

TENDER NO. RFP169/2024

**APPOINTMENT OF A MECHANICAL ENGINEERING CONTRACTOR FOR THE
MAJOR REFURBISHMENT AND CONSTRUCTION OF THE ROOIWAL
WASTE-WATER TREATMENT NORTH AND WEST WORKS**



QUESTIONS AND ANSWERS

No.	Question	Response			
1	We cannot find the Scope of Works Document and the detailed project specifications? Kindly Refer to below extract from the document: Refurbish existing MCC by Replacing Aux. Equipment (New Power Meter, Ammeters, Voltmeters, Hour Meters) and rewire existing MCC as shown in the specifications and drawings(Single Line Diagrams). The refurbishment works are stated in the Scope of Works Document. <table><tr><td>2</td><td>The Contractor's main responsibilities</td><td>Turn-key as per the scope of work</td></tr></table> 3.2.3 Existing Project Information It is important to note that this is an existing plant and some as built and design drawings can be obtained from the City of Tshwane archives. 3.3 SCOPE OF WORK & WORK DONE Major items to be covered on this contract include. • North & West Works Mechanical Works • North & West Works Electrical Works • North & West Works Instrumentation and Automation • Health and Safety Compliance • Environmental Impact and Studies to the Apies River	2	The Contractor's main responsibilities	Turn-key as per the scope of work	The scope of Works is high level as Indicated during the tender briefing. The BoQ outlined specifications and scope of Works broken down into line items. The Contractors should price as per the design drawings suppliers. If there are any material changes to designs during implementation, we shall use provisional sums to cater for those changes.
2	The Contractor's main responsibilities	Turn-key as per the scope of work			



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2	----- We thank you for the opportunity afforded to us in tendering on the above referenced project, however after reviewing the enquiry documentation and attending the site briefing on Tuesday the 17th September 2024, respectfully request an extension of the closing date until the 18th October 2024. We note that key drawings and relevant specification documents are required in order for us to have sufficient time in compiling a complete and comprehensive tender submission. We trust the above is in order and does not inconvenience you in anyway and await you favourable response herein. Should you have any queries, please feel free to contact us.	Refer to Addendum 03			
3	We cannot find the Scope of Works Document and the detailed project specifications? Kindly Refer to below extract from the document: Refurbish existing MCC by Repalcing Aux. Equipment (New Power Meter, Ammeters, Voltmeters, Hour Meters) and rewire existing MCC as shown in the specifications and drawings(Single Line Diagrams). The refurbishment works are stated in the Scope of Works Document. <table border="1" data-bbox="280 885 945 930"> <tr> <td data-bbox="280 885 362 930">2</td><td data-bbox="362 885 689 930">The Contractor's main responsibilities</td><td data-bbox="689 885 945 930">Turn-key as per the scope of work</td></tr> </table> 3.2.3 Existing Project Information It is important to note that this is an existing plant and some as built and design drawings can be obtained from the City of Tshwane archives. 3.3 SCOPE OF WORK & WORK DONE Major Items to be covered on this contract include. • North & West Works Mechanical Works • North & West Works Electrical Works • North & West Works Instrumentation and Automation • Health and Safety Compliance • Environmental Impact and Studies to the Apies River Could you please assist with the below MCC's as it seems we do not have the SLD's thereof and associated information.	2	The Contractor's main responsibilities	Turn-key as per the scope of work	• Detailed Descriptions are as per the BoQ, bidders must refer to the BoQ, refer to Addendum 04 for the updated BOQs. • Refer to addendum 04 for details on extension of the closing date • Evaluation remains, the reasons being this Plant is a Civil Engineering Project with Civil Engineering processes with embedded mechanical, electrical and automation systems. It is important for the site Agent and Foreman to be of Civil Engineering background understanding the Civil Engineering processes within the plant • Further to be above, we have Professional Service Providers with experience and registered with relevant professional bodies such as the Project Manager with Waste Water experience and Engineers with Wate Water experience to lead and do the oversight monitoring on the mechanical, electrical and automation aspects.
2	The Contractor's main responsibilities	Turn-key as per the scope of work			



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	Please provide information or SLD and Scope of works for the below MCC. Please provide information for the generator as well. Is it the generator Indoor or outdoor, external diesel tank location and type of installation? Schedule No.3 East Works I have the below Drawings numbers and the descriptions but doesn't correspond with the BoQ description. Please advise. 1- RWWTW-E-EBT-01 East Balancing tank MCC (Normal Section) 2- RWWTW-E-EW/FEPS-01 East Works final effluent pump station (VULA) MCC (Normal Section) 3- RWWTW-E-EW/FEPS-01 East Works humus pump station MCC (Normal Section) As this is a M&E bid, the required qualifications of the key personnel below do not relate to the specific mechanical and electrical disciplines. Kindly confirm if the relevant personnel with Mechanical Engineering qualifications will also be accepted? vi. Site Agent – Ten years post qualification (Diploma or BTech Civil Engineering qualification should be attached to the CV) experience as Pr. Tech Eng or Pr. Techni Eng vii. Site Foreman – Ten years post qualification Diploma in Civil Engineering minimum, qualification should be attached to the CV.	
4	On the BOQ: Tab(Mechanical & Mechanical2) a) Item 3,00 a. Civil layout dimensions for sluice gates? b. What are the require specification of the power pack? b) Item 4,00	Refer to the updated BOQ addendum 04



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	a. What are the require drive system specifications? b. Specification of existing mechanical screens? c. Confirmation of civil width, depth and bar spacing of the screen? c) Item 5,00 a. The drawings call for a belt conveyor but the BOQ calls for a screw conveyor. Which of these must we price. b. What is the required specification of the conveyor equipment? d) Item 6 a. Civil layout dimensions for sluice gates? b. What are the require specification of the power pack? e) Item 11 a. Material specification and sizes of existing Biofilter equipment?	
	a) ELECTRICAL SECTION NORTH WORKS NORTH WORKS - INLET PST CONTRACT NO :RFP169/2024:- Design , Manufacture, supply, off loading, installation & Commissioning of new PST MCC as shown in the specifications and drawings. The MCC comprises of the following Equip. b) ELECTRICAL SECTION NORTH WORKS - INLET INCINERATOR BUILDING CONTRACT NO :RFP169/2024:: Refurbish existing MCC by Repalcing Aux. Equipment (New Power Meter, Ammeters, Voltmeters, Hour Meters) and rewire existing MCC as shown in the specifications and drawings(Single Line Diagrams). The refurbishment works are stated in the Scope of Works Document. c) ELECTRICAL SECTION: NORTH WORKS NORTH WORKS - REACTORS & SSTs CONTRACT NO :RFP169/2024: - Design , Manufacture, supply, off	Price according to the specifications in the BOQ, details to be on construction drawings to be issued prior to the construction phase.



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loading, installation & Commissioning of new Reactor 1 & 2 Return Cycle Pumps MCC as shown in the specifications and drawings. The MCC(Located in Hums P/S No.1) comprises of the Equip as per SLD RWWTW-E-BNR-01. d) ELECTRICAL SECTION: NORTH WORKS - WAS & DEWATERING WORKS CONTRACT NO :RFP169/2024: Design , Manufacture, supply, off loading, installation & Commissioning of new Dewatering MCC as shown in the specifications and drawings. e) ELECTRICAL SECTION: NORTH WORKS - WAS & DEWATERING WORKS CONTRACT NO :RFP169/2024:Refurbish existing MCC by Repalcing Aux. Equipment (New Power Meter, Ammeters, Voltemeters, Hour Meters) and rewire existing MCCs as shown in the specifications and drawings(Single Line Diagrams). The refurbishment works are stated in the Scope of Works Document for WAS and Aerobic Sludge P/S MCCs f) ELECTRICAL SECTION NORTH WORKS - WEST WORKS CONTRACT NO :RFP169/2024:: Design , Manufacture, supply, off loading, installation & Commissioning of new West Works MCC as shown in the specifications and drawings. g) ELECTRICAL SECTION: NORTH WORKS - Chlorine & Final Effleunt Dam CONTRACT NO :RFP172/2024: Design , Manufacture, supply, off loading, installation & Commissioning of new Reactor 1 & 2 Return Cycle Pumps MCC as shown in the specifications and drawings. The MCC(Located in Hums P/S No.1) comprises of the Equip as per SLD RWWTW-E-BNR-01. h) 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 Conyers, PLC, Local DB& 2x Compressors)	
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a) Rooiwaal North and West: BOQ tab: 1 North Inlet Incinerator Blg. Item 1.2: Refurbish existing MCC by Repalcing Aux. Equipment (New Power Meter, Ammeters, Voltmeters, Hour Meters) and rewire existing MCC as shown in the specifications and drawings(Single Line Diagrams). The refurbishment works are stated in the Scope of Works Document. To which Single line diagram does this item refer? How is components that need to be replaced identified? Where is this item documented in a scope of works for further info? Is there photos of the MCC that must be refurbished? b) BOQ tab: 1 North Reactors & SSTs Item 1.2: Refurbish existing MCC by Repalcing Aux. Equipment (New Power Meter, Ammeters, Voltmeters, Hour Meters) and rewire existing MCCs(Return Scree P/S 1 to 3) as shown in the specifications and drawings(Single Line Diagrams). The refurbishment works are stated in the Scope of Works Document. To which Single line diagram does this item refer? How is components that need to be replaced identified? Where is this item documented in a scope of works for further info? Is there photos of the MCC that must be refurbished? c) BOQ tab: North Chlorine & Final Effluent Item 2.2: Design , Manufacture, supply, off loading, installation & Commissioning of new Reactor 1 & 2 Return Cycle Pumps MCC as shown in the specifications and drawings. The MCC(Located in Hums P/S No.1) comprises of the Equip as per SLD RWWTW-E-BNR-01.	• Price according to the specifications in the BOQ, details to be on construction drawings to be issued prior to the construction phase. • Single line diagrams have been provided, refer to Addendum 04. Any further details will be provided on construction drawings , bidders are required to price in accordance to the BOQ provided.
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This is the exact same description as Item 2.2 under North Reactors & SSTs BOQ Tab. Is this an identical panel or error on BOQ? To Which SLD should this MCC refer if not RWWTW-E-BNR-01? d) BOQ tab: West Works Item 2.1: Design , Manufacture, supply, off loading, installation & Commissioning of new West Works MCC as shown in the specifications and drawings. To which SLD drawing number does this item refer? Which specifications refer to this MCC? e) BOQ tab: WAS & Dewatering Works Item 2.2: Design , Manufacture, supply, off loading, installation & Commissioning of new Dewatering MCC as shown in the specifications and drawings. To which SLD drawing number does this item refer? Which specifications refer to this MCC? Item 2.3: Refurbish existing MCC by Repalcing Aux. Equipment (New Power Meter, Ammeters, Voltmeters, Hour Meters) and rewire existing MCCs as shown in the specifications and drawings(Single Line Diagrams). The refurbishment works are stated in the Scope of Works Document for WAS and Aerobic Sludge P/S MCCs To which Single line diagram does this item refer? How is components that need to be replaced identified? Where is this item documented in a scope of works for further info? Is there photos of the MCC that must be refurbished?	
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f) Rooiwaal East: BOQ tab: East Works Item 3.1: Manufacture, supply, off loading and installation of the Inlet Works IP66 Stainless Steel MCC including commissioning as detailed in the specifications and drawings. To which drawing number does this item refer? Which specifications refer to this MCC? Item 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 to cater for 2 x Mechanical Screens, 2 x Conyerors, PLC, Local DB& 2x Compressors) To which drawing number does this item refer? Which specifications refer to this MCC? Item 3.4: Refurbish and rewire of the existing MCC including commissioning as detailed in the specifications and drawings. To which drawing does this item refer? How is components that need to be replaced identified? Where is this item documented in a scope of works for further info? Is there photos of the MCC that must be refurbished?	
Wrt the DBSA Tenders 169 & 172, in the boq it refers to Single line diagrams, we also need these to be able to price items Please forward the following diagrams:- 1. SLD RWWTW – E – BNR – 01 2. SLD RWWTW – E – BNR – 02.	Refer to Addendum 04, the drawings have been published



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5,02	Supply and install a new screw conveyor as per specification and drawings New screw conveyor works include replacement of motor and drive as well control panels to support	ea	1	Kindly provide all existing drawings relevant to the Screw Conveyor	refer, to updated bill and specification provided
5,04	Supply and install a new inclined screw conveyor as per specification and Drawings including the supply of accompanying bins	ea	1	Kindly provide all existing drawings relevant to the Screw Conveyor	refer, to updated bill and specification provided

Refer to the photographic evidence attached with Addendum 04

8,01	Replace the existing gearbox channeling valves as per specification	ea	13	Kindly provide relevant specifications	Refer to the photographic evidence attached with Addendum 04
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Mechanical Bill of Quantities
North Water Treatment Works
Rooiwal Water Treatment Plant
Contract No:RFP169/2024_ Clarification_ RFI 001_23 September 2024

Item	Description	Unit	Quantity		Client Response
1	Inlet Water Treatment Works				
1.01	Replace existing 2000mm x 3000 x 50mm spaced coarse grit screens with new Stainless steel Grade 316 or equivalently Aluminium Screens designed to match a channel throat.	ea	3	Kindly provide drawings and specifications.	Refer to revised bill,this has changed to refurbishment works only,COT Searching for existing drawings on this section of the Work.Refer to Briefing experience
1.02	Supply and Install mechanical rakes to match new coarse screens complete IP68 Rated Motor, gearbox and variable frequency control, and mechanical arms with capabilities of about 50kg of debris per cycle, with provision for remote monitoring and control.	ea	3	Kindly provide drawings and specifications.	Refer to revised bill,mechanical rakes were removed
1.03	Decommission existing conveyor Belt system including screening bin	ea	2		
1.04	Upgrade, supply, install and commission Heavy Duty conveyor belt system minimum 800mm wide and 10mm thick with anti static and high grip surface pattern or equivalently better. The system must be installed with oblique arranged conveyor rollers and idlers to give the Belt a U Shaped profile and must be complimented with custom Side guides for spillage control.Motor and drive must IP68 Rated to handle the environment with provision for incorporation to remote monitoring.The works must be programmed so that they do not interfere with the operations of the water treatment works.	ea	2	Kindly provide specifications for the inlet coarse screening bin	See COT Spec M16 Provided
1.05	Supply and install a new screening bin with heavy gauge steel, inspection hatches and a discharge mechanism suitable for heavy and wet debris.	ea	2	Kindly provide specifications for the inlet coarse screening bin	Refer to drawings RWWT-W-M-IW-03
1.06	Provision for supply and install Reciprocating scraping mechanism to match.	ea	2		
TOTAL CARRIED FORWARD					

BROUGHT FORWARD					
2	Grit Chambers				
2.01	Replace existing Degritter Pumps with Gorman Rupp Model T3A71S-BFM or equivalently approved complete with variable speed drives and remote monitoring capabilities.		ea	6	
2.02	Replace 200 dia flexible hoses for the Degritter Pumps x 15m.		ea	6	Please provide all existing drawings and specifica
2.03	Decommission and remove cast iron degritter pipework and fittings.		ea	1	Please provide all existing drawings and specifica
2.04	Replace 200 dia cast iron piping with heavy duty Heavy Duty PVC to handle degritting to the grit classifier complete with fittings(Valves),hangers and brackets.		sum	1	Please provide all existing drawings and specifica
2.05	Decommission and remove existing Grit Classifiers.		ea	2	
2.06	Replace and upgrade the grit classifier complete with variable drive, provision for remote monitoring and automation capabilities. This includes complete replacement of the screw conveyor and replacement of the grit bins.		ea	6	Please provide all existing drawings and specifica
2.07	Supply and Install new Hoist System for Degritter Pumps.		ea	6	
TOTAL CARRIED FORWARD					

BROUGHT FORWARD					
3	Primary Settling Tanks				
3.01	Replace 15kW Motors for Settling Tank Bridges include variable control .		ea	4	
3.02	Disassemble the main bridge structure, remove from PST, identify and replace the centre bearing, replace bridge drive gearbox and motor, replace the rolling wheels, refurbish and repaint the main bridge structure, refurbish and repaint the handrailing, repaint, and reassemble into position, test and commission equipment.		ea	4	1. Kindly provide all existing drawings. 2. Kindly provide details for the required wheels (type i.e.Teflon, size etc) 3. Kindly provide the size of the center bearing. Refer to Attached drawing,teflown wheels,center bearing as per drawing attached
3.03	Decommissioning and removal of existing desludging pumps.		ea	3	
3.04	Supply and install PST Desludging Pumps-Gorman Rupp T63AS self priming pumps complete with speed control and remote monitoring capabilities.		ea	3	
3.05	Valves and other fittings to accompany the desludging valves.		ea	3	Kindy provide all existing drawings and valve spec Refer to new revised bill
4	Biological Reactors				
4.01	Decommission existing Pumps.		ea	18	
4.02	Replace all internal return sludge pumps with Gorman Rupp T6A3S complete with variable speed control and remote monitoring capabilities.		ea	18	
4.03	Installation kit of the pumps inclusive of strainers and isolating valves and other accompanying fittings.		ea	18	Kindly provide layout drawings. Refer to updated bill
4.04	Remove and replace existing Submersible 10kw Mixers for Anaerobic Zone.		ea	12	1.Kindly provide all existing drawings and specifications. 2.Kindly provide size of tank. Refer to updated bill
4.05	Remove and Replace existing submersible 10kw mixers for Anoxic Zone.		ea	12	1.Kindly provide all existing drawings and specifications. 2.Kindly provide size of tank. Refer to updated bill
TOTAL CARRIED FORWARD					

BROUGHT FORWARD					
4.06	Comprehensive Refurbishment of the outlet sluice gates.	ea	18	1. Kindly provide all existing drawings. 2. Kindly provide size of Sluice Gate.	Refer to updated bill
4.07	Refurbishment of the scum removers.	ea	18	Kindly provide all existing drawings.	
4.08	Replacement of the airflow meters for Anaerobic Zone.	ea	4	2. Kindly confirm the make and model relevant to the airflow meters.	Refer to updated bill-They have been removed from scope
4.09	Replacement of the Airflow meters for Anoxic Zone.	ea	4	2. Kindly confirm the make and model relevant to the airflow meters.	Refer to updated bill-They have been removed from scope
4.1	Replacement of air compression equipment preferably Atlas copco complete with desiccant dryers, compressed air receivers and control panels.	ea	2	1. Kindly provide all existing drawings and specifications. 2. Kindly provide details for the compressors i.e. size etc.	Refer to updated Bill
4.11	Provision for repairs to the compressed air line.	ea	1	Kindly provide further details i.e. lengths, quantities	No drawings exist for the compressed air lines
5	<u>Secondary Sedimentation Treatment</u>				
5.01	Remove existing Telescopic Handvalves.	ea	6	Kindly provide valve data sheets.	Refer to updated bill
5.02	Replace with Motorised or Actuated 400dia valve for return activated sludge equipped with electronic control for flow regulation and remote operation capabilities.	ea	6	Kindly provide valve data sheets.	Refer to updated bill
5.01	Total Refurbishment of all the SST /Clarifier Bridge. This includes removal and replacement of centre bearings, drives and motors and reinstate bridges to full functionality.	ea	18	Kindly provide all existing drawings.	Refer to SST Drawing
5.03	Replace manual 450 dia scour hand valves to the dissolved air flotation plant.	ea	6	Kindly provide valve data sheets.	Refer to Updated Bill
TOTAL CARRIED FORWARD					

BROUGHT FORWARD					
	Waste Activated Sludge				
6	Pumpstation				
	Total Refurbishment of the entire pumpstation including new piping, new sludge pumps, valves, flow meters, actuated sluice gates piping, electricals, controls and instrumentation as well as inclusion of remote monitoring and operation systems.				
6.01	Waste Activated Sludge Gorman Rupp Pumps or equivalently Better complete with Motor and control panelling with provision for remote monitoring and control.		ea	3	Kindly provide the model details for the required p Refer to updated bill
6.02	Supply and Install of piping, gate valves, actuators, strainers, couplings and all accompanying pipe fittings.		lot	1	1. Kindly provide drawings for the the piping layout. 2. Kindly confirm required piping sizes. Refer to updated bill
6.03	Flowmeters complete with accompanying components.		ea	2	layout. 2. Kindly confirm required piping sizes. Refer to updated bill, removed from scope
	Balancing Tank Pumpstation				
7	Removal of all Endsuction Balancing Pumps.		ea	3	Refer to updated bill
7.01	Supply and installation of Gorman Rupp VS6A60 End suction Pumps including motors, variable speed control, panelling with provision for remote monitoring and control.		ea	3	Kindly provide the model details and size for the r Refer to updated bill, Model given in the updated bill
7.02	Supply and install flooding submissible emergency pump.		ea	1	Kindly provide the model details and size for the r Refer to updated bill, smaller HCP Pump required now
7.03	Piping ,fittings hangers and brackets to accompany installation		sum	1	layout. 2. Kindly confirm required piping sizes and all
	Total carried forward to Mechanical Summary				

Mechanical Bill of Quantities
West Water Treatment Works
Rooiwal Water Treatment Plant
Contract No:RFP169/2024_Clarification_ RFI 001_23 September 2024

Item	Description	Unit	Quantity		Client Response
1	Farmers Pump Station				
1.01	Decommission and remove pumps and equipment in the pump station	ea	3		
1.02	Supply ,install and commission Gorman Rupp VS6A60-BFM or equivalently better Centrifugal Complete with new baseplate, variable speed drive and control panel to run on a two duty one standby basis	ea	3		
1.03	Supply and Install piping,valves,flowmeters and accompanying fittings for the new Pumps	ea	3	1. Kindly provide drawings for the the piping layout. 2. Kindly confirm required piping sizes and all required components and fittings.	Clarified by Engineers on site during briefing. The rplacement equipment will be of similar specifications to the existing ones on site or better
2	Return Activated Sludge Internal Recirculaton Pumpstation				
2.01	Decommission and remove pump and equipment in the pump station	ea	3		
2.02	Supply ,install and commision new Gorman Rupp T6A3S-BFM Pumps Complete with new variable speed drive and control panel programmed to run on a two duty one standby basis	ea	3		
2.03	Supply and Install piping,valves,flowmeters and accompanying fittings for the new Pumps	ea	3	1. Kindly provide drawings for the the piping layout. 2. Kindly confirm required piping sizes and all required components and fittings.	Clarified by Engineers on site during briefing. The replacement equipment will be of similar specifications to the existing ones on site or better
TOTAL CARRIED FORWARD					

BROUGHT FORWARD					
3	Waste Activated Sludge Pumpstation				
3.01	Decommission and remove pump and equipment in the pump station	ea	3		
3.02	Supply ,install and commision new Gorman Rupp T6A3S-BFM Pumps Complete with new variable speed drive and control panel programmed to run on a two duty one standby basis	ea	3		
3.03	Supply and Install piping,valves,flowmeters and accompanying fittings for the new Pumps	ea	3	1. Kindly provide drawings for the the piping layout. 2. Kindly confirm required piping sizes and all required components and fittings.	Clarified by Engineers on site during briefing. The replacement equipment will be of similar specifications to the existing ones on site or better
4	Anaerobic Digesters				
4.01	Replace all isolating valves 200NB Manual Valves at the 7 Anaerobic digesters	ea	42		
	Total carried forward to Mechanical Summary				

New Pumpstation -Rooiwal Contract No:RFP169/2024 Clarification RFI 001 23 September 2024					
Item	Description	Unit	Qty		Client Response
1	Desludging valves and Actuators				
	Supply and Install DN200 Knife Edge gate valves for the primary sludge PS06 to the sludge sump	sum	2	Kindly provide valve data sheets.	Refer to updated bill,M21 Spec
1.01	Supply and Install DN200 Knife Edge gate valves for the primary sludge PS05 to the sludge sump	sum	2	Kindly provide valve data sheets.	Refer to updated bill,M21 Spec
1.02	Supply and install Electric Modulating Actuators preferably Rotork or Auma to operate the gate valves with minimum torque rating of 70Nm, a 0-10mA control signal, manual override characteristics and SCADA integration capabilities. Rate must include gearbox, controls and electrical wiring and full operational commissioning.	sum	4	Kindly provide valve data sheets.	Refer to updated bill,Was removed from scope
1.03	Supply and Install electromagnetic flow meters, preferably Kronhne Optiflux 2300 or equivalently better from PP01 to PP03 complete with electrical power supplies and conduits.	ea	1		
1.04	Supply and Install electromagnetic flow meter preferably Kronhne Optiflux 2300 or equivalently better from PP02 to PP03 complete with electrical power supplies and conduits.	ea	1		
1.05	Supply and install a DN350 Sch40 Mild steel Pipe that is coated and corrosion protected complete with supports and brackets running from PS05 and PS06 to Sludge sump PP03.	m	50		
1.06	Supply and install a DN350 Sch40 Mild steel Pipe that is coated and corrosion protected complete with supports and brackets running from PP01 and PP02 to Sludge sump PP03.	m	100		
	Primary Sludge Pump-station-Feed to West Works Tower				
2	Works Tower				
	Supply and install Gorman Rupp Sludge Pumps Model V3A-B-1 operationing at 35l/s @ 38m TDH.	ea	2		
2.01	Supply and Install 37kW IP67 Rated Integral Pump Control Panel Complete with Variable Speed Drive including electrical cables and controls to the pumps. Control panel must come with provision for future connections to the SCADA.	ea	1		
2.02	Electrical Cabling and trunking from the Pumpstation main distribution board to the pump control panel.	m	10		
2.03	Electrical Supply cable from the Control Panel to the Pumps including trunking and brackets and emergency switches.	m	30		
2.04					
TOTAL CARRIED FORWARD					

BROUGHT FORWARD					
2.05	Supply and Install DN175mm Butterfly Valves.	ea	5	Kindly provide valve data sheets.	Refer to updated bill,this was changed to resilie
2.06	Supply and install Electric Modulating Actuators preferably Rotork or Auma to operate the isolating butterfly valves with minimum torque rating of 170Nm, a 0-10mA control signal, manual override characteristics and SCADA integration capabilities. Rate must include gearbox, control and electrical wiring and full operational commissioning.	ea	4	Kindly provide specifications and data sheets.	
2.07	Supply and Install DN175 Strainer to fit operation.	ea	2	Kindly provide valve data sheets.	Refer to updated bill and M21 Spec
2.08	Supply and Install DN175 Non Return Valve.	ea	2	Kindly provide valve data sheets.	Refer to updated bill and M21 Spec
2.09	Supply and Install Sch 40 Corrosion protected and coated DN175 Piping as per drawing in the plantroom including reducers, tees, bends, antivibration couplings to the pipes and end caps complete with supports. Piping must include connection to the concrete line running from the plantroom to the West Sludge anaerobic digester line.	m	40	1. Kindly provide drawings for the the piping layout. 2. Kindly confirm required piping sizes and all required components and fittings.	
2.1	Supply and Installation of 50mm Air valves.	ea	2	Kindly provide valve data sheets.	
2.11	Supply and install a daily drainage 1.0l/s submissible daily drainage pump complete with float mechanism and piping to drain back into the sludge sump.	ea	1	2. Kindly confirm required piping sizes and all required components and fittings. 3. Kindly provide required pump details.	Refer to updated bill,Pump is an offt he shelf HC
2.12	Provision for supply and installation of a 45l/s emergency submissible drainage pump including piping to the nearest drainage point.	ea	1	2. Kindly confirm required piping sizes and all required components and fittings. 3. Kindly provide required pump details.	Refer to updated bill,was removed from bill
2.12	Supply and Install electromagnetic flow meter preferably Kronhne Optiflux 2300 or equivalently better from PP03 to the west works Tower complete with electrical power supplies and conduits.	ea	1		
2.12	Supply and install a DN175 Sch40 Mild steel Pipe that is coated and corrosion protected from the sludge pump station to the Westworks tower complete with all pipe fittings.	m	920	1. Kindly provide drawings for the the piping layout. 2. Kindly confirm required piping sizes and all required components and fittings.	Refer to updated bill,M21 Spec
TOTAL CARRIED FORWARD					

BROUGHT FORWARD					
	Plantroom Ventilation				
	Supply and install Freudenberg or equivalent similar modular Fresh Air Unit to supply 680l/s@ 380Pa to maintain plantroom positive pressure. Modular Unit must come with primary panel filtration only, its own panel with alarm indicators for dirty filters and fan trip. The Unit to be mounted outside the plantroom as per the drawing and specification.	ea	1		
12.1	500 x 250 Uninsulated Ducting and air terminals to Drop down to plantroom lower level including supports.	m	10		
12.2	Electrical Supplies to the Modular Filtered Fresh Air Unit.	m	10		
	Plantroom Fire Protection				
2.15	Supply and Install 9kg CO2 Fire Extinguishers	ea	2		
2.16	Supply and Install Photoluminescent Fire Signage	sum	1		
	Primary Sludge Pump-station-Feed to East Works P/S				
3					
3.01	Supply and install Gorman Rupp Sludge Pumps Model T10A-B-4 operating at 70l/s@ 15m TDH.	ea	2		
3.02	Supply and Install 22kW IP67 Rated Integral Pump Control Panel Complete with Variable Speed Drive including electrical cables and controls to the pumps. Control panel must come with provision for future connections to the SCADA.	ea	1		
3.03	Electrical Cabling and trunking from the Pumpstation main distribution board to the pump control panel.	m	10		
3.04	Electrical Supply cable from the Control Panel to the Pumps including trunking and brackets and emergency switches.	m	30		
3.05	Supply and Install DN225mm Butterfly Valves. Supply and install Electric Modulating Actuators preferably Rotork or Auma to operate the isolating butterfly valves with minimum torque rating of 170Nm, a 0-10mA control signal, manual override characteristics and SCADA integration capabilities. Rate must include gearbox, control and electrical wiring and full operational commissioning.	ea	5		
3.06		ea	4	1. Kindly provide drawings and specifications 2. Kindly provide valve data sheets.	Refer to updated bill
TOTAL CARRIED FORWARD					

BROUGHT FORWARD					
3.07	Supply and Install DN225 Strainer to fit operation.	ea	2	Kindly provide valve data sheets.	Refer to updated bill, strainers removed from bill
3.08	Supply and Install DN225 Non Return Valve.	ea	2	Kindly provide valve data sheets.	Refer to updated bill, M21 Spec
3.09	Supply and Install Sch 40 Corrosion protected and coated DN225mm Piping as per drawing in the plantroom including reducers, tees, bends, antivibration couplings to the pipes and end caps complete with supports. Piping must include connection to the concrete line running from the plantroom to the West Sludge anaerobic digester line.	m	40	1. Kindly provide drawings for the the piping layout. 2. Kindly confirm required piping sizes and all required components and fittings.	Refer to updated bill, M21 Spec
3.1	Supply and Installation of DN80 Air valves.	ea	1	Kindly provide valve data sheets.	Refer to updated bill, M21 Spec
3.11	Supply and install a daily drainage 1.0l/s submissible daily drainage pump complete with float mechanism and piping to drain back into the sludge sump.	ea	1	Kindly provide required pump details.	Refer to updated bill
3.12	Provision for supply and installation of a 85l/s emergency submissible drainage pump including piping to the nearest drainage point.	ea	1	Kindly provide required pump details.	Refer to updated bill
3.13	Supply and Install electromagnetic flow meter preferably Kronhne Optiflux 2300 or equivalently better from PP03 to the east works complete with electrical power supplies and conduits.	ea	1	1. Kindly provide drawings for the the piping layout. 2. Kindly confirm required piping sizes and all required components and fittings.	Refer to updated bill
3.14	Supply and install a DN225 Sch40 Mild steel Pipe that is corrosion protected from the sludge pump station to the east works complete with all pipe fittings.	m	200		
3.15	Plantroom Ventilation Supply and install Freudenberg or equivalent similar modular Fresh Air Unit to supply 680l/s@ 380Pa to maintain plantroom positive pressure. Modular Unit must come with primary panel filtration only, its own panel with alarm indicators for dirty filters and fan trip. The Unit to be mounted outside the plantroom as per the drawing and specification.	ea	1		
3.16	500 x 250 Uninsulated Ducting and air terminals to Drop down to plantroom lower level including supports.	m	10		
3.17	Electrical Supplies to the Modular Filtered Fresh Air Unit.	m	10		
3.16	Plantroom Fire Protection Supply and Install 9kg CO2 Fire Extinguishers.	ea	2		
3.17	Supply and Install Photoluminescent Fire Signage.	sum	1		
4	Construction Drawings	ea	1		
5	As Built Drawings	ea	1		
6	Maintenance Guarantees	ea	1		
7	Datapack Including all commissioning Certificates: Fire, HVAC and Pumps.	ea	1		
Total carried forward to Mechanical Summary					