	Request for Information (RFI) Template	Document Identifier	240-72663051	Rev	1
		Effective Date	October 2022		
		Review Date	October 2027		
		RFI Number	MWP2140CX		

PART A REQUEST FOR INFORMATION (RFI)			
Description of the works/goods/services	Organic treatment technologies		
Deadline for submission	11 September 2023	At (South African Standard Time)	10h00
Tender Office address	Eskom Megawatt Park Megawatt Park Tender Office Retail Centre 1 Maxwell Drive Sunninghill 2000		

Eskom Holdings SOC Ltd ("Eskom") invites you to submit an:

- **Request for information (RFI)** to submit information for the works/goods/services as stated in the table. This RFI is a stand-alone information-gathering and market-testing exercise, intended only to inform and assist Eskom's further deliberation and development of a strategy for the Request for Information for Organic treatment technologies. Eskom may request indicative prices if so stated in this RFI.

Eskom has delegated the responsibility for this RFI to the signatory of this document, whose details can be found below.


Nicole Moila

BrooksNM@eskom.co.za

011 709 3755


We look forward to receipt of your response.

Yours faithfully

Name	Designation	Signature	Date
Damela Mathetja	Procurement Manager		10 August 2023

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PART B RESPONSE SHEET IN TERMS OF A REQUEST FOR INFORMATION To be completed by the supplier			
To	Eskom Holdings SOC Ltd	Date Insert today's date	10 Aug. 23
Attention	Nicole Moila Senior Advisor: Procurement		
Tel no Insert your tel number		Fax no and /or e-mail address Insert your fax number and/or e-mail address	
From Insert the registered full legal name of the company		Address Insert the business address of the company	
Address Insert the physical address of the company			
Sender Insert the full name of the sender at the company			
Description of the works/goods/services	<p>Medupi Power Station will be required to receive and treat raw water from the Crocodile West Scheme. The organic compounds will have to be removed prior to the UF and reverse osmosis (RO) step to protect the downstream plant as well as the boilers and turbines.</p> <p>Hence, a request for commercially available treatment technologies/strategy is being requested that will ultimately produce water quality adhering to the ultrafiltration UF) and reverse osmosis (RO) membrane tolerance whilst complying to Eskom's ZLED (Zero liquid effluent discharge) philosophy and minimising further risk and deterioration to the existing infrastructure at Medupi power station.</p>		

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1. Background/Current state

The design intent of Medupi Power Station is to receive raw water supply from both the Mokolo and Crocodile West systems. The station is currently supplied with only raw water from the Mokolo system. The raw water is initially clarified and then filtered. The filtered water is then used to produce potable water, fire water and high purity demineralised water quality for steam/water process requirements on supercritical boiler units. Medupi power station will be required to receive and treat raw water from the Crocodile West Scheme (2028), with elevated organic concentrations.

The current water treatment plant consists of clarification, ultrafiltration, membrane demineralisation (in the form of a double pass {permeate staged} reverse osmosis process), gas transfer membranes and continuous electro-deionisation (CEDI) (for polishing of the demineralised water).

The membranes utilised throughout the treatment process have low tolerance to organics (specifically humic acids and biopolymers), necessitating the inclusion of an organics removal system in the Water Treatment process. The concentration of dissolved organics in the final demineralised water is also required to be controlled to < 50 micrograms per litre. The technology installed at Medupi Power Station will not be able to meet this requirement when the station operates with water supplied from the Crocodile West system due to the high level of organics. An organic treatment technology is thus required.

2. Requirements

Suppliers are to respond to Sections A1 and A2 in the Appendices of this report. The Eskom technical team will evaluate the submissions following the Commercial process.

3. Format, Method, and place of delivery

Format of Submission

The response must be submitted as **1 (one) printed original RFI**, plus **1 (one) printed copy**.


Method and place of delivery

All responses must be sealed and delivered before the closing date and time to the tender box located at:

Eskom Megawatt Park
Tender Office
Retail Centre
1 Maxwell Drive
Sunninghill
2000

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Please find below our response to Eskom's questions:

No.	Question	Please indicate your response in this column
1.	Your contact's name and contact details	
2.	Company registration number	
3.	Brief description of previous experience and Description of the solution that you can offer	
4.	Indicative prices (optional and only for use of RFI's)	
5.	At what stage of development is the device (e.g., still a concept, in the laboratory stage, commercially available)?	
6.	Description of operation of the device.	
7.	Submit commercially available treatment proposals or suitable technology that can be retrofitted to the existing treatment regime that will ultimately produce a water quality adhering to the UF and RO membrane tolerance whilst complying to Eskom's ZLED (Zero liquid effluent discharge) philosophy. Please also note that occasionally there are cases of lubrication and fuel oil contaminating the feed water and may cascade into the process water.	

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	<p>The submission MUST include:</p> <ul style="list-style-type: none"> - The background literature and justification for the use of specific technology proposed to substantiate its use. - The impact of the technology on downstream water quality (increased conductivity, turbidity or blowdown requirements). - The possible impact of the technology on downstream processes (clarification, settling, UF, RO, filters etc). - The existing plant has the following layout: Clarification→UF→RO→GTM→CEDI. The installed clarifier at Medupi was designed based on the incoming raw water flow. - The design flowrate for the WTP: demineralised water-nominal flow of 330 m3/hr and max flow of 1120 m3/hr; potable water-nominal flow of 538 m3/hr, - Pre-treatment dosing currently used in clarifiers: 24 ppm coagulant (Rheofloc 5023Xi) and 0.4 ppm flocculant (Rheofloc 5413XI) - The limits of the UF membrane must be taken into consideration and are as follows: TOC < 5 mg/l COD < 20mg/l Free Oil = 0 mg/l Emulsified oil < 5 mg/l TSS < 30 mg/l - The TOC limit of RO membrane is <1 mg/l and must be taken into consideration. - The effect of pipe and system dimensions on the technology (pipe diameters >2m). - Waste produced from the technology - Installation requirements of the technology (mechanical, electrical, C&I, civil, etc). - Utility requirements (air, electricity, water, etc.) - Information on the maintenance requirements of the system. - The footprint required, and maximum load of the technology proposed for civil requirements. - Provide a budget capital cost for full scale installation (mechanical, civil, and electrical work must be included). - The typical capital cost of the equipment. - The typical operating cost of the system. - Provide a process flow diagram of the system clearly defining the battery limits 	
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<ul style="list-style-type: none"> - Highlight any process constraints / limits that impact the operation of the system. - Provide case studies and information on reference plant where the technology has been employed with process information showing plant performance - Provide information on the expected maintenance requirements regarding lifespan of consumable items, etc. where applicable. - Indicate the estimated lead time for the delivery of the equipment. - Indicate any exclusions identified 	
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Appendix:

Crocodile West quality water has the following compositions:

Constituent	Units	Average (October 2013 – October 2018)	Median	95th Percentile (Based on 95th Percentile of Conductivity)	Maximum
Aluminium	mg/l	0.19	0.09	0.21	1.90
Barium	mg/l	0.08	0.08	0.09	0.29
Boron	mg/l	0.09	0.07	0.21	0.44
Cadmium	mg/l	0.01	0.01	0.01	0.01
Calcium	mg/l	43.33	44.00	54	59.00
Calcium Hardness as Calcium Carbonate	mg/l	108.79	109.89	139.86	147.35
Chemical Oxygen Demand	mg/l	17.83	16.00	3.00	51.00
Chloride	mg/l	88.61	85.08	130	150.00
Chromium	mg/l	0.01	0.01	0.01	0.01

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Constituent	Units	Average (October 2013 – October 2018)	Median	95th Percentile (Based on 95 th Percentile of Conductivity)	Maximum
Cobalt	mg/l	0.01	0.01	0.01	0.01
Copper	mg/l	0.02	0.01	0.056	0.06
Conductivity	µS/cm	763.31	749.50	985.00	1045.00
Fluoride	mg/l	0.24	0.24	0.39	0.44
Iron (total)	mg/l	0.16	0.08	0.22	0.60
Lead	mg/l	0.03		0.03	
Magnesium	mg/l	26.45	26.00	35.00	37.00
Magnesium Hardness as Calcium Carbonate	mg/l	109.74	107.82	152.26	152.26
m-alk	mg/l	189.79	207.00	212.00	224.00
Manganese	mg/l	0.12		0.18	0.56
Nitrates (NO ₃ -N)	mg/l	1.28	1.32	1.32	3.84
Nitrite (NO ₂ -N)	mg/l	0.25	0.24	0.57	0.66
pH		8.32	8.20	8.19	9.92
Phosphate	mg/l	0.21	0.20	0.40	0.50
Potassium	mg/l	9.00	8.90	8.70	13.00
Silicon Dioxide	mg/l	8.25	8.26	10.00	16.00
Sodium	mg/l	67.36	67.00	72.00	116.40

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Constituent	Units	Average (October 2013 – October 2018)	Median	95th Percentile (Based on 95 th Percentile of Conductivity)	Maximum
Sulphate	mg/l	82.78	80.60	99.77	130.00
Total Dissolved Solids	mg/l	457.33	442.30	571.10	700.50
Total Hardness	mg/l	218.52	214.08	292.12	292.12
Total Organic Carbon	mg/l	8.59	8.28	7.49	15.40
Zinc	mg/l	0.03	0.02	0.09	0.10

Organic characterisation of Crocodile West Water

DOC (ppb)	8175
Biopolymers (ppb)	20 .9
Humic Substances (ppb)	50
Building blocks (ppb)	15
Low molecular neutrals (ppb)	10
Low molecular acids (ppb)	0
SUVA Lmg-1m-1	2.27

Yours faithfully

Name	Designation	Signature	Date
Nicole Moila	Senior Advisor: Procurement		14 August 2023
Telephone number	011 709 3755	Fax and/or e-mail address	BrooksNM@eskom.co.za

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