12mm	ea	R	1.00	R	-	R	-
1.209	Supply and Install new stainless steel dome lid for methane gas outlet dome complete with pre-drilled holes,bolts,washers and a flanged outlet to mount methane gas piping	ea	R	1.00	R	-	R	-
1.21	Remove existing and replace pressure and vacuum breather valve complete with 125mm inline deflagration flame arrester	ea	R	1.00	R	-	R	-
1.211	Derust and repaint all hand railings at the Digester plant including those liding to the ground level	sum	R	1.00	R	-	R	-
1.212	Shorten existing 225mm cast iron scum removal/overflow piping to required level	ea	R	1.00	R	-	R	-
1.213	Supply and Install 225mm mechanical flange adapter to create a flange connection to the cast iron piping	ea	R	1.00	R	-	R	-
1.214	supply 225mm loose removable flange with gasket,bolts ,nuts and washers (to be used during crust removal)_	ea	R	1.00	R	-	R	-
1.215	Supply and instal steel handrails to fully enclose the digester tank valve chamber (5m x 7m)	ea	R	1.00	R	-	R	-
1.216	Refurbish 125mm methane gas isolating valve in the valve chamber	ea	R	1.00	R	-	R	-
1.217	Replace all 125mm AC Methane gas piping with welded stainless steel Sch80S Gr 304/316 piping including properly coupling the piping to underground AC Piping to the boiler plant	m	R	7.00	R	-	R	-
1.218	Supply and Install new thermocouple with Analogue gauge for local readout	ea	R	1.00	R	-	R	-
	Digester 9 Subtotal to Bill Summary						R	-
1.3	Digester 10							
1.301	Supply and Install 1200x900x12mm Stainless Steel Gr 304/316 Checker Plate inspect hole lid complete with lifting handles,pre-drilled mounting holes,high tensile bolts	ea	R	1.00	R	-	R	-
1.302	Remove existing 1200 x 900mm cast iron neck at the inspection hole and replace with a stainless steel 12mm x GR304/316 Stainless steel including welded flanged lip to fit new lit with pre-drilled holes.This should include removal and recasting concrete with the neck	ea	R	1.00	R	-	R	-
1.303	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.304	Supply and Install 500dia x12mm mild steel steam injection hole lid complete with pipe extension to connect to the 65mm steam supply line.Retain the existing neck,replace all bolts and gasket.	ea	R	1.00	R	-	R	-
1.305	Replace Steam Injection line into the digester:65mm x sch80S	m	R	7.00	R	-	R	-
1.306	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.307	Replace all AC Piping from the methane gas outlet to the valve chamber with welded stainless steel GR304/316 :125mm x sch80S	ea	R	15.00	R	-	R	-
1.308	Remove ,recast and replace existing methane gas outlet cast iron neck and replace with stainless steel GR304/316 neck complete with lip flanges with pre-drilled holes and gasket to mount new lid:1100mm x 12mm	ea	R	1.00	R	-	R	-



1.309	Supply and Install new stainless steel dome lid for methane gas outlet dome complete with pre-drilled holes,bolts,washers and a flanged outlet to mount methane gas piping	ea	R	1.00	R	-	R	-
1.31	Remove existing and replace pressure and vacuum breather valve complete with 125mm inline deflagration flame arrester	ea	R	1.00	R	-	R	-
1.311	Derust and repaint all hand railings at the Digester plant including those liding to the ground level	sum	R	1.00	R	-	R	-
1.312	Shorten existing 225mm cast iron scum removal/overflow piping to required level	ea	R	1.00	R	-	R	-
1.313	Supply and Install 225mm mechanical flange adapter to create a flange connection to the cast iron piping	ea	R	1.00	R	-	R	-
1.314	supply 225mm loose removable flange with gasket,bolts ,nuts and washers (to be used during crust removal)_	ea	R	1.00	R	-	R	-
1.315	Supply and instal steel handrails to fully enclose the digester tank valve chamber (5m x 7m)	ea	R	1.00	R	-	R	-
1.316	Refurbish 125mm methane gas isolating valve in the valve chamber	ea	R	1.00	R	-	R	-
1.317	Replace all 125mm AC Methane gas piping with welded stainless steel Sch80S Gr 304/316 piping including properly coupling the piping to underground AC Piping to the boiler plant	m	R	7.00	R	-	R	-
1.318	Supply and Install new thermocouple with Analogue gauge for local readout	ea	R	1.00	R	-	R	-
	Digester 10 Subtotal to Bill Summary						R	-
1.4	Digester 11							
1.401	Supply and Install 1200x900x12mm Stainless Steel Gr 304/316 Checker Plate inspect hole lid complete with lifting handles,pre-drilled mounting holes,high tensile bolts	ea	R	1.00	R	-	R	-
1.402	Remove existing 1200 x 900mm cast iron neck at the inspection hole and replace with a stainless steel 12mm x GR304/316 Stainless steel including welded flanged lip to fit new lit with pre-drilled holes.This should include removal and recasting concrete with the neck	ea	R	1.00	R	-	R	-
1.403	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.404	Supply and Install 500dia x12mm mild steel steam injection hole lid complete with pipe extension to connect to the 65mm steam supply line.Retain the existing neck,replace all bolts and gasket.	ea	R	1.00	R	-	R	-
1.405	Replace Steam Injection line into the digester:65mm x sch80S	m	R	7.00	R	-	R	-
1.406	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.407	Replace all AC Piping from the methane gas outlet to the valve chamber with welded stainless steel GR304/316 :125mm x sch80S	ea	R	15.00	R	-	R	-
1.408	Remove ,recast and replace existing methane gas outlet cast iron neck and replace with stainless steel GR304/316 neck complete with lip flanges with pre-drilled holes and gasket to mount new lid:1100mm x 12mm	ea	R	1.00	R	-	R	-
1.409	Supply and Install new stainless steel dome lid for methane gas outlet dome complete with pre-drilled holes,bolts,washers and a flanged outlet to mount methane gas piping	ea	R	1.00	R	-	R	-
1.41	Remove existing and replace pressure and vacuum breather valve complete with 125mm inline deflagration flame arrester	ea	R	1.00	R	-	R	-
1.411	Derust and repaint all hand railings at the Digester plant including those liding to the ground level	sum	R	1.00	R	-	R	-
1.412	Shorten existing 225mm cast iron scum removal/overflow piping to required level	ea	R	1.00	R	-	R	-
1.413	Supply and Install 225mm mechanical flange adapter to create a flange connection to the cast iron piping	ea	R	1.00	R	-	R	-
1.414	supply 225mm loose removable flange with gasket,bolts ,nuts and washers (to be used during crust removal)_	ea	R	1.00	R	-	R	-
1.415	Supply and instal steel handrails to fully enclose the digester tank valve chamber (5m x 7m)	ea	R	1.00	R	-	R	-
1.416	Refurbish 125mm methane gas isolating valve in the valve chamber	ea	R	1.00	R	-	R	-

1.417	Replace all 125mm AC Methane gas piping with welded stainless steel Sch80S Gr 304/316 piping including properly coupling the piping to underground AC Piping to the boiler plant	m	R	7.00	R	-	R	-
1.418	Supply and Install new thermocouple with Analogue gauge for local readout	ea	R	1.00	R	-	R	-
	Digester 11 Subtotal to Bill Summary						R	-
1.5	Digester 12							
1.501	Supply and Install 1200x900x12mm Stainless Steel Gr 304/316 Checker Plate inspect hole lid complete with lifting handles,pre-drilled mounting holes,high tensile bolts	ea	R	1.00	R	-	R	-
1.502	Remove existing 1200 x 900mm cast iron neck at the inspection hole and replace with a stainless steel 12mm x GR304/316 Stainless steel including welded flanged lip to fit new lit with pre-drilled holes.This should include removal and recasting concrete with the neck	ea	R	1.00	R	-	R	-
1.503	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.504	Supply and Install 500dia x12mm mild steel steam injection hole lid complete with pipe extension to connect to the 65mm steam supply line.Retain the existing neck,replace all bolts and gasket.	ea	R	1.00	R	-	R	-
1.505	Replace Steam Injection line into the digester:65mm x sch80S	m	R	7.00	R	-	R	-
1.506	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.507	Replace all AC Piping from the methane gas outlet to the valve chamber with welded stainless steel GR304/316 :125mm x sch80S	ea	R	15.00	R	-	R	-
1.508	Remove ,recast and replace existing methane gas outlet cast iron neck and replace with stainless steel GR304/316 neck complete with lip flanges with pre-drilled holes and gasket to mount new lid:1100mm x 12mm	ea	R	1.00	R	-	R	-
1.509	Supply and Install new stainless steel dome lid for methane gas outlet dome complete with pre-drilled holes,bolts,washers and a flanged outlet to mount methane gas piping	ea	R	1.00	R	-	R	-
1.51	Remove existing and replace pressure and vacuum breather valve complete with 125mm inline deflagration flame arrester	ea	R	1.00	R	-	R	-
1.511	Derust and repaint all hand railings at the Digester plant including those liding to the ground level	sum	R	1.00	R	-	R	-
1.512	Shorten existing 225mm cast iron scum removal/overflow piping to required level	ea	R	1.00	R	-	R	-
1.513	Supply and Install 225mm mechanical flange adapter to create a flange connection to the cast iron piping	ea	R	1.00	R	-	R	-
1.514	supply 225mm loose removable flange with gasket,bolts ,nuts and washers (to be used during crust removal)_	ea	R	1.00	R	-	R	-
1.515	Supply and instal steel handrails to fully enclose the digester tank valve chamber (5m x 7m)	ea	R	1.00	R	-	R	-
1.516	Refurbish 125mm methane gas isolating valve in the valve chamber	ea	R	1.00	R	-	R	-
1.517	Replace all 125mm AC Methane gas piping with welded stainless steel Sch80S Gr 304/316 piping including properly coupling the piping to underground AC Piping to the boiler plant	m	R	7.00	R	-	R	-
1.518	Supply and Install new thermocouple with Analogue gauge for local readout	ea	R	1.00	R	-	R	-
	Digester 12 Subtotal to Bill Summary						R	-
1.6	Digester 13							
1.601	Supply and Install 1200x900x12mm Stainless Steel Gr 304/316 Checker Plate inspect hole lid complete with lifting handles,pre-drilled mounting holes,high tensile bolts	ea	R	1.00	R	-	R	-

1.602	Remove existing 1200 x 900mm cast iron neck at the inspection hole and replace with a stainless steel 12mm x GR304/316 Stainless steel including welded flanged lip to fit new lit with pre-drilled holes.This should include removal and recasting concrete with the neck	ea	R	1.00	R	-	R	-
1.603	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.604	Supply and Install 500dia x12mm mild steel steam injection hole lid complete with pipe extension to connect to the 65mm steam supply line.Retain the existing neck,replace all bolts and gasket.	ea	R	1.00	R	-	R	-
1.605	Replace Steam Injection line into the digester:65mm x sch80S	m	R	7.00	R	-	R	-
1.606	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.607	Replace all AC Piping from the methane gas outlet to the valve chamber with welded stainless steel GR304/316 :125mm x sch80S	ea	R	15.00	R	-	R	-
1.608	Remove ,recast and replace existing methane gas outlet cast iron neck and replace with stainless steel GR304/316 neck complete with lip flanges with pre-drilled holes and gasket to mount new lid:1100mm x 12mm	ea	R	1.00	R	-	R	-
1.609	Supply and Install new stainless steel dome lid for methane gas outlet dome complete with pre-drilled holes,bolts,washers and a flanged outlet to mount methane gas piping	ea	R	1.00	R	-	R	-
1.61	Remove existing and replace pressure and vacuum breather valve complete with 125mm inline deflagration flame arrester	ea	R	1.00	R	-	R	-
1.611	Derust and repaint all hand railings at the Digester plant including those liding to the ground level	sum	R	1.00	R	-	R	-
1.612	Shorten existing 225mm cast iron scum removal/overflow piping to required level	ea	R	1.00	R	-	R	-
1.613	Supply and Install 225mm mechanical flange adapter to create a flange connection to the cast iron piping	ea	R	1.00	R	-	R	-
1.614	supply 225mm loose removable flange with gasket,bolts ,nuts and washers (to be used during crust removal)_	ea	R	1.00	R	-	R	-
1.615	Supply and instal steel handrails to fully enclose the digester tank valve chamber (5m x 7m)	ea	R	1.00	R	-	R	-
1.616	Refurbish 125mm methane gas isolating valve in the valve chamber	ea	R	1.00	R	-	R	-
1.617	Replace all 125mm AC Methane gas piping with welded stainless steel Sch80S Gr 304/316 piping including properly coupling the piping to underground AC Piping to the boiler plant	m	R	7.00	R	-	R	-
1.618	Supply and Install new thermocouple with Analogue gauge for local readout	ea	R	1.00	R	-	R	-
	Digester 13 Subtotal to Bill Summary						R	-
1.7	Digester 14							
1.701	Supply and Install 1200x900x12mm Stainless Steel Gr 304/316 Checker Plate inspect hole lid complete with lifting handles,pre-drilled mounting holes,high tensile bolts	ea	R	1.00	R	-	R	-
1.702	Remove existing 1200 x 900mm cast iron neck at the inspection hole and replace with a stainless steel 12mm x GR304/316 Stainless steel including welded flanged lip to fit new lit with pre-drilled holes.This should include removal and recasting concrete with the neck	ea	R	1.00	R	-	R	-
1.703	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.704	Supply and Install 500dia x12mm mild steel steam injection hole lid complete with pipe extension to connect to the 65mm steam supply line.Retain the existing neck,replace all bolts and gasket.	ea	R	1.00	R	-	R	-
1.705	Replace Steam Injection line into the digester:65mm x sch80S	m	R	7.00	R	-	R	-
1.706	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-

1.707	Replace all AC Piping from the methane gas outlet to the valve chamber with welded stainless steel GR304/316 :125mm x sch80S	ea	R	15.00	R	-	R	-
1.708	Remove ,recast and replace existing methane gas outlet cast iron neck and replace with stainless steel GR304/316 neck complete with lip flanges with pre-drilled holes and gasket to mount new lid:1100mm x 12mm	ea	R	1.00	R	-	R	-
1.709	Supply and Install new stainless steel dome lid for methane gas outlet dome complete with pre-drilled holes,bolts,washers and a flanged outlet to mount methane gas piping	ea	R	1.00	R	-	R	-
1.71	Remove existing and replace pressure and vacuum breather valve complete with 125mm inline deflagration flame arrester	ea	R	1.00	R	-	R	-
1.711	Derust and repaint all hand railings at the Digester plant including those liding to the ground level	sum	R	1.00	R	-	R	-
1.712	Shorten existing 225mm cast iron scum removal/overflow piping to required level	ea	R	1.00	R	-	R	-
1.713	Supply and Install 225mm mechanical flange adapter to create a flange connection to the cast iron piping	ea	R	1.00	R	-	R	-
1.714	supply 225mm loose removable flange with gasket,bolts ,nuts and washers (to be used during crust removal)_	ea	R	1.00	R	-	R	-
1.715	Supply and instal steel handrails to fully enclose the digester tank valve chamber (5m x 7m)	ea	R	1.00	R	-	R	-
1.716	Refurbish 125mm methane gas isolating valve in the valve chamber	ea	R	1.00	R	-	R	-
1.717	Replace all 125mm AC Methane gas piping with welded stainless steel Sch80S Gr 304/316 piping including properly coupling the piping to underground AC Piping to the boiler plant	m	R	7.00	R	-	R	-
1.718	Supply and Install new thermocouple with Analogue gauge for local readout	ea	R	1.00	R	-	R	-
	Digester 14 Subtotal to Bill Summary						R	-
1.8	Digester 15							
1.801	Supply and Install 1200x900x12mm Stainless Steel Gr 304/316 Checker Plate inspect hole lid complete with lifting handles,pre-drilled mounting holes,high tensile bolts	ea	R	1.00	R	-	R	-
1.802	Remove existing 1200 x 900mm cast iron neck at the inspection hole and replace with a stainless steel 12mm x GR304/316 Stainless steel including welded flanged lip to fit new lit with pre-drilled holes.This should include removal and recasting concrete with the neck	ea	R	1.00	R	-	R	-
1.803	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.804	Supply and Install 500dia x12mm mild steel steam injection hole lid complete with pipe extension to connect to the 65mm steam supply line.Retain the existing neck,replace all bolts and gasket.	ea	R	1.00	R	-	R	-
1.805	Replace Steam Injection line into the digester:65mm x sch80S	m	R	7.00	R	-	R	-
1.806	Replace the 800dia x 12mm cast iron lid for the mixer inlet hole complete with pre-drilled holes ,bolts and gasket	ea	R	1.00	R	-	R	-
1.807	Replace all AC Piping from the methane gas outlet to the valve chamber with welded stainless steel GR304/316 :125mm x sch80S	ea	R	15.00	R	-	R	-
1.808	Remove ,recast and replace existing methane gas outlet cast iron neck and replace with stainless steel GR304/316 neck complete with lip flanges with pre-drilled holes and gasket to mount new lid:1100mm x 12mm	ea	R	1.00	R	-	R	-
1.809	Supply and Install new stainless steel dome lid for methane gas outlet dome complete with pre-drilled holes,bolts,washers and a flanged outlet to mount methane gas piping	ea	R	1.00	R	-	R	-
1.81	Remove existing and replace pressure and vacuum breather valve complete with 125mm inline deflagration flame arrester	ea	R	1.00	R	-	R	-
1.811	Derust and repaint all hand railings at the Digester plant including those liding to the ground level	sum	R	1.00	R	-	R	-
1.812	Shorten existing 225mm cast iron scum removal/overflow piping to required level	ea	R	1.00	R	-	R	-
1.813	Supply and Install 225mm mechanical flange adapter to create a flange connection to the cast iron piping	ea	R	1.00	R	-	R	-

1.814	supply 225mm loose removable flange with gasket,bolts ,nuts and washers (to be used during crust removal)_	ea	R	1.00	R	-	R	-
1.815	Supply and instal steel handrails to fully enclose the digester tank valve chamber (5m x 7m)	ea	R	1.00	R	-	R	-
1.816	Refurbish 125mm methane gas isolating valve in the valve chamber	ea	R	1.00	R	-	R	-
1.817	Replace all 125mm AC Methane gas piping with welded stainless steel Sch80S Gr 304/316 piping including properly coupling the piping to underground AC Piping to the boiler plant	m	R	7.00	R	-	R	-
1.818	Supply and Install new thermocouple with Analogue gauge for local readout	ea	R	1.00	R	-	R	-
	Digester 15 Subtotal to Bill Summary						R	-
1.9	Methane Gas Flare Burner							
1.901	Isolate,Dismantle,safely relocate and reassemble the flare burner unit from the valve chamber to the designated area next to the steam boiler plant.	sum	R	1.00	R	-	R	-
1.902	Refurbish and Recommission Flare Burner	ea	R	1.00	R	-	R	-
1.903	Supply and Install Welded 100mm Sch80S stainless piping from the valve chamber to the new location of the flare burner.Stainless Steel piping to run overhead on existing platforms	m	R	70.00	R	-	R	-
1.904	Supply and install 100mm detonation flame arrestor	ea	R	1.00	R	-	R	-
1.1	Valve Chamber and Gas Holder				R	-	R	-
1.101	Clean 150mm Concealed AC Methane Gas Line	sum	R	1.00	R	-	R	-
1.102	Pressure Test 150mm AC Line	ea	R	1.00	R	-	R	-
1.103	Provision for Repairs as per pressure test report	m	R	50.00	R	-	R	-
1.104	Refurbish 150mm methane gas isolating valves	ea	R	3.00	R	-	R	-
1.105	replace 150mm inline deflagration frame arrestors	ea	R	3.00	R	-	R	-
1.106	replace 150mm corroded and AC Piping section in the valve chamber with welded stainless steel grade 304/316 including tees and couplings	m	R	10.00	R	-	R	-
1.107	Refurbish isolating valve to the gas holder	ea	R	1.00	R	-	R	-
1.108	Supply and install handrailings at the main valve chamber(7m x7m)	ea	R	1.00	R	-	R	-
1.109	Clean valve chamber and unblock all drains	ea	R	1.00	R	-	R	-
1.11	Replace AC overflow pipe with Mild Steel piping :75mm	m	R	4.00	R	-	R	-
1.111	Refurbish Scour valve:150mm	ea	R	1.00	R	-	R	-
1.112	Replace Overflow Float and ball valve in the make up tank	ea	R	1.00	R	-	R	-
1.113	Corrosion Protection of the entire gas collection dome (13m diameter)in situ	sum	R	1.00	R	-	R	-
1.114	Refurbish guide rollers and frame columns of the gas collecting dome frame	ea	R	8.00	R	-	R	-
1.115	Replace all frame anchor bolts(4 per column x 8 columns)	ea	R	8.00	R	-	R	-
1.116								
1.117	Flare Burner and Gas Holder Subtotal						R	-
1.12	Steam Piping							
1.121	Remove existing steam piping ,lagging,cladding,hangers and brackets from digester 8-15 and to the old steam boiler plant	m	R	220.00	R	-	R	-
1.122	Properly dispose of fiberglass insulation removed from the steam pipes	sum	R	1.00	R	-	R	-
1.123	Supply and Install 65mm Sch80 Welded steam piping including 25mm fibreglass insulation and 0.8mm Grade 304/316 Stainless Steel Cladding including bends,tees,reducers and Expansion Bellows .Use existing platforms for mounting steam piping but these excludes the mountina brackets	m	R	160.00	R	-	R	-
1.124	Supply and Install 65mm Globe valves for Isolating steam supply to Digesters 8-15	ea	R	8.00	R	-	R	-

1.125	Supply and Install 80mm Sch80 Welded steam piping including 25mm fibreglass insulation and 0.8mm Grade 304/316 Stainless Steel Cladding including bends,tees,reducers and Expansion bellows.Use existing platforms for mounting steam piping but these excludes the mounting brackets	m	R	90.00	R	-	R	-
1.126	Supply and Install 65mm Steam Non Return Valves	ea	R	8.00	R	-	R	-
1.127	Supply and install 20mm complete steam trap arrangement	ea	R	4.00	R	-	R	-
1.128	Supply and Install 100mm Sch80 Welded steam piping including 25mm fibreglass insulation and 0.8mm Grade 304/316 Stainless Steel Cladding including bends,tees,reducers and Expansion bellows.Use existing platforms for mounting steam piping but these excludes the mounting brackets	m	R	25.00	R	-	R	-
1.129	Supply and Install new 200mm inline deflagration flame arrestor outside the boiler plant	ea	R	1.00	R	-	R	-
1.13	Old Steam Generator/Boiler Plant							
1.131	Conduct and submit a comprehensive Non Destructive Testing Report to evaluate the structural integrity of the old biogas Cyclotherm Steam Boiler(Serial 2800...33/Type CE...2800)	ea	R	1.00	R	-	R	-
1.132	Relocate the boiler from the old boiler plant to the new boiler plant ,this includes dismantling,safe transportation and reinstallation	ea	R	1.00	R	-	R	-
1.133	Based on the NDT Findings,perform necessary repairs to restore the boiler to full operational status.Preparation and repairs works to meet or exceed standards required for a 36-Month Interval Inspection.All repair activities to be conducted at the new boiler plant	ea	R	1.00	R	-	R	-
1.134	Hydrostatic Pressure Testing and Approved Inspection Authority Certification of the Cyclotherm Boiler	ea	R	1.00	R	-	R	-
	Steam Piping and Generator Subtotal						R	-
1.14	New Steam Generator/Boiler Plant							
1.141	Conduct and submit a comprehensive Non Destructive Testing Report to evaluate the structural integrity of the new uncommissioned biogas Cyclotherm Steam Boiler(Serial 2800...33/Type CE...2800)	ea	R	1.00	R	-	R	-
1.142	Based on the NDT Findings,perform necessary repairs to restore the boiler to full operational status.Preparation and repairs works to meet or exceed standards required for a 36-Month Interval Inspection.All repair activities to be conducted at the new boiler plant	ea	R	1.00	R	-	R	-
1.143	Hydrostatic Pressure Testing post repairs and Approved Inspection Authority Certification (AIA)	ea	R	1.00	R	-	R	-
1.144	Supply,install and commissioning of new water treatment plant	ea	R	1.00	R	-	R	-
1.145	Supply , Install and commissionng of new water filtration and softening plant for the feedwater system	ea	R	1.00	R	-	R	-
1.146	Twelve Months Supply of Water Treatment Chemicals and brine for water softening plant	ea	R	12.00	R	-	R	-
1.147	Supply and Install 50mm Galvanised feedwater water piping including accompaning fittings from the feedwater tanks to the two commissioned boilers	m	R	20.00	R	-	R	-
1.148	Commission feedwater tanks and Pumps	ea	R	1.00	R	-	R	-
1.149	Supply and install 100dia Steam piping including 25mm fibreglass lagging and 0.8mm GR304/316 stainless steel piping from the boiler outlet to the supply header and from the header to connect to the outside lines	m	R	20.00	R	-	R	-
1.15	100dia Steam Globe valves for steam supply Isolation	ea	R	1.00	R	-	R	-
1.151	Supply and Install 50mm galvanised water piping including fittings from the gas collecting dome to the new boiler plant	m	R	30.00	R	-	R	-
1.152	Supply ,install and commission 2 x 48kg LPG Gas bank outside the the new boiler plant including piping to the boilers,changeover switch pressure testing,commisioning and certification	sum	R	1.00	R	-	R	-
	New Steam Generator Subtotal						R	-

	Subtotals					
1.1	Digester 8	R	-			
1.2	Digester 9	R	-			
1.3	Digester 10	R	-			
1.4	Digester 11	R	-			
1.5	Digester 12	R	-			
1.6	Digester 13	R	-			
1.7	Digester 14	R	-			
1.8	Digester 15	R	-			
1.9	Flare Burner and Gas Holder	R	-			
2	Steam Piping and Generator	R	-			
2.1	New Steam Generator	R	-			
	Mechanical East Works Heating System carried to Summary(Excl Vat)	R	-			

Section	Mechanical					
	Rooiwal East					
	Description	Unit	Qty	Rate	Total	
	BILL No 2:East Mechanical Refurbishment Work					
2.1	Inlet Screens					
2.101	Refurbish inlet sluice gates: This should include removal, disassembly, corrosion treatment, lubrication, handwheel maintenance, refurbishment of guides and all associated seals.	ea	R	3.00	R	-
2.102	Provision of for Derusting and Corrosion protection of inlet works mentis grid hand railing.	sum	R	1.00	R	-
2.103	Corrosion protection of all the floor gratings at the inlet works	sum	R	1.00	R	-
2.104	Supply and installation of 1500mm x 1500mm fine expanded metal or grating downstream of the three rung steps at inlet channel number 2.	ea	R	1.00	R	-
2.105	Refurbishment of the mechanical inlet screen no 1 including repairs to the chain rollers, sprockets, supply of new proximity switch, new chains, damaged floating bars, damaged scraper bucket, replacement of the rakes with double sided rakes, service of the screen motor and replacement of the stainless steel four rakes at the scraper.	ea	R	1.00	R	-
2.106	Supply and installation of a new mechanical inlet screen to readily fit into the 1700mm wide inlet channel number 2. The mechanical screen must be supplied as per the provided specification and similar to the mechanical screen on inlet 1. The screen must come complete with motor and accessories to empty into the horizontal screw.	ea	R	1.00	R	-
2.107	Provision for major service of the removed screen on inlet channel no 2.	ea	R	1.00	R	-
2.108	Refurbish horizontal screw including changing of the bearings and modification at the bearing block to prevent ingress of water into the bearings.	ea	R	1.00	R	-
2.109	Supply and Install rising (inclined) screw conveyor including the replacement of shaft ( Ø50mm x 4m), flight and modifications to the bearing blocks to prevent ingress of water as per specification provided.	ea	R	1.00	R	-
2.11	Refurbish Outlet sluice gates: This includes removal, disassembly, corrosion treatment, lubrication, handwheel maintenance, refurbishment of guide, and all associated seals.	ea	R	3.00	R	-
2.111	Supply and install of plain stainless steel identification plates at the inlet screens.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	sum	R	1.00	R	-
	Inlet Screens Subtotal				R	-
2.2	Degritter Chamber					
2.201	Refurbish Degritter Inlet sluice gates: This includes removal, disassembly, corrosion treatment, lubrication, handwheel maintenance, refurbishment of guides and all associated seals.	ea	R	2.00	R	-
2.202	Replacement of all the deflector plates (400mm x 200mm) at the degritter chamber. The plates to be corrosion protected.	ea	R	26.00	R	-
2.203	Removal, corrosion protection, painting, and reinstallation of the the mentis handrails at the Degritter Chambers.	ea	R	1.00	R	-
2.204	Corrosion Protection of the floor grating at the degritter chamber bridge 1200mm x 600mm in size.	ea	R	4.00	R	-
2.205	Supply and Installation of new mild steel and corrosion protected Grit scrapers as per specifications provided.	ea	R	2.00	R	-
2.206	Replacement of the grit scraper drive motor ( 0,75kW Motor).	ea	R	1.00	R	-
2.207	Refurbish grit scraper motor gearbox.	ea	R	2.00	R	-



2.208	Supply and Installation of new grit removal submissible pumps preferably HCP or equivalently approved (4 Pole Motor x Vortex Impellers with duty 16l/s@ 8m Head).	ea	R	2.00	R	-
2.209	Supply of flexible hose for degritter pumps (Ø80mm).	m	R	30.00	R	-
2.21	Supply and Installation of new gate valves for grit classifier piping (Ø100mm).	ea	R	4.00	R	-
2.211	Supply and installation of Non return valves for grit removal piping (Ø100mm).	ea	R	2.00	R	-
2.212	Replace Motor and Gearbox for the screw conveyor at the grit classifier 1 ( 0,75kW).	ea	R	1.00	R	-
2.213	Refurbish grit classifier No 1 including corrosion protection of the screw, changing of the Ø50mm bearings and modifications at the bearing blocks to prevent ingress of water into bearings, and refurbishment of the wear lining. Refurb and paint grit classifier return line.	ea	R	1.00	R	-
2.214	Refurbish grit classifier No 2.	ea	R	1.00	R	-
2.215	Derust, repair, corrosion protection and painting of the Ø150mm return piping from the grit classifiers 1 and 2 including replacement of gaskets and rusted bolts at the flanges.	m	R	20.00	R	-
2.216	Supply and Install a new screw conveyor at grit classifier no 2 as per the specification provided. This includes a new shaft, flight, linings, bearings, and wear lining.	ea	R	1.00	R	-
2.217	De-rust and painting of manual lifting equipment at the grit chambers.	ea	R	2.00	R	-
2.218	De-rust and paint the degritter bridge beams.	ea	R	2.00	R	-
2.219	Supply and install of plain stainless steel identification plates at the degritter chambers.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	sum	R	1.00	R	-
	Degritter Chambers Subtotal				R	-
2.3	Primary Settling Treatment					
2.301	Refurbish Sluice gates at the PST Division Chambers.	ea	R	4.00	R	-
2.302	Refurbish Sluice gates at the PST Inlets.	ea	R	8.00	R	-
2.303	Replace all the asbestos scum baffles at the Primary settling tanks with Stainless Steel baffles preferably Grade 304 or better approved.	ea	R	8.00	R	-
2.304	Replace the entire scum remover mechanicals including the motor, gearbox, scraper arm, scraper rubber, draw off line, and scraper bridge.	ea	R	8.00	R	-
2.305	Supply and Installation of New Tip Valves x Ø200mm made from 304 Stainless Steel.	ea	R	8.00	R	-
2.306	Refurbishment of scum isolating vlaves (Ø450mm).	ea	R	8.00	R	-
2.307	Refurbish all IQ12 x 81Nm Rotork Actuators for Primary Sludge Draw off.	ea	R	8.00	R	-
2.308	Supply and installation of lateral supports for the shafts connecting the draw off valves and the rotork actuators.	ea	R	8.00	R	-
2.309	Refurbish the fine screens 1: The refurbishment should include the changing of the bottom bearing for the bottom shaft, top bearing for the top shaft, replacement of the broken stainless steel racks (four off ) and conveyor shaft. New rakes must be double raked with teeth opening of 6mm and bar gaps 10mm.	ea	R	1.00	R	-
2.31	Refurbish the fine screens 2: The refurbishment should include the changing of the bottom bearing for the bottom shaft, top bearing for the top shaft, replacement of the 0,5kW Gearbox and motor, replacement of the broken stainless steel racks (four off ) and conveyor shaft. New rakes must be double raked with teeth opening of 6mm and bar gaps 10mm.	ea	R	1.00	R	-
2.311	Supply of new fine screen bins as per specifacaton and drawings.	ea	R	1.00	R	-
2.312	Supply and install of plain stainless steel identification plates at the primary settling tanks.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	sum	R	1.00	R	-

	Primary Settling Tanks Subtotal					R	-
2.4	Primary Sludge Pump Station						
2.401	Refurbish the Manual Isolation Ø300mm valves into the Primary Sludge Pump station. This includes the bypass valve between sump 1 and 2.	ea	R	3.00		R	-
2.402	Refurbish Manual Suction Isolating valves for the sludge pumps x Ø300mm.	ea	R	5.00		R	-
2.403	Supply and install HCP or equivalently approved submersible (1.5kW x 2-Pole Motor x Vortex Impleller with Duty 3l/s @ 14m Head) drainage pump including float switch and piping to discharge (Allow for Ø50mm pipe x 6m of mild steel piping) back into the primary sump.	ea	R	1.00		R	-
2.404	Derust, corrosion treatment, and painting of the 2T beam inside the plant room.	ea	R	1.00		R	-
2.405	Load Test and certify 2T Single Beam lifting equipment.	ea	R	1.00		R	-
2.406	Supply and install of plain stainless steel identification plates at the primary sludge Pumpstation.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	sum	R	1.00		R	-
2.407	Fines Screen No 1: Refurbish bars, rake, top and bottom bearings. Rakes to be double-raked. Replace motor and gearbox. Rake teeth opening of 6mm, bars shall have a gap of 10mm.	each	R	1.00		R	-
2.408	Fines Screen No 2: Refurbish the fine screen including the replacement of the conveyor motor and gearbox.	each	R	1.00		R	-
	Primary Sludge Pumpstation Subtotal					R	-
2.5	Anaerobic Digester Plants						
2.501	Replace Mixing Pumps (Vaughan Model HE8N100SB x 1900m3/h @ 39m Head) complete with Motor .	ea	R	3.00		R	-
2.502	Refurbish Inflow Isolating Valves (Ø400mm).	ea	R	8.00		R	-
2.503	Refurbish Manual Outflow Isolating Valves (Ø400mm).	ea	R	8.00		R	-
2.504	Refurbish Manual Supernatant Water Isolating Valves (Ø80mm).	ea	R	24.00		R	-
2.505	Refurbish Mixing Valves (Ø250mm ).	ea	R	24.00		R	-
2.506	Refurbish Rotork actuators for the mixer Inlet valves.	ea	R	8.00		R	-
2.507	Derusting, corrosion protection and painting of all exposed piping and fittings at each digester tank.	ea	R	8.00		R	-
2.508	Refurbish sludge feed manifold Isolating valves (Ø400mm)	ea	R	2.00		R	-
2.509	Supply and install of plain stainless steel identification plates for the Anaerobic digester Plant.	sum	R	1.00		R	-
2.51	Piping Labeling at each Digester Plant.	ea	R	1.00		R	-
2.511	Supply and install of plain stainless steel identification plates at the Anaerobic Digester Plant.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	sum	R	1.00		R	-
	Anaerobic Digester Plant Subtotal					R	-
2.6	Digested Sludge Pump Station						
2.601	Refurbish the Gorman Rupp Ultra V6A60 pumps, including replacing missing components to restore the pump to full operation.	ea	R	1.00		R	-
2.602	Replace Gorman Rupp Ultra V6A60 Pump as per standard specification provided.	ea	R	1.00		R	-
2.603	Refurbish all manual suction and discharge valves (Ø225mm).	ea	R	4.00		R	-

	Supply and install HCP or equivalently approved submersible (1.5kW x 2-Pole Motor x Vortex Impleller with						
2.604	Duty 3l/s @ 14m Head) drainage pump including float switch and piping to discharge (Allow for Ø50mm pipe x 6m of mild steel piping) back into the primary sump.	ea	R	1.00		R	-
2.605	Derust, corrosion treatment, and painting of the 2T beam inside the plantroom.	ea	R	1.00		R	-
2.606	Load Test and certify 2T Single Beam lifting equipment.	ea	R	1.00		R	-
2.607	Supply and install of plain stainless steel identification plates at the Digested Sludge Pump Station.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	sum	R	1.00		R	-
2.608	Refurbishment of Ø300mm inlet valves in situ at Digested sludge Pumpstation	ea	R	2.00		R	-
	Digested Sludge Pumpstation					R	-
2.7	Trickling Bio Filters						
2.701	Refurbish Sluice Gates at the main dividing chambers.	ea	R	8.00		R	-
2.702	Refubish the dosing siphon cast iron dome which includes rust removal, corrosion treatment and coating.	ea	R	8.00		R	-
2.703	Replace dome pipe and fittings ( Ø60mm x Sch 80).	m	R	64.00		R	-
2.704	Supply and Install dome Supports(Minimum of 3 supports per dome required)	ea	R	48.00		R	-
2.705	Supply and Install Hand Stops at the Biofilter dividing Chambers.	ea	R	16.00		R	-
2.706	Quote to Strip and Refurbish biofilter centre columns. Refurbishment must include crannage removal, disassembly, assessment, replacement of top bearings, replacement of the bottom bushing, bottom centre housing, sandblasting, corrosion treatment, reassembly and reinstalling crannage.	ea	R	8.00		R	-
2.707	Provision for Replacement of the center columns.	ea	R	8.00		R	-
2.708	Replacement of cross wire ropes holding distribution piping including replacement of the turnbuckles.	ea	R	64.00		R	-
2.709	Replacement of wire ropes from the supporting rods including the replacement of turnbuckles	ea	R	64.00		R	-
2.71	Refurbish the scour valves (Ø125mm).	ea	R	16.00		R	-
2.711	Supply and install of plain stainless steel identification plates at the Biofilters.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	sum	R	1.00		R	-
	Trickling Biofilters Subtotal					R	-
2.8	Ferri Dosing Plant						
2.801	Supply and Installation of a pre-assembled Dosseuro or equivalently approved Ferri Dosing plant with four duty peristaltic pumps @ 271l/h + one standby pump. New plant must come fully tested and precommissioned to connect only to the existing outlet piping.	sum	R	1.00		R	-
2.802	Replace all PVC Piping inside the plantroom.	sum	R	1.00		R	-
2.803	Integrity Test and Certification of existing Ferri Bulk Tanks including sealing off the gap between the tank bottom and the floor with concrete.	sum	R	2.00		R	-
2.804	Replace all the PVC Ferri Chloride piping from the refill points,to the ferri tanks and then to the ferri dosing plant (Ø50mm).	sum	R	1.00		R	-
2.805	Supply and install of plain stainless steel identification plates at the Ferri Dosing Tanks.	sum	R	1.00		R	-
	Subtotal Ferri Dosing Plant					R	-
2.9	Humus Tanks						

2.901	Refurbish inlet sluice gates at the dividing chambers	ea	R	16.00	R	-
2.902	Replace all the asbestos scum baffles at the Primary settling tanks with Stainless Steel baffles preferably Grade 304 Or better approved.	ea	R	12.00	R	-
2.903	Supply of Towable Diesel Atlas Copco Compressor or equivalently approved better for unblocking sludge lines (200cfm minimum 7-12 Bars).	ea	R	1.00	R	-
2.904	Refurbish sludge and scum outlet valves (Ø100mm). Supply and install of plain stainless steel identification plates at the Humus Tanks.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	ea	R	12.00	R	-
2.905		sum	R	1.00	R	-
	Humus Tanks Subtotal				R	-
2.1	Effluent and Humus Pump Station					
2.101	Refurbish Isolating manual valves at the sump (Ø400mm).	ea	R	4.00	R	-
2.102	Refurbish Isolating manual humus valves at the humus pumps (Ø500mm).	ea	R	4.00	R	-
2.103	Paint all the humus piping inside the plantroom.	ea	R	1.00	R	-
2.104	Supply and Install 140l/s @ 25m Head End Suction Farmer Pump.	ea	R	1.00	R	-
2.105	Repair all leaks, treat corrosion and paint all piping at the farmers pumps (Ø600mm).	ea	R	1.00	R	-
2.106	Derust, corrosion protect and paint the 5T Single beams inside the plantroom.	ea	R	2.00	R	-
2.107	Certify and load Test beams and lifting equipment.	ea	R	2.00	R	-
2.108	Supply and install HCP or equivalently approved submersible (1.5kW x 2-Pole Motor x Vortex Impleller with Duty 3l/s @ 14m Head) drainage pump including float switch and piping to discharge (Allow for Ø50mm pipe x 6m of mild steel piping) back into the primary sump.	ea	R	1.00	R	-
2.109	Supply and install of plain stainless steel identification plates at the Effluent and Humus Pumpstation.(130mm x35mm x1mm Thick must include punching of ID Codes with Stainless Steel wire crimp)	sum	R	1.00	R	-
	Subtotal Effluent Pumpstation				R	-
	Subtotals					
2.1	Inlet Screens Subtotal				R	-
2.2	Degritter Chambers Subtotal				R	-
2.3	Primary Settling Tanks Subtotal				R	-
2.4	Primary Sludge Pumpstation Subtotal				R	-
2.5	Anaerobic Digester Plant Subtotal				R	-
2.6	Digested Sludge Pumpstation				R	-
2.7	Trickling Biofilters Subtotal				R	-
2.8	Subtotal Ferri Dosing Plant				R	-
2.9	Humus Tanks Subtotal				R	-
2.1	Subtotal Effluent Pumpstation				R	-
	Bill Total Carried to Summary				R	-