

REQUIREMENT SPECIFICATION

**TITLE : REQUEST FOR PROPOSAL TO SUPPLY, DELIVERY,
INSTALLATION AND COMMISSIONING OF REVERSE OSMOSIS (RO)
WATER TREATMENT SYSTEM FOR 825 WOODLANDS AND 203
YISHUN DIALYSIS CENTRE**

1. Introduction

- 1.1. The National Kidney Foundation (“**NKF**”) wishes to appoint vendor (the “**Contractor**”) for the provision to supply, delivery, installation and commissioning of Reverse Osmosis (RO) Water Treatment System for 825 Woodlands and 203 Yishun Dialysis Centre.

2. Product Specification

- 2.1 The Goods and Services shall conform to the detail specification in Annex A1 (a and b).
- 2.2 The Contractor shall perform the Services according to the requirements specified in **Annex A1 (a and b)**, as according to their submission of bid(s) in the **Price Schedule**.

3. Quantity Requirement and Delivery Schedule

- 3.1 The Contractor shall supply the Goods and Services in accordance with the Conditions of Contract.

4. Vendor Presentation and Product Demo

- 4.1 Should there be any requirement, each vendor should provide presentation or demo for the items in the full range of products set out in the proposal requirement in respect of which they are quoting, free-of charge. The address and location for the presentation or demo is to be advised later.
- 4.2 The presentation or demo of the products are to be provided within four (4) weeks upon request from NKF, or such extended time period as the Company may agree to in writing upon request by the vendor. The vendor may be rendered to rejection if products for presentation or demo is not provided.

5. RFP Briefing

- 5.1 Vendors are required to attend a compulsory briefing (either personally or through a company’s representative) which will be conducted as follows:

Date: 16 January 2025, Thursday
Time: 3.30 pm
Venue: NKF Centre, 81 Kim Keat Road, Singapore 328836

- 5.2 To participate in the briefing session, vendors are required to email to raymond.thong@nkfs.org with details on the company’s name, attendee’s name and email address by **15 January 2025, Wednesday, 10.00am**. The meeting details would be emailed to Vendors who had expressed their interest to attend.



6. Submission of RFP Bids

- 6.1 Each Vendor should provide the price quote in the Price Schedule.
- 6.2 All quotations submitted by the Vendor must indicate the prices applicable for the estimated numbers of Goods or Services specified in Annex A1 (a and b).
- 6.3 Each vendor is required to indicate the following information for the proposed products in the Price Schedule:
 - 6.3.1 The minimum delivery lead time
 - 6.3.2 Country of manufacturer
- 6.4 All quotations submitted by the Tenderer must indicate the prices applicable for the estimated numbers of Services specified in point 3 above.

REQUIREMENT SPECIFICATIONS

Specification of Reverse Osmosis Water Treatment System with Heat Rinse			
Description of function			
Water plays a vital role in haemodialysis treatment. Reverse osmosis water treatment system compliments our superior standards in water quality and serves our mission to deliver high-quality dialysis.			
General Specification			
S/No	Parameters	Specifications	Comply (Yes/No)
1	Dual-stage RO system: A complete dual stage RO system that consists of Break tank / Soft water tank, valves, indicators, connectors, membranes, pumps, PLC, Online monitoring system etc. Each stage must be able to operate individually.	Required RO Main system constructed with high medical grade materials for heat rinse with dual stage, able to operate individual stages	
2	RO Water disruption loop: (Primary Loop/Main Pipe). The main pipe that allows circulating purified water from the RO system to the Dialysis area and returning back unused RO water to the Break tank / Soft water tank.	High medical grade PEX pipe construction with 100% dead space-free construction and coupling with a double adaptor at the dialysis unit for hot/heat rinse.	

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Vendor's stamp : _____

S/No	Parameters	Specifications	Comply (Yes/No)
3	RO Water distribution loop: (Secondary Loop/recirculation loop - if). Branch out of lines/circulation from the Primary loop/ Main pipe to individual stations.	Option 1: Secondary loop/recirculation loop with ring piping design to avoid stagnant water, completely made of high-grade PTFE (Teflon) material with 100% dead space-free construction, and reinforced with stainless steel net for high durability for heat rinse Option 2: Medical/ High-grade PEX pipe/ Reinforced silicone tubing used for secondary/fluid fly loops construction for secondary loop/recirculation tube silicon material with 100% dead space-free construction, and reinforced for high durability for heat rinse.	
4	RO Membrane : Material	Polyamide material - ESPA (Energy saving Polyamide) with heat withstanding capability	
5	RO Membrane : Dimension	Required 8-inch diameters by 40-inch long spiral wound	

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S/No	Parameters	Specifications	Comply (Yes/No)
6	Operational Features		
	Permeate Flow (Based on the number of stations estimated 3 to 6 units of 8-inch membranes in the system)	Refer point 14 for the Requirement of Reverse Osmosis Water Treatment System Capacity	
	Retention capacity	Min 99 % retention capacity of inorganic substances	
	RO Membrane	Rejection Rate : Bacteria & Endotoxin >99%	
	PUB Raw Water pressure	Able to operate with, Static pressure 2 - 6 bar and Dynamic pressure 2 - 3 bar	
	Membrane cleaning	Required membrane backwash rinsing / regular flushing at a regular interval	
	Auto ON/OFF	Programmable auto ON/OFF function for the entire week/ Month.	
	Disinfection heat disinfection	Function to do complete heat disinfection programmable for Auto and Manual.	
	Disinfection Chemical disinfection	Function to do complete chemical disinfection programmable for Auto and Manual	
	Sampling point	Minimum two sampling points, one at the start of the Primary loop and another one at the End loop.	
	Service menu	Password Secured menu for service technicians	

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S/No	Parameters	Specifications	Comply (Yes/No)
7	Security Features	Required Dual-stage RO system	
		Able to operate emergency operation functions for Stage 1 and 2- Auto / Manual	
		Able to detect and control Permeate overpressure	
		Able to detect and control Permeate high conductivity	
		Able to detect and control Permeate high temperature	
		Able to detect and control Dry run protection	
		Voltage stabilisation	
		Traceability of alarms	
		Operation and alarm history	

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Vendor's stamp : _____

S/No	Parameters	Specifications	Comply (Yes/No)
8	Monitoring Features	Permeate Flow	
		Concentrate Flow	
		Membrane pressure	
		Permeate pressure	
		Permeate temperature	
		Raw water, Concentrate and Permeate water conductivity	
		Online Monitoring: History and Event	
		Soft water Hardness (optional)	
		Chlorine & Chloramine (optional)	

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S/No	Parameters	Specifications	Comply (Yes/No)
9	Pre-treatment Specification:		
	Pre-filters	Replaceable 5 /1 micron filter Assembly (single/dual stage)	
		Feed water inlet filter /100-micron filter assembly/ Multimedia filter	
	Pre-Treatment Piping	UPVC grade with good quality of connectors and pipes	
		Metal flexible hose especially high-pressure handling areas like inlet and outlet of Carbon tanks Softener tanks and Multimedia filter	
	Safety	Backflow Preventer/ Non-returnable valve	
	Softener	Duplex (two) softener with auto and manual backwash function	
		Bypass facility	
		Softener tank capacity: Based on the RO system permeate flow	
		Operating pressure minimum 2 bar	
		Media -Synthetic Resin - Ion-exchanger	
	Activated Carbon Filter	Minimum two charcoal filter with auto and manual backwash	
		Bypass facility for stage 1 and stage 2	
		Carbon tank capacity: Based on the RO system permeate flow	
		Operating pressure minimum 2 bar	

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S/No	Parameters	Specifications	Comply (Yes/No)
		Media - Activated carbon	
	Pretreatment media headers (Multimedia, Softener, Carbon)	Able to program backwash on particular date & time (To support nocturnal dialysis)	
	Booster Pump	Two pumps with Bypass facility	
	RO Status Indicator	RO status indicator to be installed at Treatment Area including cable and accessories	
10	Warranty period for 3 years	Entire RO system with RO water loop (High medical grade PEX pipe) and Pre treatment (Multimedia, Softener & Carbon tank controller and Booster Pump and leakage detector)	
11	Educational / Technical Training for BMEs	Minimum Two sessions of Technical training for NKF BMEs during the warranty period.	
12	Disposal of packaging material/	All packing materials and unwanted items to remove from site after commissioning.	
13	Additional Information	Please indicate the number of years of experience in relevant industry (Medical RO system)	
		Please indicate the number of RO systems installed in Singapore. Provide the customer details.	

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S/No	Parameters	Specifications
14	Requirement of Reverse Osmosis Water Treatment System Capacity	
	<div>DC</div> <div>Description</div>	203 Yishun
	Estimated Number of Stations	16
	Estimated Possibility of increase in number of stations	2
	Estimated Number of Standby by	3
	Estimated Number of contingency	1
	Estimated Number of midloops	2
	Total Number of water points	24
	Estimated Product Output/permeate flow	Min 1200 - 1800 L/hr
	Estimated target month to issue Purchase Order	Jul-25
	Estimated target month of installation	May-26
	Layout	Not Available

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REQUIREMENT SPECIFICATIONS

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Water plays a vital role in haemodialysis treatment. Reverse osmosis water treatment system compliments our superior standards in water quality and serves our mission to deliver high-quality dialysis.			
General Specification			
S/No	Parameters	Specifications	Comply (Yes/No)
1	Dual-stage RO system: A complete dual stage RO system that consists of Break tank / Soft water tank, valves, indicators, connectors, membranes, pumps, PLC, Online monitoring system etc. Each stages must be able to operate individually.	Required RO Main system constructed with high medical grade materials for heat rinse with dual stage, able to operate individual stages	
2	RO Water disruption loop: (Primary Loop/Main Pipe). The main pipe that allows circulating purified water from the RO system to the Dialysis area and returning back unused RO water to the Break tank / Soft water tank.	High medical grade PEX pipe construction with 100% dead space-free construction and coupling with a double adaptor at the dialysis unit for hot/heat rinse.	

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S/No	Parameters	Specifications	Comply (Yes/No)
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4	RO Membrane : Material	Polyamide material - ESPA (Energy saving Polyamide) with heat withstanding capability	
5	RO Membrane : Dimension	Required 8-inch diameters by 40-inch long spiral wound	
6	Operational Features		
	Permeate Flow (Based on the number of stations estimated 3 to 6 units of 8-inch membranes in the system)	Refer point 14 for the Requirement of Reverse Osmosis Water Treatment System Capacity	

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S/No	Parameters	Specifications	Comply (Yes/No)
	Retention capacity	Min 99 % retention capacity of inorganic substances	
	RO Membrane	Rejection Rate : Bacteria & Endotoxin >99%	
	PUB Raw Water pressure	Able to operate with, Static pressure 2 - 6 bar and Dynamic pressure 2 - 3 bar	
	Membrane cleaning	Required membrane backwash rinsing / regular flushing at a regular interval	
	Auto ON/OFF	Programmable auto ON/OFF function for the entire week/ Month.	
	Disinfection heat disinfection	Function to do complete heat disinfection programmable for Auto and Manual.	
	Disinfection Chemical disinfection	Function to do complete chemical disinfection programmable for Auto and Manual	
	Sampling point	Minimum two sampling points, one at the start of the Primary loop and another one at the End loop.	
	Service menu	Password Secured menu for service technicians	

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S/No	Parameters	Specifications	Comply (Yes/No)
7	Security Features	Required Dual-stage RO system	
		Able to operate emergency operation functions for Stage 1 and 2- Auto / Manual	
		Able to detect and control Permeate overpressure	
		Able to detect and control Permeate high conductivity	
		Able to detect and control Permeate high temperature	
		Able to detect and control Dry run protection	
		Voltage stabilisation	
		Traceability of alarms	
		Operation and alarm history	

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S/No	Parameters	Specifications	Comply (Yes/No)
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		Concentrate Flow	
		Membrane pressure	
		Permeate pressure	
		Permeate temperature	
		Raw water, Concentrate and Permeate water conductivity	
		Online Monitoring: History and Event	
		Soft water Hardness (optional)	
		Chlorine & Chloramine (optional)	

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S/No	Parameters	Specifications	Comply (Yes/No)
9	Pre-treatment Specification:		
	Pre-filters	Replaceable 5 /1 micron filter Assembly (single/dual stage)	
		Feed water inlet filter /100-micron filter assembly/ Multimedia filter	
	Pre-Treatment Piping	UPVC grade with good quality of connectors and pipes	
		Metal flexible hose especially high-pressure handling areas like inlet and outlet of Carbon tanks Softener tanks and Multimedia filter	
	Safety	Backflow Preventer/ Non-returnable valve	
	Softener	Duplex (two) softener with auto and manual backwash function	
		Bypass facility	
		Softener tank capacity: Based on the RO system permeate flow	

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S/No	Parameters	Specifications	Comply (Yes/No)
		Operating pressure minimum 2 bar	
		Media -Synthetic Resin - Ion-exchanger	
	Activated Carbon Filter	Duplex (two) charcoal filter with auto and manual backwash	
		Bypass facility for stage 1 and stage 2	
		Carbon tank capacity: Based on the RO system permeate flow	
		Operating pressure minimum 2 bar	
		Media - Activated carbon	
	Pretreatment media headers (Multimedia, Softener, Carbon)	Able to program backwash on particular data & time (To support nocturnal dialysis)	
	Booster Pump	Two pumps with Bypass facility	
	RO Status Indicator	RO status indicator to be installed at Treatment Area including cable and accessories	

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S/No	Parameters	Specifications	Comply (Yes/No)
10	Warranty period for 3 years	Entire RO system with RO water loop (High medical grade PEX pipe) and Pre treatment (Multimedia, Softener & Carbon tank controller and Booster Pump and leakage detector)	
11	Educational / Technical Training for BMEs	Minimum Two sessions of Technical training for NKF BMEs during the warranty period.	
12	Disposal of packaging material/	All packing materials and unwanted items to remove from site after commissioning.	
13	Additional Information	Please indicate the number of years of experience in relevant industry (Medical RO system)	
		Please indicate the number of RO systems installed in Singapore. Provide the customer details.	

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S/No	Parameters	Specifications
14	Requirement of Reverse Osmosis Water Treatment System Capacity	
	<div>DC</div> <div>Description</div>	825 Woodlands
	Estimated Number of Stations	24
	Estimated Possibility of increase in number of stations	2
	Estimated Number of Standby by	4
	Estimated Number of contingency	1
	Estimated Number of midloops	2
	Total Number of water points	33
	Estimated Product Output/permeate flow	Min 1600 - 1800 L/hr
	Estimated target month to issue Purchase Order	Jul-25
	Estimated target month of installation	Oct-25
	Layout	Not Available

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