

PRE-BID AMMEDMENTS/CLARRIFICATIONS

NAME OF THE WORK: DESIGN, CONSTRUCTION, ERECTION, TESTING AND COMMISSIONING OF 20 MLD TERTIARY TREATMENT PLANT FOR NTPC KORBA INCLUDING OPERATION AND MAINTENANCE OF ENTIRE SCHEME FOR 15 YEARS

System Tender No: 188173 NIT NO: 1507/WS/2026

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System Tender No:188173

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
1.	Secondary Treated Sewage / TTP Feed Water Characteristics and TTP Treated Water Characteristics Table 2: Inlet parameters of TTP	(Page – 49,50)		The tender only mentions TDS, Hardness and Chlorides. However detailed ionic break-up is not provided. We request you to kindly provide concentrations of other ionic constituents that are required for RO design.	Bidder has to ascertain and analyse Ionic balance for RO design as per water quality in Tender pg. no 50
2.	Pre- Qualification Criteria (Page -12) iv) The Technology provider/ integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.	12		The technology proposed for tertiary treatment is ultrafiltration (UF) process followed by reverse osmosis (RO). Ultrafiltration system is the one of the most critical aspect of the tertiary treatment plant as the system guarantee and RO performance is dependent upon the UF design and membrane technology. Hence, considering the same, the Non-Judicial agreement (MoU) with technology provider shall be as per the following experience criteria:- “The technology provider or OEM shall have experience of providing the proposed UF system in at least One (1) TTP of at least 10 MLD capacity for sewage/water treatment application in India during last seven year for any State / Central Government organizations / ULBs. The said TTP must in operation for at least 2 years as on date. The technology provider or its authorised representative should have a registered office in India, with the trained manpower in process design, detailed engineering, commissioning and support during O&M period. Technology provider shall be registered with any Central/State government.” Kindly confirm.	As per NIT
3.	1.3 ADVANCED ULTRAFILTRATION MEMBRANE WITH COMPLETE PERMEATE, BACKWASH, CEB AND CIP SYSTEM			The various specifications for advanced ultrafiltration such as flux, module arrangement, system configuration, number of trains/units, pertain to a specific type of ultrafiltration system based on ceramic membranes. In order to ensure fair bidding, it is requested to allow	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications

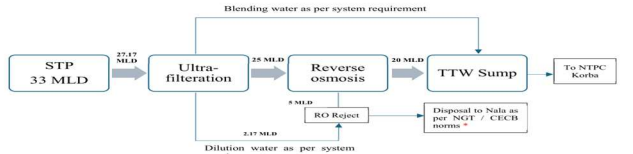
Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
	(Page - 73-75) The UF system must be designed at a flux of minimum 150 LMH. (Page - 75)			other advanced ultrafiltration systems such as Submerged Ultrafiltration System based on PVDF membranes that have widespread applications in tertiary treatment of waste water. Kindly refer to Annexure 1 for List of projects in India based on Submerged Ultrafiltration System with PVDF Membranes for STP water reuse application. Hence, we understand that the bidder is allowed to design the ultrafiltration system utilising PVDF membranes as per the design criteria of the OEM /technology provider. Kindly confirm.	
4.	1.3.1 Minimum design criteria for UF System (Page - 76) b. UF Membranes: The UF System shall use a membrane sheet made of microporous amorphous membrane structure, manufactured from either Alumina (Al ₂ O ₃), Zirconia (ZrO ₂), titanium dioxide. (Page - 77)			The MoC of UF membranes mentioned in tender pertain to different type of ceramic membranes. We request you, to also allow the bidder to offer Submerged Ultrafiltration Systems based on PVDF membranes having pore size < 0.04 microns considering their proven performance and widespread use in tertiary treatment applications. Kindly Confirm.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
5.	Approved Make List C. ELETROMECHANICAL & INSTRUMENTATION WORK (Page - 306) UF System - CERAFILTEC, Meidensha & Nano Stone (Page - 306)			The UF system makes mentioned in tender pertain to ceramic membranes only. We request you to include “Dupont” Make for Ultrafiltration Systems utilising PVDF Membranes. Dupont is one of the leading supplier of pressurized, submerged ultrafiltration and MBR membranes; having more than 1000 worldwide installations. Membranes offered by Dupont are robust, offering high fouling resistance and high recovery. Kindly confirm.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
6.	3. Performance Guarantee 5.1 Ultrafiltration (UF) System (Page - 62) & 1.3.2 Scope of supply f. Membrane Element Life (Page - 78)	Life of Ultrafiltration membranes shall have warranty to cover the total membrane life of minimum 15 years. & f. Membrane Element Life Contractor shall provide a warranty to cover the total membrane life of 15 years. The first 5 years of Warranty must be cliff (full replacement warranty/ no cost warranty) while the remaining 10 years shall be pro-rated replacement warranty.		Life of UF membranes differs amongst various UF membrane makes and generally ranges from 5 to 15 years. In order to ensure fair bidding, we understand that any UF membrane replacement occurring in the 15 years of O&M shall be under the scope of the contractor. The Membrane warranty terms are generally an agreement reached between the contractor and technology provider/OEM for the duration of the O&M. The contractor has to account for	It shall be the responsibility of bidder to run the entire plant for 15 years including all the guarantees, warranties and replacements for successful performance of the entire plant.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				the design membrane life and consider the required membrane replacement in his O&M calculation. Hence, we assume that contractor has to replace the UF membranes as per the design life of the selected UF Membranes during 15 years of O&M. Please confirm.	
7.	1. ULTRA FILTRATION (UF) SYSTEM PROCESS (Page - 68)	a. Manual strainer (Page - 68) & iv. UF feed strainers Type - Punched hole type rotating drum, Automatic, size - 1mm (Page - 94)		We propose the inclusion of disc filter instead of manual strainer or rotary drum screen upstream of the UF system, to improve the performance of downstream processes and to provide enhanced protection to the downstream membranes. Kindly confirm.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, So Bidder shall adopt appropriate pre-treatment as per technology requirement without any financial implication to KMC
8.	Tertiary Treatment Plant (TTP) Construction (Page - 66)	2. Reverse Osmosis System Reverse Osmosis process is a membrane process in which a synthetic semi-permeable membrane is used to separate water from dissolved impurities. When a semi-permeable membrane separates a dilute and concentrates solution of salts, due to osmosis, the water from the dilute solution side passes through the membrane to the concentrated side till osmotic equilibrium is attained. (Page - 80)		As per tender, conventional RO System is to be provided after Ultrafiltration for TDS removal. We request you to kindly allow Advanced Reverse Osmosis System - Closed Circuit RO (CCRO), an advanced high-recovery RO system that can recover up to 90 % of inlet water in single stage eliminating the need for multiple stages as required in Conventional RO systems. Also, CCRO systems consume less power and chemicals than that required for Conventional RO systems. Advanced Reverse Osmosis / Closed Circuit Reverse Osmosis will deliver substantial savings in OPEX of the plant during 15 years of O&M. Please refer Annexure 2 for list of recent projects in India where CCRO has been implemented in place of conventional RO. Also refer to Annexure 3 for CCRO specifications of recently published 16 MLD TTP, Lucknow PM Mitra Park tender. Therefore, we request you, to also allow the bidder to provide advanced RO (Closed Circuit Reverse Osmosis) process in addition to the conventional multistage RO process. Kindly confirm.	Bidder to assess and can offer any advanced upgraded technology to meet system requirements without any financial implication as an alternative technical offer (Keeping base offer as same as NIT). However, JOC Shall reserve the right to accept or reject the proposed advanced technology.
9.	Pre- Qualification Criteria (Page -12)	(iv) The Technology provider/ integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.		The technology proposed for tertiary treatment is ultrafiltration (UF) process followed by reverse osmosis (RO). Reverse Osmosis System is the one of the most critical aspect of the tertiary treatment plant as the system guarantee is dependent upon the RO design and membrane technology Hence, considering the same, the Non-Judicial agreement (MoU) with technology provider shall be as per the following experience criteria :- “The technology provider or OEM shall	As per NIT,

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				have experience of providing the proposed RO/Advanced RO system in at least One (1) TTP of 10 MLD capacity for sewage/water treatment application in India or abroad during last seven year for any Private/State/Central Government organizations / ULBs. The said TTP must in operation for at least 2 years as on date. The technology provider or its authorised representative should have a registered office in India, with the trained manpower in process design, detailed engineering, commissioning and support during O&M period. Technology provider shall be registered with any Central/State government.” Kindly confirm.	
10.	Approved Make List C. ELETROMECHANICAL & INSTRUMENTATION WORK (Page - 307)	RO Membrane - Toray, Dow, Hydranautics, Veolia (Page - 307)		As per the tender specifications, DOW is mentioned as an approved make for RO membranes. Since, the earlier Dow RO membranes are now DuPont RO membranes it is understood that DuPont RO membranes will be acceptable under the approved makes. Please confirm.	Yes, Bidders understanding is correct
11.	6. Technical Datasheet (Page - 96)	As per Tender datasheet - RO Trains / RO skids Reverse Osmosis System (RO) - (Min. 5-6 trains) (Page - 96)		The tender mentions that 5 - 6 number of RO Skids need to be provided. Considering the output capacity of 20 MLD, 2 Working + 1 Standby Skid are sufficient. Increasing the RO skid will unnecessarily increase the CAPEX of system. Kindly confirm that the bidder can offer 2 Working + 1 Standby Skid configuration for RO system.	Bidder has to ascertain, analyse & design as per the requirement
12.	A. Technical Qualification Sr.No.1 /Page No. 13	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		We request authority to consider experience of STP works having Tertiary Treatment Process (TTP) based on Fiber Disc Filter (FDF) technology in addition to UF - RO technology. Fiber Disc Filter–based TTP systems are widely accepted, proven, and implemented in large-scale STP projects, and are considered technically equivalent for tertiary treatment applications. Allowing such experience will help broaden competition and enable participation of technically qualified bidders with relevant and proven expertise. This approach is also in line with prevailing industry practices adopted in similar large-scale STP–TTP tenders. Therefore, we request to modify clause as under : Construction of at least one either UF - RO or Fiber Disc Filter waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
13.	A. Technical Qualification Sr.No.2 /Page No. 13	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		We request authority to consider experience of STP works having Tertiary Treatment Process (TTP) based on Fiber Disc Filter (FDF) technology in addition to UF - RO technology. Fiber Disc Filter–based TTP systems are widely accepted, proven, and implemented in large-scale STP projects, and are considered technically equivalent for tertiary treatment applications. Allowing such experience will help broaden competition and enable participation of technically qualified bidders with relevant and proven expertise. This approach is also in line with prevailing industry practices adopted in similar large-scale STP–TTP tenders. Therefore, we request to modify clause as under : Should have experience in Operation and Maintenance of either UF - RO or Fiber Disc Filter waste water based treatment Plant for a period of 1 year.	As per NIT
14.	Appendix – 3 Work Performed by Bidder on all classes of Civil Engineering Construction Works over the last five years /Page No. 284	Certificate of Completion of the Works, in sufficient detail to verify the contract name, value and completion time issued by Engineer in charge not below the rank of Executive Engineer or equivalent.		We are currently managing multiple concurrent projects across various locations, and obtaining signatures from the Executive Engineer or equivalent for all ongoing works on the Works-in-Hand Statement would be a challenging and time-consuming process. In this regard, we would like to submit that certification of such statements by a Statutory Auditor has been also accepted by various Government authorities in similar tenders. In view of the above, we request to modify clause as under: Certificate of Completion of the Works, in sufficient detail to verify the contract name, value and completion time issued by Engineer in charge not below the rank of Executive Engineer or equivalent or certified by Statutory Auditor.	<p>Certificate of Completion of the Works, in sufficient detail to verify the contract name, value and completion time issued by Engineer in charge not below the rank of Executive Engineer or equivalent.</p> <p>For ongoing projects, Certificate from not below the rank of executive engineer or Statutory Auditor along with UDIN no. with sufficient proof such as work order shall also be accepted.</p>
15.	Appendix – 4 Existing commitments and on-going all classes of civil engineering construction works. /Page No. 284	Enclose certificates from Engineer (s) in charge (Not below the rank of Executive Engineer or equivalent) for value of work remaining to be completed, value of work done, anticipated date of completion.		We are currently managing multiple concurrent projects across various locations, and obtaining signatures from the Executive Engineer or equivalent for all ongoing works on the Works-in-Hand Statement would be a challenging and time-consuming process. In this regard, we would like to submit that certification of such statements by a Statutory Auditor has been also accepted by various Government authorities in similar tenders. In view of the above, we request to modify clause as under : Enclose certificates from	<p>Certificate of Completion of the Works, in sufficient detail to verify the contract name, value and completion time issued by Engineer in charge not below the rank of Executive Engineer or equivalent.</p> <p>For ongoing projects, Certificate from not below the rank of executive engineer or Statutory Auditor along with UDIN no. with sufficient proof such as work order shall also be accepted.</p>

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				Engineer (s) in charge (Not below the rank of Executive Engineer or equivalent) or certification by Statutory Auditor for value of work remaining to be completed, value of work done, anticipated date of completion.	
16.	A. Technical Qualification Sr.No.1 /Page No. 13	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		We respectfully request the Authority to kindly consider allowing the experience of a technology provider for the purpose of meeting the Technical Qualification requirements. In line with the above, we request modification of the relevant clause as follows: Construction of at least one either UF – RO municipal waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD. If the Bidder does not qualify on its own under the Technical Qualification criteria under clause 1.(i), the Bidder shall be permitted to enter into a Memorandum of Understanding (MoU) with a technology provider who has provided technology, that meets the prescribed eligibility requirements in India or Abroad.	As per NIT
17.	A. Technical Qualification Sr.No.2 /Page No. 13	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		We respectfully request the Authority to kindly consider allowing the experience of a technology provider for the purpose of meeting the Technical Qualification requirements. In line with the above, we request modification of the relevant clause as follows: Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year. If the Bidder does not qualify on its own under the Technical Qualification criteria under clause 1.(ii), the Bidder shall be permitted to enter into a Memorandum of Understanding (MoU) with a technology provider who has provided technology, that meets the prescribed eligibility requirements in India or Abroad.	As per NIT
18.	ANNEXURE – E SCOPE OF WORK & TECHNICAL SPECIFICATIONS	Note : Note: The TDS concentration in RO reject tank for disposal into the nallah shall be <2100 ppm as per EPA 1986. Bidder shall adhere to compliance as per CECB directives in addition to NGT Norms.		As per the Tender, the combined reject from UF & RO system should meet the NGT norms of TDS < 2100 mg/l. And as per the Inlet parameters of TTP, it states that the system needs to be	As per NIT, Pg no.83

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification																																				
				<p>designed for TDS of 1000 mg/l, whereas the actual value of TDS is 632 mg/l.</p> <p>The combined reject from UF & RO system will have reject TDS value of < 2100 mg/l; only if the inlet TDS to TTP is considered as 632 mg/l.</p> <p>Hence, we presume that for RO reject calculations, inlet TDS of 632 mg/l needs to be considered.</p> <p>Kindly Confirm.</p>																																					
19.	Table-2	<table><tr><th>Sr. No.</th><th>Parameters/ Pollutants</th><th>Values after secondary treatment</th></tr><tr><td>1</td><td>pH</td><td>6.5 to 9.0</td></tr><tr><td>2</td><td>Biochemical Oxygen Demand (BOD₅)</td><td>≤ 10 mg/l</td></tr><tr><td>3</td><td>Chemical Oxygen Demand (COD)</td><td>≤ 50 mg/l</td></tr><tr><td>4</td><td>Total Suspended Solids (TSS)</td><td>≤ 10 mg/l</td></tr><tr><td>5</td><td>Total Phosphorous (TP)</td><td>≤ 1mg/l</td></tr><tr><td>6</td><td>Total Nitrogen (TN)</td><td>≤ 10 mg/l</td></tr><tr><td>7</td><td>Ammonical Nitrogen (NH₃-N)</td><td>≤ 5 mg/l</td></tr><tr><td>8</td><td>Faecal Coliform (MPN/100 ml)</td><td>≤ 230 MPN/100 ml</td></tr><tr><td>9</td><td>TDS</td><td>632 (system to be designed for 1000 ppm)</td></tr><tr><td>10</td><td>Chlorides</td><td>333.7 (system to be designed for 350 ppm)</td></tr><tr><td>11</td><td>Hardness</td><td>218 (system to be designed for 600 ppm)</td></tr></table>	Sr. No.	Parameters/ Pollutants	Values after secondary treatment	1	pH	6.5 to 9.0	2	Biochemical Oxygen Demand (BOD ₅)	≤ 10 mg/l	3	Chemical Oxygen Demand (COD)	≤ 50 mg/l	4	Total Suspended Solids (TSS)	≤ 10 mg/l	5	Total Phosphorous (TP)	≤ 1mg/l	6	Total Nitrogen (TN)	≤ 10 mg/l	7	Ammonical Nitrogen (NH ₃ -N)	≤ 5 mg/l	8	Faecal Coliform (MPN/100 ml)	≤ 230 MPN/100 ml	9	TDS	632 (system to be designed for 1000 ppm)	10	Chlorides	333.7 (system to be designed for 350 ppm)	11	Hardness	218 (system to be designed for 600 ppm)		<p>The inlet parameters for TDS, chlorides, and hardness have been specified for system design purposes and however the outlet parameters which needs to be achieved is not specified. Kindly clarify.</p>	As per NIT
Sr. No.	Parameters/ Pollutants	Values after secondary treatment																																							
1	pH	6.5 to 9.0																																							
2	Biochemical Oxygen Demand (BOD ₅)	≤ 10 mg/l																																							
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20.	6. Technical Data sheet	<table><tr><td>Inlet Feed Quality</td><td></td></tr><tr><td>pH of Feed water</td><td>6.5-7.5</td></tr><tr><td>Inlet Turbidity</td><td><15 NTU</td></tr><tr><td>Inlet TSS</td><td><30 mg/L</td></tr><tr><td>Inlet TOC</td><td><2 mg/L</td></tr></table>	Inlet Feed Quality		pH of Feed water	6.5-7.5	Inlet Turbidity	<15 NTU	Inlet TSS	<30 mg/L	Inlet TOC	<2 mg/L			As per NIT																										
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21.	1. General			<p>The bidder understands that the net output flow is the blended flow of RO permeate and UF permeate. Please confirm.</p>	RO & UF permeate shall be provided as net outflow																																				
22.	Table-4	<table><tr><th>Details</th><th>As per Tender</th><th>To be guaranteed by bidder</th></tr><tr><td>Net output Flow</td><td>Min. 20 MLD</td><td>_____</td></tr></table>	Details	As per Tender		To be guaranteed by bidder	Net output Flow	Min. 20 MLD	_____																																
Details	As per Tender	To be guaranteed by bidder																																							
Net output Flow	Min. 20 MLD	_____																																							
23.	i.	After RO treatment, the permeate of 20 MLD shall be sent to NTPC for reuse. The reject of RO shall be disposed to the nearby water body only if the required parameters are fulfilled.																																							
24.	c.	c. Life of Ultrafiltration membranes shall have warranty to cover the total membrane life of minimum 15 years. The first 5 years of Warranty must be cliff (full replacement warranty/ no cost warranty) while the remaining 10 years shall be pro-rated replacement warranty.		<p>Please confirm the guarantee on UF membrane life, as there are contradiction in the tender.</p>	It shall be the responsibility of bidder to run the entire plant for 15 years including all the guarantees, warranties and replacements for successful performance of the entire plant.																																				
25.	f.	Contractor shall provide a warranty to cover the total membrane life of 15 years. The first 5 years of Warranty must be cliff (full replacement warranty/ no cost warranty) while the remaining 10 years shall be pro-rated replacement warranty.																																							
26.	d & e	Process recovery: The UF system shall achieve a minimum product recovery of 92% percent (minimum) on a daily average basis (even under worst case scenario as defined by the feed water analysis).		<p>Please confirm the UF recovery, as there are contradiction in the tender.</p>	Min product recovery of 90% is admissible																																				
27.	iii.	Recovery rate : Min. 90%																																							

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28.	Annexure E-I	<div>Table 5: List of components</div> <table><tr><th></th><th>Type</th><th>MOC</th><th>Quantity</th><th>Flow</th></tr><tr><td>UF FEED STRAINERS</td><td>Punched hole (1 mm) type rotating drum, Automatic</td><td>SS 316</td><td>As per design, with 50% standby</td><td>As per design</td></tr></table>		Type	MOC	Quantity	Flow	UF FEED STRAINERS	Punched hole (1 mm) type rotating drum, Automatic	SS 316	As per design, with 50% standby	As per design		Please confirm the strainer requirement—whether it should be automatic or manual, and whether it shall be a punched hole drum type or a 500-micron wedge wire type.	1 mm automatic screen typically rotary screen with punched holes shall be provided
	Type	MOC	Quantity	Flow											
UF FEED STRAINERS	Punched hole (1 mm) type rotating drum, Automatic	SS 316	As per design, with 50% standby	As per design											
29.	1.a.	<div>a. Manual Strainer:</div> <p>The Filtering process, raw water enters the filter inlet through the coarse screen which protects the cleaning mechanism from large debris. The water passes through the fine screen, trapping dirt particles that accumulate inside the filter. Clean water flows through the filter outlet.</p> <p>The gradual dirt buildup on the inner screen surface causes a filter cake to develop, with a corresponding increase in the pressure differential across the screen. A pressure differential switch senses the pressure differential and when it reaches a pre-set value, the cleaning process begins.</p> <p>The Strainer shall be auto-cleaning wedge wire type and shall have a maximum rating of 500 microns.</p>													
30.	Annexure E-I	<table><tr><td>Dosing System for UF</td><td>Motorised diaphragm dosing pump</td><td>10000 litre each LDPE</td><td>separate sets for HCl, Caustic and Hypochlorite CEB</td><td>As per design</td></tr><tr><td>UF CIP PUMPS</td><td>Submersible</td><td>FRP / GRP</td><td>1 No.</td><td>Min. 10 m3</td></tr></table>	Dosing System for UF	Motorised diaphragm dosing pump	10000 litre each LDPE	separate sets for HCl, Caustic and Hypochlorite CEB	As per design	UF CIP PUMPS	Submersible	FRP / GRP	1 No.	Min. 10 m3		Please confirm whether each CEB tank in LDPE MOC is required to have a capacity of 10,000 liters. The CIP pump MOC and flow details lack clarity; kindly review and reconfirm these requirements.	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalize design post detail Engineering as per the quality and quantity required at the Product outlet of TTP.
Dosing System for UF	Motorised diaphragm dosing pump	10000 litre each LDPE	separate sets for HCl, Caustic and Hypochlorite CEB	As per design											
UF CIP PUMPS	Submersible	FRP / GRP	1 No.	Min. 10 m3											
31.	Annexure E-I	<div>Table 5: List of components</div> <table><tr><th></th><th>Type</th><th>MOC</th><th>Quantity</th><th>Flow</th></tr><tr><td>UF Backwash tank</td><td></td><td>RCC with acid-proof tile lining</td><td>1 No.</td><td>Min. 50 m3</td></tr></table>		Type	MOC	Quantity	Flow	UF Backwash tank		RCC with acid-proof tile lining	1 No.	Min. 50 m3		Please confirm whether a separate backwash tank is required. If so, kindly confirm the MOC of the tank, as it is not listed under RCC tanks in Class i – Civil Components, Page-66.	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalize design post detail Engineering as per the quality and quantity required at the Product outlet of TTP.
	Type	MOC	Quantity	Flow											
UF Backwash tank		RCC with acid-proof tile lining	1 No.	Min. 50 m3											
32.	ii.	UF backwash-cum- Reverse Osmosis (RO) feed tank under the Mechanical Components		Please confirm the MOC of the tank, as well as whether a separate UF backwash tank is required as mentioned in the Annexure E-I	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalize design post detail Engineering as per the quality and quantity required at the Product outlet of TTP.										
33.	g.	<div>g. UF Backwash Water Storage:</div> <p>Water from this UF permeate tank shall be used as Feed water to the RO trains. Some of the water is used to backwash the Ultra Filtration trains to maintain the operating flow/flux of the membranes.</p>													
34.	ii.	Strainers/ Filters in UF backwash line		Please clarify whether this is a manual suction strainer at the backwash pump suction.	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalize design post detail Engineering as per the quality and quantity required at the Product outlet of TTP.										
35.	1	Chlorination, if required.		Pre-treatment by chlorination shall be based on the upstream treatment scheme. Kindly confirm whether a chlorine dosing system is envisaged and specify the residual chlorine level maintained in the treated sewage. This will determine the requirement for chlorine dosing at the UF inlet as a pretreatment.	Provision for chlorination upstream filtration shall be provided to oxidise feed sufficiently before filtration.										
36.	e.	<div>e. Flushing</div> <p>The UF system shall be configured such that individual trains can be flushed or backwashed with RO permeate water during periods of extended reduced flow or</p>		Please confirm whether RO permeate is to be used for UF flushing/backwash.	No, UF water backwash shall be performed with UF permeate										

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification																									
		e. Flushing The UF system shall be configured such that individual trains can be flushed or backwashed with RO permeate water during periods of extended reduced flow or standby.																												
37.	j	Service Cycle: The UF membrane system will operate on an out-to-in mode where the feed stream flows on the outside of the membrane with the filtrate flowing through the inside. The Membrane system operates on a dead-end configuration with intermittent membrane tank drain cycles. The system shall be designed on a constant flow condition which means in case of down time of 1-2 membrane tanks the UF system shall be capable of providing the constant design flow to RO system.		The bidder understands that a submerged type system with a membrane tank is envisaged. Kindly confirm the MOC of the membrane tank.	As per the NIT MOC of the membrane tanks shall be RCC M30																									
38.	o.	The RO feed water has high scaling potential especially due to Silica, CaCO3, CaSO4 and CaF2, which are harmful to membranes and hence an on-line anti-scalant dosing is provided for controlling the scaling and fouling tendency of the feed water.		Chloride and hardness values are provided in the feed water parameters. Kindly provide the ionic concentrations of silica, calcium, sulphate, fluoride, and alkalinity for appropriate antiscalant selection.	Premium grade antiscalent which can handle silica upto 250 ppm in reject with good LSI tolerance shall be provided																									
39.	1.1	1.1 UF FEED TANK (As per annexure E2) 1.1.1 Provision of UF and RO reject water sump (i.e. underground RCC M-30 tank) of required capacity for collecting UF / RO reject water and then transmitting it to river with necessary electrical / mechanical instruments, inter connecting pipe.		There is a contradiction in the tank nomenclature. We understand that the UF feed tank is an above-ground construction; please confirm.	All the RCC Structures shall be Underground																									
40.	1.2	<table><tr><th colspan="5">ii UF FEED PUMP</th></tr><tr><th>UF pump</th><th>Feed</th><th>Type</th><th>MOC</th><th>Quantity</th></tr><tr><td></td><td></td><td>Submersible/ Vertical turbine</td><td>SS316</td><td>As per design, with 50% standby</td></tr><tr><td></td><td></td><td></td><td></td><td>Flow</td></tr><tr><td></td><td></td><td></td><td></td><td>As per design</td></tr></table>	ii UF FEED PUMP					UF pump	Feed	Type	MOC	Quantity			Submersible/ Vertical turbine	SS316	As per design, with 50% standby					Flow					As per design		The feed pump standby requirement mentioned in the technical data sheet appear to be contradictory. Kindly clarify the final requirement.	1Working + 1standby per feed pump shall be provided
ii UF FEED PUMP																														
UF pump	Feed	Type	MOC	Quantity																										
		Submersible/ Vertical turbine	SS316	As per design, with 50% standby																										
				Flow																										
				As per design																										
41.	1.3	Membranes trains of Min. 180 m3/h each shall be provided and filtered water to be collected in 1000 m3 tank adjacent to primary collection tank.		Please confirm whether, in other parts of the tender where it is mentioned ‘as per design,’ the bidder is allowed to propose a capacity lower than 180 m³/h.	The bidder must ensure the average feed flow into the UF system remains constant even in the instance of streams going out of service for cleaning, i.e. for a plant with N number of streams the plant must continuously deliver the same output even in N-1 condition.																									
42.	2	The RO system consists of minimum 4 trains.			As per NIT																									
43.	1.3	Pre-conditioning of feed, which may involve dosing of Acid/Alkali for pH correction (if required), coagulants such as PACl, FeCL3 & dosing of oxidants such as NaOCl. Adequate tanks & chemical dosing pumps shall be provided for this purpose.		Please confirm the oxidant dosing requirements, as the same clause mentions the use of ClO2. Kindly clarify whether the oxidant shall be dosed as NaOCl or ClO2.	Technically oxidisation of feed is required. So NaOCl dosage shall be provided owing to operational reliability																									
44.	a.	Chemical dosing tanks & pumps for Oxidant (NaOCl) dosing – System to be designed for a typical FRC Concentration of around 0.5 ppm																												
45.	1.3	Efficient and complete mixing of chemicals using some form of flash mixer before the conditioned feed enters the reaction Chamber. Homogenization & provision of sufficient residence time (approximately 60 minutes) for the reaction & formation of micro-flocs in the reaction Chamber which ideally is a tank and baffle arrangement.		As there is contradiction in the retention time, kindly clarify.	Bidder to ascertain the said duration is sufficient to stabilize feed quality variations.																									
46.	a.	Reaction tank with baffles (15-20 minutes retention time)																												
47.	1.3	The Ultra Filtration (UF) system shall preferably be submerged in tanks (for ease of installation).		As the approved vendor Nanostone offers pressurized, non-submersible UF membranes, please confirm whether a pressurized, non-submersible system is acceptable.	As per NIT																									
48.	1.3	The complete UF system must be split into 04 independent streams with each stream comprising several trains to provide 3 (4-1) functionalities. Each stream must be equipped with a dedicated backwashing, chemical cleaning & aeration system.		Please clarify this requirements.	The bidder must ensure the average feed flow into the UF system remains constant even in the instance of streams going out of service for cleaning, i.e. for a plant with N number of streams the plant must continuously deliver the same																									

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification										
					output even in N-1 condition.										
49.	1.3	A common standby (50%) must be provided for Filtration for each stream, either hot standby or store standby.		As per other parts of the tender, the system is specified as 180 m³/h per train with one standby (N+1). Please confirm the UF standby requirement.	UF system shall be designed with one train standby (N-1)										
50.	1.3	The UF system must be designed to achieve Filtrate with Turbidity <5 NTU, TSS <5,SDI <3.		Please review and reconfirm this requirement, as other parts of the tender (6. Technical Data Sheet) specify turbidity of < 0.5 NTU.	Outlet product of UF should be <0.5 NTU										
51.	1.4	Provision of backwash pump shall have to provide for UF backwash facility with necessary electrical / mechanical instruments, inter connecting pipe, with necessary arrangements of knife gate valves/ penstock gates and UF clarified water – backwash pumping arrangement by SS304 pipeline upto UF.		The bidder understands that the UF system is backwashed by gravity flow from the backwash tank without the use of a pump, and that the backwash pump is envisaged as a provision. Please clarify and confirm.	All Operation of UF including Filling, Filtration and cleaning must be with pumps for control of operation. Gravitational flows shall be used for draining only										
52.	1.4.1	· Backwash & chemical dosing pumps must have a minimum of 100% standby pumps installed (1 duty, 1 standby).													
53.	1.4.1	<table><tr><td></td><td>Type</td><td>MOC</td><td>Quantity</td><td>Flow</td></tr><tr><td>UF Backwash Pump with VFD</td><td>Horizontal Centrifugal</td><td>SS 316</td><td>As per design, with 50% standby</td><td>As per design</td></tr></table>				Type	MOC	Quantity	Flow	UF Backwash Pump with VFD	Horizontal Centrifugal	SS 316	As per design, with 50% standby	As per design	
	Type	MOC	Quantity	Flow											
UF Backwash Pump with VFD	Horizontal Centrifugal	SS 316	As per design, with 50% standby	As per design											
54.		1.4 UF permeate Tank cum RO feed tank with overhead wash water tank and backwash / CIP pumps <table><tr><td></td><td>Type</td><td>MOC</td><td>Quantity</td><td>Flow</td></tr><tr><td>UF Permeate tank</td><td></td><td>RCC</td><td>1 No.</td><td>Min. 1000 m3</td></tr></table>		Type	MOC	Quantity	Flow	UF Permeate tank		RCC	1 No.	Min. 1000 m3		There is a contradiction in the tank volume. We understand that the UF permeate cum RO Feed tank is an above-ground construction with the volume of 1000 m3; please confirm.	RO Feed tank shall be under ground
	Type	MOC	Quantity	Flow											
UF Permeate tank		RCC	1 No.	Min. 1000 m3											
55.		<table><tr><td colspan="2">REVERSE OSMOSIS (RO) SYSTEM (Min. 5-6 trains)</td></tr><tr><td colspan="2">i. RO FEED TANK</td></tr><tr><td>No. of units</td><td>1 No.</td></tr><tr><td>Design flow</td><td>As per design</td></tr><tr><td>HRT</td><td>30 minutes</td></tr></table>	REVERSE OSMOSIS (RO) SYSTEM (Min. 5-6 trains)		i. RO FEED TANK		No. of units	1 No.	Design flow	As per design	HRT	30 minutes			RO Feed tank shall be under ground
REVERSE OSMOSIS (RO) SYSTEM (Min. 5-6 trains)															
i. RO FEED TANK															
No. of units	1 No.														
Design flow	As per design														
HRT	30 minutes														
56.	1.4.2	Cleaning-in-Place (CIP) System Purpose: Periodic cleaning of RO membranes to remove fouling and scaling. Automation: Automated CIP cycle with programmable logic controller (PLC) integration.		We understand that the CIP system is dedicated to the UF system and not the RO system. Please confirm. Also, kindly specify the level of automation required for the CIP system.	RO CIP Mandatory, The level of automation shall be 100%										
57.	2	LIMITING CONDITION OF FEED WATER TO RO UNIT • SDI : <3 • Temperature : 60 deg. C (max.) • Free chlorine : Nil or as per design • Oil and grease : Nil or as per design		Please confirm that the influent feed water temperature shall not exceed 36 Deg C at battery limit and no provision shall be considered to reduce the temperature in the treatment plant.	SHALL NOT EXCEED 40 Deg										
58.	f.	The operating temperature of feed water shall not be exceeding 40 deg. Celsius or as per design requirements.			SHALL NOT EXCEED 40 Deg										
59.	5.2	b. TDS of RO permeate shall not be more than 100 ppm at 36 deg C.			SHALL NOT EXCEED 40 Deg										
60.	i.	<ul style="list-style-type: none">Compliance: CPCB standards for reject water quality (e.g., TDS <2100 mg/L, BOD <10 mg/L, COD <50 mg/L), Environment (Protection) Rules, 1986, and amendments.		With inlet BOD & COD as <10 & < 50 mg/l respectively, the same will get concentrated in the RO reject and hence achieving the same levels at inlet in the RO reject also is not possible. Moreover having RO reject treatment for such a flow is not feasible. Kindly Clarify. We suggest that RO reject shall be considered for other applications like Ash quenching or dilution with other treated wastewater to achieve the desired BOD & COD levels.	As per NIT										
61.	2.4.1	· Disposal/Treatment: Discharge to designated water body after treatment as per CPCB norms (TDS and other parameters within limits 2100 ppm TDS to Hasdeo River)			As per NIT										
62.	Note:	2) The reject water treatment shall be carried out as per the norms of CPCB, NGT.			As per NIT										

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
63.	2.4.1	Disinfection: Chlorination to ensure pathogen-free permeate. With totally automatic chlorine dosing system of reputed make as per approved make list and test certificate.		The bidder can consider a UV-based disinfection system. Please confirm.	Free Residual Chlorine dosing shall be provided by bidder
64.	2.4.1	Remineralization: If required for industrial reuse, addition of calcium/magnesium salts.		The bidder has envisaged this as a provision; however, the actual requirement shall be confirmed.	As per NIT
65.					
66.	3.1 Terminal Points:	The scope of this tender shall start from the outlet of STP. The contractor shall make all the necessary arrangements for interconnection with bypass arrangements for taking the STP water in their proposed facility.		<p>INCOMING PIPING BATTERY LIMIT:</p> <p>We presume that STP water shall be terminated by client at one location in the proposed TTP plant Battery Limit.</p> <p>Please confirm.</p>	As per NIT
67.	ANNEXURE – E SCOPE OF WORK & TECHNICAL SPECIFICATIONS	Reject water management and Safe disposal arrangement of UF, RO and all other reject water as per the norms of NGT to Hasdeo river		<p>We presume that the reject water from the TTP plant shall be terminated by the bidder within the plant boundary.</p> <p>Please confirm.</p>	As per NIT, The safe drainage and disposal arrangements shall be done by the contractor in the nearby nala which intern meets Hasdeo river
68.	1.3 ADVANCED ULTRAFILTRATION MEMBRANE WITH COMPLETE PERMEATE, BACKWASH, CEB AND CIP SYSTEM 1.4 UF permeate Tank cum RO feed tank with overhead wash water tank and backwash / CIP pumps	<p>UF system with UPVC piping</p> <p>Provision of backwash pump shall have to provide for UF backwash facility with necessary electrical / mechanical instruments, interconnecting pipe, with necessary arrangements of knife gate valves/ penstock gates and UF clarified water – backwash pumping arrangement by SS304 pipeline upto UF.</p>		<p>Considering both the tender clauses, we Presume that UF System and Backwash piping shall be UPVC/GRP.</p> <p>Please Confirm.</p>	UF System and Backwash piping shall be UPVC/GRP.
69.	7. Interconnecting Piping and Valves	Piping: Guide Line for Velocity		<p>Pipe velocity for the following are not specified in the tender documents, hence pipe sizing shall be carried out in accordance with the following velocity criteria,</p> <p>i) Pump Suction: 1.5 m/s ii) RO High Pressure Lines : 3.5 m/s</p> <p>Please Confirm.</p>	Shall be finalized during detail engineering

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
70.	1.9.8. Butterfly Valves	Butterfly Valves to be installed in the discharge piping of pumps shall have seat of elastomer (EPDM rubber) seats as per IS 1309 and AWWA C504 (Resilient Seated Butterfly Valves).		We presume that all PN16/150# pressure rating butterfly valves shall be of soft seated type. Please confirm	As per NIT
71.	Approved Make List C.ELETROMECHANICAL & INSTRUMENTATION WORK	Approved Make List		Apart from the vendor list provided in the tender document, we assume that the bidder shall choose reputed Indian vendors also. Please confirm.	As per NIT
72.	3.1 & E 4	Electrical & Instrumentation Works: Nominal system supply 1. Incoming power : 11KV, 3Ø, 3W, 50Hz 2. Power distribution : 11KV/ 415V, 3Ø, 4W,50Hz, AC & Providing erection and commissioning of 1500 KVA/33/3.3 KV electric sub station		Kindly clarify the discrepancy between Clause 3.1 and E4, and confirm the applicable incoming supply voltage, power distribution voltage levels, and short-circuit current.	The incoming supply will be 33 Kva. The CSPDCL will provide power upto the compound wall / entrance gate. The secondary side of transformer will be 440V,3-Phase 50 Hz. Short circuit protection shall be as per IEC, Type-2 Coordination. All instrument power will be 24 VDC and control 4-20 Ma.
73.	3.1	It shall be the Bidder's responsibility to obtain adequate incoming HT power from State Electricity Authority based on the maximum demand load. The KMC will pay the charges for obtaining the above connection whereas necessary licencing for the same shall be done by the Bidder in consultation with Engineer-in-charge.		The Bidder understands that the incoming HT power supply shall be terminated within the plant battery limit, with the Client (KMC) responsible up to this point. The Bidder's scope shall commence downstream of the incoming 4-pole structure (incomer) inside the plant, including all associated electrical works. Kindly confirm.	The CSPDCL will provide power upto the compound wall / entrance gate. The excavation, laying of HT / LT cables with proper cable trenches, cable makers with danger sign, etc will be in the scope of the bidder. The required letters, fees and deposits will be borne by the ULB. However, all liaisoning pertaining to the approvals from chief electrical safety officer & CSPDCL will be in the scope of the bidder.
74.	1. TRANSFORMER GENERAL REQUIREMENT	Transformer Ratings for TTP Min. 1500 KVA / 33/ 3.3 KV		The bidder presumes that the specified transformer rating is not mandatory and may be modified as per the bidder's design requirements. Please confirm	1. The successful bidder shall have to give the complete electrical plant load and get it approved by the ULB / PMC. 2. Based on the approved plant load (with 20% margin) the transformer sizing (kVA) is to be installed. The source supply shall be 33 KVA.
75.	1500 KVA DG SET FOR TTP	Work also includes providing 1500 KVA DG set for TTP of reputed make including all cabling panelling etc complete including required connection, commissioning etc complete		The bidder presumes that the specified DG rating is not mandatory and may be modified as per the bidder's design requirements. Please confirm	1. The successful bidder shall have to give the complete electrical plant load and get it approved by the ULB / PMC. 2. Based on the approved plant load the DG set sizing (kVA) is to be installed. The source supply shall be 33 KVA.
76.	2.0 SCOPE	DG set shall be provided for critical process requirement only i.e. to for load requirement of SBR air blowers, plant lighting & raw sewage transfer pumps.		The bidder understands that the DG is intended to cater only to critical process and essential non-process loads, and not for the entire plant load. In case this	The successful bidder shall have to give the complete electrical plant load and get it approved by the KMC / PMC. Based on the approved plant load the DG sizing (kVA) is to be done.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				understanding is not correct, kindly provide the detailed DG requirements	
77.	General	11Kv or 33kV Panel		The bidder presumes that the HT switchgear panel shall be air-insulated, with aluminium bus bars and VCB. Kindly confirm	Yes. The bidders assumption is right
78.	LT PANEL BOARD	PCC & MCC		Bidder shall consider Single or Double front, Aluminium Bus bar, non-intelligent and fixed type panels for all Low Voltage Switchgear/MCC panels. Please confirm.	Single / Double front, Aluminium Bus bar, intelligent and draw out type panels for all Low Voltage Switchgear/MCC panels shall have to be provided.
79.	LT PANEL BOARD (General)	MCC		The bidder understands that the PCC/PMCC shall be configured with two incomers and one bus coupler, and that all MCC panels shall have a single incomer. Kindly confirm	Yes, PCC/PMCC shall be configured with two incomers and one bus coupler
80.	CABLES	3. All cable shall be XLPE and shall comply with the following requirements: a) Annealed copper conductor, class 2 as per 15:8130 or aluminium. b) Colour coding shall be provided. c) Inner sheath shall be extruded type and shall be compatible with the insulation for the cables. The inner sheath shall be with PVC compound type 'A'.		The bidder understands that power cables up to 4 sq.mm shall be of copper conductor, and above 4 sq.mm shall be of aluminium conductor with non-FRLS insulation. Further, all control cables shall be of copper conductor with non-FRLS insulation. Kindly confirm	As per NIT
81.	5. Specifications for Installing LT cables and Control Cables	Laid in prepared trenches/Hume pipes Laid Underground Laid on cable trays		Bidder proposes that all external cables shall be directly buried, and cables within buildings shall be laid on cable trays. Kindly confirm	All external cables shall be directly buried with proper cable trench and cables (outside) within buildings shall be laid on cable trays. However, the cables inside the rooms / office / building shall be concealed.
82.	Laid on cable trays	MOC of Cable tray		Kindly provide the material of construction (MOC) for the cable trays	The MOC of the cable trays shall be steel (Hot Dip Galvanized)
83.	1.5 Control Panel	Type of starter shall be as under: Up to 10 HP - DOL From 12 Hp to 40 HP - Star - Delta. 50 HP and above – Auto Transformer Starter / Soft Starter		The bidder proposes to consider the selection of motor starters as follows: Direct On-Line (DOL) starters for motors less than or equal to 55 kW. Soft starters for motors greater than or equal to 55 kW. VFDs shall be chosen based on process requirements. Please confirm	DOL starters are to be considered for motors rating upto 11kW, Star/Delta starters for motors rating above 11kW, Soft Starters for motor 55kW and above. VFD starters shall have to be considered for all pump motors above 22kW.
84.	General	UPS & Battery Charger		Kindly provide the requirements and detailed technical specifications for the UPS and battery charger, including the battery type and required battery backup duration.	The sizing of the UPS and battery bank will be based on the instrument load list and control room automation equipment. Min 60 min battery back-up shall be considered.
85.	General	LPBS or LCS		Bidders propose aluminium alloy as the material of construction (MOC) for the outdoor LPBS. Kindly confirm	The MOC of the LPBS shall have to be corrosion free alloy.
86.	General	Vendor selection		Bidder is free to select reputed vendors, including authorized system integrators, irrespective of the country of origin for electrical equipment. Kindly confirm.	The decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35
87.	iv. Electrical works (As	APFC panel		Kindly provide the grid power factor and	APFC is to be designed for power factor >0.98

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
	per Annexure E4)			the required plant power factor to be maintained.	
88.	3. Electrical and Instrumentation / Automation System	The Bidder shall design, shop test, supply, transport, storing at site, erecting, testing and commissioning all electrical equipment and instruments required for the plant as per general specifications, specific specifications for electrical works, typical power distribution scheme and typical control system architecture		It is understood that no general or specific specifications for instrumentation have been provided in the tender document. Therefore, the bidder proposes to design and develop the instrumentation system based on prior experience from similar projects and will submit appropriate instrumentation specifications suitable for the TTRO plant. Kindly confirm	As per NIT
89.		Approved Make List	C.ELETRO MECHANICAL & INSTRUMENTATION WORK	Bidder shall consider authorized system integrators of the approved vendor makes for PLC System, Please confirm.	The decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35
90.	General	IO Channel Density		Kindly Confirm the channel density for IO cards (AI, AO, DI, and DO) DI – 32 Channel DO – 32 Channel AI – 16 Channel AO – 8 Channel	Channel density should not be more than DI – 32 Channel DO – 32 Channel AI – 16 Channel AO – 8 Channel Minimum 20% spare I/Os shall have to be considered, wired up upto the TBs’.
91.	General	Redundancy		Kindly Confirm the following redundancy to be considered for PLC *Redundant Controller, * Redundant Communication, * Redundant Power Supply * Non Redundant IOs	Redundancy is required only in the power supply.
92.	General	Remote IO Panels		Bidder presumes that Remote I/O panels can be considered through out plant. Kindly confirm.	The bidder can consider the RIO panels, but the approvals of the architecture are to be taken from KMC / PMC
93.	General	C&I Cables		Bidder Presumes that selection of multicore/pair cable and size as per their standards and previous experience. Kindly confirm	The selection and sizing of the control and instrument cable will be discussed during the detail engineering with the successful bidder.
94.		Input & Output for DOL, MOV & VFD Drives.		Input & Output for Electrical Drives & MOV VFD is not mentioned in the tender. Bidder assume that they are free to choose IO for DOL, MOV & VFD drives and mode of communication is Hardwired. Kindly Confirm	Shall be discussed with the successful bidder during the detailed engineering.
95.		Cable Gland MOC		Bidder presumes that cable gland shall be Double Compression Nickel plated brass, weatherproof cable glands. Kindly Confirm	Shall be discussed with the successful bidder during the detailed engineering.
96.		Junction Box MOC		MOC of Junction boxes is not mentioned in the tender we assume that the Junction Boxes MOC shall be Die Cast	Shall be discussed with the successful bidder during the detailed engineering.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification																																	
97.		Exclusions		Aluminium/FRP. Kindly Confirm. As there is no requirement mention in Scope of supply for the following Items ☐ Machine monitoring System / Vibration Monitoring System, ☐ ESD, ☐ F&G, ☐ PA & Access Control System and ☐ Telecommunication system Bidder understand that these systems are not envisage in bidder scope of supply. Kindly confirm	Considering good engineering practices all the required component/accessories should be provided by the contractor as it is EPC Contract.																																	
98.	General			1.Please specify the disposal location to dispose the used membranes, used cartridge filters, chemical cans and any other residues generated from plant during 15 years of O&M. 2.We request employer to bear the charges pertaining to disposal locations since employer being the ultimate authority of plant assets	It shall be the responsibility of contractor for safe disposal of all the materials/Components/Membranes throughout the Contract period in line with prevailing statutory norms of Central/State Pollution control board																																	
99.	ANNEXURE – E-VII Operation and Maintenance of Tertiary Treatment Plant and all components of Scheme for the period of 15 years Operation c) Manpower	<table><tr><th>Sr. No.</th><th>Description</th><th>Qty.</th></tr><tr><td>1</td><td>Supervisors</td><td>3</td></tr><tr><td>2</td><td>Operational person</td><td>18</td></tr><tr><td>3</td><td>Maintenance Team</td><td>9</td></tr><tr><td>5</td><td>Electrician</td><td>As Required</td></tr><tr><td>6</td><td>Fitter</td><td>As Required</td></tr><tr><td>8</td><td>Chlorine operator</td><td>1</td></tr><tr><td>9</td><td>Helper</td><td>As Required</td></tr><tr><td>10</td><td>Gardener/Sweeper</td><td>As Required</td></tr><tr><td>11</td><td>Security Guards</td><td>As Required</td></tr><tr><td>12</td><td>Helpers and operators</td><td>As Required</td></tr></table>	Sr. No.	Description	Qty.	1	Supervisors	3	2	Operational person	18	3	Maintenance Team	9	5	Electrician	As Required	6	Fitter	As Required	8	Chlorine operator	1	9	Helper	As Required	10	Gardener/Sweeper	As Required	11	Security Guards	As Required	12	Helpers and operators	As Required		1.The para specifies 31 manpower and additional manpower which looks very high 2.So please provide us with the clear cut manpower nos. with respect to each category.	The deployment of Man-Power indicated in this NIT is Tentative. Bidder is free to deploy required manpower considering 24 hours service delivery pertinent to the penalties and liquidity damages
Sr. No.	Description	Qty.																																				
1	Supervisors	3																																				
2	Operational person	18																																				
3	Maintenance Team	9																																				
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12	Helpers and operators	As Required																																				
100.	ANNEXURE – E-VII Operation and Maintenance of Tertiary Treatment Plant and all components of Scheme for the period of 15 years	6) Operation and Maintenance of 20 MLD Tertiary Sewage Treatment plant. Operation and Maintaining diesel generator including fuel and operator for round a clock duty in all seasons at Tertiary Treatment Plant at Korba of following capacity.		We understand that the expenditure on staff, establishment, maintenance and repairs, spares and consumables, and any other expenses will be in the scope of bidder and the expenses incurred on power and diesel for generator will be in the scope of employer. Please Confirm																																		
101.	ANNEXURE – E-VII Operation and Maintenance of Tertiary Treatment Plant and all components of Scheme for the period of 15 years 13.4 Contract Price and Payment 13.4.1 Contract Price	The Operator shall be paid the Contract Price every month (The rate quoted by the bidder for the year in 12 instalments after deducting the performance security and taxes). The contract price shall cover all expenditure on staff, establishment, maintenance and repairs, spares and consumables, and any other expenses excluding expenses incurred on power and diesel for generator.			The expenditure on staff, establishment, maintenance and repairs, spares and consumables, and any other expenses will be in the scope of bidder and the expenses towards Power for plant and diesel for generator will be under the scope of KMC.																																	
102.	8. Operation and Maintenance Cost	All the cost for Operation and Maintenance of the Plant such as Chemicals and Consumables, Manpower, Spares, Repair and Maintenance of Civil, Mechanical, Electrical, Instrumentation Items including all other major/minor repairs, breakdowns, replacements etc. excluding Cost of Electricity and Diesel for DG shall be in the scope of the Bidder. No extra payment other than whatever has been quoted in Price Schedule will be entertained by the KMC.																																				
103.	ANNEXURE – F – 7 OPERATION & MAINTENANCE (O&M)	Operation & Maintenance for 15 Years for Tertiary treatment Plant, sump, pumping Main etc. for all capital works under scope of project		1.We could understand that O&M payment is linked with the production. As you're aware the O&M services comprises of 60 - 70 % fixed and rest is variable	As per NIT, The essence of the contract is quantity and quality of TTRO water to be supplied to NTPC. In case of any constitutional dispute, the decision of JOC shall be final and binding on the																																	

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				hence we request the employer to split the payment into fixed and variable and pay the fixed fee irrespective of the production 2.This fixed payment will ensure uninterrupted labour wages and other maintenance expenses on time. Please consider and confirm our request	contractor. For JOC please refer Conditions of Contract (I) Page 35
104.				We request clarification regarding the payment mechanism under conditions where the Operator is unable to operate the plant due to reasons beyond their control, such as: 1.Non-availability or reduced inflow at inlet (dry conditions), off Spec inlet Quality beyond the design envelope 2.Upstream plant malfunction or interruption 3.Power supply issues from external sources 4.Any adverse operating conditions not attributable to the Operator As per the tender, payment is linked to the actual quantity of treated water supplied to NTPC. However, no provision is specified for minimum guaranteed payment or compensation under the above scenarios. In this regard, we request employer to: 1.Compensate for additional expenses with respect to power, Manpower, chemical, membrane, Consumables and any additional expenses, 2.Alternate output standards shall be agreed during such time. 3.No penalties to be enforced during Adverse operating / Off spec quality.	The essence of the contract is quantity and quality of TTRO water to be supplied to NTPC. In case of any constitutional dispute, the decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35
105.		ANNEXURE – E-VII The performance security of 5% of the amount of the bidder's price for B (O&M offer for 15 years B in financial offer) has to be submitted by the bidder within 15 days of the written notice by the KMC.		Since we are submitting the Performance security as BG, we understand that no deduction will be made from O&M monthly payments, to avoid double security burden on the Operator. Please Confirm	As per NIT
106.		13.4 Contract Price and Payment 13.4.1 Contract Price The Operator shall be paid the Contract Price every month (The rate quoted by the bidder for the year in 12 instalments after deducting the performance security and taxes). The contract price shall cover all expenditure on staff, establishment, maintenance and repairs, spares and consumables, and any other expenses excluding expenses incurred on power and diesel for generator.			
107.	General			We request the Employer to clarify provisions in case of adverse inlet conditions (beyond design parameters) or non-availability of inflow (dry conditions). In such situations, we request confirmation that:	As per NIT, The essence of the contract is quantity and quality of TTRO water to be supplied to NTPC. In case of any constitutional dispute, the decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>1. The Contractor shall operate the plant as per mutually agreed revised conditions, including partial operation or shutdown if required.</p> <p>2. No penalties (quality, quantity, or performance) shall be applicable.</p> <p>3. No penalty shall be levied for higher power consumption.</p> <p>4. Fixed O&M payment shall be made, along with variable payment for actual treated water supplied.</p> <p>5. Additional costs towards increased consumption of chemicals, consumables, and membrane/filter replacement shall be reimbursed.</p> <p>Please Clarify and confirm</p>	
108.	<p>1.INSTRUCTION TO BIDDERS</p> <p>“INSTRUCTIONS FOR USING THE ELECTRONIC TENDERING SYSTEM”</p> <p>13. DEFECT LIABILITY PERIOD</p>	Defect Liability period of 18 months and fifteen years O&M of all components of whole scheme shall start concurrently after successful completion of 03 months trial run (i.e. completion of capital work) as certified by Engineer-in-Charge/Competent authority		<p>We understand that the O&M Period is 15 Years which includes 18 Months of Defect Liability Period.</p> <p>Please confirm</p>	Bidders understanding is correct
109.	<p>ANNEXURE – E-VII</p> <p>Operation and Maintenance of Tertiary Treatment Plant and all components of Scheme for the period of 15 years</p>	12. Damages and Penalties		<p>We request the Employer to consider evaluating penalties on a monthly average basis instead of per occurrence.</p> <p>As treatment processes may have short-term fluctuations, assessing performance on a monthly average would ensure a more practical and fair evaluation.</p> <p>Kindly confirm that penalties for key parameters (quality and quantity) will be based on overall monthly performance, and not on isolated deviations</p>	As per NIT
110.	General			We request employer to provide, the Historical data of inlet water quality for last one year.	As per NIT, Bidder has to prepare detail design based on the parameters stated in the NIT
111.	<p>ANNEXURE – E</p> <p>SCOPE OF WORK & TECHNICAL SPECIFICATIONS</p> <p>1. GENERAL</p>	SECONDARY TREATED SEWAGE / TTP FEED WATER CHARACTERISTICS AND TTP TREATED WATER CHARACTERISTICS		We request the employer to provide Inlet and outlet TOC in the design parameters.	System shall be designed for given BOD and COD parameters
112.	CONDITIONS OF CONTRACT	20.Limitations of Liability- Except in cases of criminal negligence or wilful misconduct. (a) the bidder shall not be liable to the Employer, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not		we request the Employer to kindly revise the clause such that the aggregate liability of the Bidder is limited to 100% of the annual contract price instead of the total	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
		apply to any obligation of the Bidder to pay liquidated damages to the Employer and (b) the aggregate liability of the Bidder to the Employer, whether under the Contract, in tort or otherwise, shall not exceed 100% of the contract price, provided that this shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Bidder to indemnify the Employer with respect to patent infringement.		contract value.	
113.	1. Civil Works for TTP	1.4 Construction Works. The finished GL of the TTPs premises shall be above HFL.		Kindly provide the highest flood levels of the Canal and Hasdeo River.	The drawings provided in NIT are for Tender purpose only. Bidder has to prepare detail design after carrying out detailed survey.
114.	General			Kindly provide the Soil Investigation report and Ground water table level for Proposed 20MLD TTP site	Soil investigation report of SBR basin of on going STP is attached in annexure for reference purpose only. However the responsibility of correctness of bidders design shall totally lie with the bidder
115.	SCOPE OF WORK & 1.1 UF FEED TANK (As per annexure E2) & ANNEXURE – E-II SPECIFICATIONS FOR GROUND SERVICE RESERVOIR (GSR) CUM UF FEED SUMP OF 4000 CUM CAPACITY	Providing GI Hand Railing along all the Stairs and Walkways of all Process Units & 1.1.2 Approach shall be provided with RCC - M-30 staircase having 1.5 mt width with 1.00 M high SS Railing approved by Engineer In Charge. & (xiii) Providing and supplying of three row of 25 mm Dia, G.I. medium class pipe Railing with RCC “L” type column 1000 mm height @ 1.5m C/C OR 50x50x6mm M.S. angle iron post 1m high. The stair case will be closed by a M.S gate with jali as per the direction of Engineer-in-Charge at the ground level.		Both the clauses are contradicting. We presume that, The hand rail for Staircase and walkways shall be followed as GI Handrail Kindly confirm.	The hand rail for Staircase and walkways shall be GI Handrail in three rows with proper painting.
116.	3.3 Detail Engineering & 5. MISCELENEOUS POINTS OF CIVIL WORKS & 1.9.10.9. Steel Reinforcement	The entire construction shall be in M30 grade reinforced cement concrete Fe 500 TMT steel and as per IS 3370. & All the reinforcement steel to be used for the RCC work for the proposed tertiary sewage treatment plants at all levels, shall be CRS type of Fe 500 Grade confirming to IS:1786 and from the specified vendors/manufacturers only. & high yield strength deformed bars shall be coated with fusion bonded epoxy coating conforming to IS: 13620.		All the clauses are contradicting. We presume that, steel reinforcement shall be Fe 500 TMT steel . Kindly confirm.	The entire construction shall be in M30 grade reinforced cement concrete Fe 500 TMT steel and as per IS 3370. & All the reinforcement steel to be used for the RCC work for the proposed tertiary sewage treatment plants at all levels, shall be CRS type of Fe 500 TMT Grade confirming to IS:1786
117.	General			Please provide the Plot Plan/layout details for Proposed 25 MLD TTP site.	Plot layout attached in Annexure. Kindly consider it only for reference purpose. Bidder need to ascertain and finalised the layout post detail survey.
118.	General			Kindly provide the Topography layout/contour levels to assess the site condition and also provide Finished Ground level(FGL) for proposed 25 MLD TTP site.	The location of proposed TTP is besides the On going STP of 33 MLD at Pragati Nagar Korba
119.	General			Kindly provide the Ground level details with Longitudinal Section drawing for Treated water pipe line discharge to NTPC for 20 MLD TTP site	The L-section is now attached in annexure for reference purpose only
120.	General			Statutory approval for the Canal crossing, road and railway crossing has already been obtained by the client for tertiary treated water pipe line . Please confirm.	Yes, Statutory approval for the Canal crossing, road and railway crossing has already been obtained by KMC for tertiary treated water pipe line
121.	General			Right of way for tertiary treated water pipe line is available with client. Kindly confirm.	Right of way for tertiary treated water pipe line is available with KMC

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
122.	General			Kindly provide the distance of Surplus excavated earth material shall be disposed of off-site.	As per NIT
123.	General			The necessary approvals for treated water pipe laying work within the NTPC campus shall be obtained by the client as part of client scope.	Yes
124.	General			Please indicate the disposal location of storm water drain at outside the TTP plant.	As per NIT, The safe drainage and disposal arrangements shall be done by the contractor in the nearby nala which intern meets Hasdeo river
125.	General			We presume that, Interconnection of the inlet piping from the existing 33 MLD STP to the proposed TTP is excluded from the bidder's scope of work. Kindly confirm.	As per NIT
126.	General			Please provide the existing 33MLD STP layout, HFD and civil drawing.	Attached in Annexure
127.	General	Rs 82.20 Lakh (Eighty two lakhs twenty thousand only) TDR/FDR in favour of Commissioner, Municipal Corporation Korba.		We kindly request the client to accept the EMD in form of bank guarantee. If acceptable kindly provide us the format for the EMD. Kindly accept and confirm.	As per NIT
128.	General	Rs 82.20 Lakh (Eighty two lakhs twenty thousand only) TDR/FDR in favour of Commissioner, Municipal Corporation Korba.		Kindly provide us the beneficiary details.	Commissioner, Municipal Corporation, korba A/c No. 60257412448 Bank of Maharashtra IFSC Code: MAHB0001695. Branch Address: Plot No. 784,Main Road, Shubhash Chowk, Kosabari, Korba, Chhattisgarh 495677
129.		Payment Duration		Bidder understands that all payments will be done within 30 days from the date of payment invoice.	Generally, the RA Bill payment shall be made within 30 days of submission of bill
130.		Probable amount of contract (Rs. in Lacs) (incl 15 years O&M) - 16438.95 Lacs (Capital work - 8,005.05 lacs, O&M - 8,433.90 lacs)		We understand that the estimated value and its breakup provided in the bid document are for reference purposes only. Accordingly, bidders are allowed to quote their final prices in the price bid based on their own detailed assessment and estimates. Kindly confirm if our understanding is correct	Yes
131.		Probable amount of contract (Rs. in Lacs) (incl 15 years O&M) - 16438.95 Lacs (Capital work - 8,005.05 lacs, O&M - 8,433.90 lacs)		We understand that the probable amount of contacts mentioned in the tender document or NIT are excluding GST.	Bidders understanding is correct, However bidder shall submit the bid including GST and all others taxes etc.
132.	Form F			We understand that the form F is only referred and limited to total Lump sum offer (Cost of capital works + cost of 15 yrs. O&M) (including GST, other taxes etc.) with Bidder's letter head with seal and signature. Kindly Confirm.	Bidders Lumpsum offer shall be quoted in the prescribed online format only. No physical financial bid shall be accepted
133.	Form F			We request Owner/Client to provide Form F in editable format.	Maybe Downloaded from CG PWD website
134.		11. Bidders/tenderers should have to submit "Envelope A' and "B" Physically (in sealed Envelope) as well as to be uploaded ONLINE also. "Envelope C' shall		As per tender document, bidder has given 4 days (i.e. 24th April 2026) for physical	Please refer corrigendum

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
		be uploaded ONLINE only. Physical Submission of Envelope A and Envelope B (in sealed Envelope) to be submitted by Registered Post/ Speed Post only. Submission through Courier Services and other means shall not be entertained. Above documents must be submitted on or before the dates and time as indicated NIT/Tender Notice.		submission of Envelope A & B as "Physical Doc Submission End Date". However bidder request minimum 7 Days for physical submission date (i.e.27th April 2026). Kindly confirm.	
135.		The scope of work includes all costs and no claim for price adjustment/Escalation or on account of any reason whatsoever shall be entertained.	16. PRICE ADJUSTMENT / ESCALATION	Considering the current geopolitical scenario and fluctuations in oil prices, we request the Client/Owner to consider incorporating a price adjustment / escalation clause in the contract. As the project completion period is expected to be a minimum of 24 months, such provisions are essential to address variations in input costs over time. We kindly request Owner to consider our proposal for inclusion of a price adjustment / escalation mechanism and to share the applicable formula for the same. Kindly confirm.	As per NIT
136.		Consent to Establish: Shall be taken by KMC, however all the relevant data and checklists shall be filled by the Contractor. Consent to Operate: Shall be taken by the contractor as and when required, however the fees to be paid to CECB shall be borne by the KMC.	18. STATUS OF ENVIRONMENTAL CLEARANCE	We request the Client/Owner to keep all approvals from statutory / government / local authorities within the scope of the Owner, including any costs associated with obtaining such approvals. The bidder shall extend necessary support by providing required documentation and assistance during the approval process. Kindly consider and confirm.	As per NIT
137.		The competent authority reserves the right to increase or decrease any item of work during the currency of the contract and the bidder will be bound to comply with the order of the competent authority without any claim for compensation or higher rates for additions and alterations	32. RIGHT TO INCREASE OF DECREASE OF QUANTITY OF WORK	We request the Client to limit the permissible variation in quantities to the generally recommended threshold of 10% for any item. In instances where the variation exceeds 10%, the Bidder shall be entitled to propose a revised rate and revised timelines, which shall be mutually discussed, negotiated, and finalized with the Client. Kindly confirm your acceptance of the above.	As per NIT
138.		The competent authority reserves the right to increase or decrease any item of work during the currency of the contract and the bidder will be bound to comply with the order of the competent authority without any claim for compensation or higher rates for additions and alterations	32. RIGHT TO INCREASE OF DECREASE OF QUANTITY OF WORK	In the event that the quantum of work is reduced from the original scope, the applicable percentage of Overheads and Margin shall be paid to the Contractor on the reduced scope of work, so as to ensure that the Contractor does not incur any revenue loss on account of such reduction. Kindly accept and confirm the above.	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
139.		As far as possible the bidder shall be allowed to use the Municipal Land without any charge, in possession of Korba Municipal Corporation (KMC) for stacking his materials, stores, erection of temporary structures, sheds etc with prior written permission of Engineer in charge. The location of the temporary structures to be erected shall be got approved from the Engineer in charge and all the products obtained after cutting the same shall be stacked at suitable place as directed by Engineer in charge. All KMC land occupied by the bidder for temporary use shall be handed over back in good conditions to the entire satisfactions of the KMC as and when demanded by him. Any damage or alterations made in the area shall be made good by the bidder. If the departmental land is not available the bidder has to make his own arrangements of land on hire or otherwise at his own cost.	46. LAND FOR THE USE BY THE BIDDER FOR STORING MATERIALS ETC.	Bidder request Owner/Client to allocate a dedicated land for material storage and handling during construction and project execution activity.	As per NIT
140.		The works comprised in this tender are to be commenced immediately upon received of the work order by Commissioner. The whole work, including all such addition and variations as aforesaid (but excluding such, if any, as may have been postponed by an order from the Commissioner) shall be completed in every respect within 24 months (Construction Period 21 Months (including Monsoon) and Trial & Run Period 3 Months) from the reckoned date (The period will be reckoned from the 15 days after the date of Work order in case of completion period is up to six months and 30 days in case of completion period is more than six months). The work shall throughout the stipulated period of contract be proceeded with all due diligence, keeping in view that time is the essence of the contract. The bidder shall be bound in all cases, in which the time allowed for any work exceeds one month, to complete 1/8th of the whole work before 1/4th of the whole time allowed under the contract has elapsed, 3/8th of the work before 1/2 of such time has elapsed and 3/4th of the work before 3/4th of such time has elapsed. In the event of the bidder failing to comply with the above conditions, the Executive Engineer shall levy on the bidder, as compensation an amount equal to: 0.5% (zero-point five percent) of the value of work (contract sum) for each week of delay, provided that the total amount of compensation under the provision of the clause shall be limited to 6% (six percent) of the value of Construction work and 10% (ten percent) of the value of Operation and Maintenance (O&M) work.		Proposed Delay Penalty Clause: In the event of delay in completion of the work, the bidder shall be liable to pay compensation at the rate of 0.1% (zero point one percent) of the contract value of Capital / Constructions works per week of delay or part thereof. However, the total amount of such compensation shall be limited to a maximum of 5% (five percent) of the value of the Capital/Construction Work. We request Owner/Client to review the same and share the feedback.	As per NIT
141.		The bidder shall make arrangement, at his own cost, for housing his staff and stores for the work and Model Rules relating to labour Water supply and sanitation shall be followed.		We assume that the client will provide space for workers' temporary accommodation (labour huts) free of cost. Kindly confirm.	As per NIT
142.		The scope of this tender shall start from the outlet of STP. The contractor shall make all the necessary arrangements for interconnection with bypass arrangements for taking the STP water in their proposed facility.		Kindly provide us the battery limits for Inlet and Outlet pipe for better understanding and estimation.	As per NIT
143.		Drawings		Bidder request to provide Hydraulic Flow Levels and Finished Ground Level.	Please refer annexure as attached, FGL shall be proposed by the contractor as per their design.
144.		Limitations of Liability - Except in cases of criminal negligence or wilful misconduct. (a) the bidder shall not be liable to the Employer, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Bidder to pay liquidated damages to the Employer and (b) the aggregate liability of the Bidder to the Employer, whether under the Contract, in tort or otherwise, shall not exceed 100% of the contract price, provided that this shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Bidder to indemnify the Employer with respect to patent infringement.	20. Limitations of Liability	Limitations of Liability - Except in cases of criminal negligence or wilful misconduct. (a) the bidder shall not be liable to the Employer, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Bidder to pay liquidated damages to the Employer and (b) the aggregate liability of the Bidder to the Employer, whether under the Contract, in tort or otherwise, shall not exceed 20% of the	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				contract price, provided that this shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Bidder to indemnify the Employer with respect to patent infringement.	
145.		Arranging Construction Power & Water.	Extent of capital works Sub-clause 3. Site Development	We understand that the construction power and electricity in bidders scope but the cost for the same shall be reimbursed by the client. Kindly accept and confirm.	Bidder to arrange and pay for the same. As per Pg 59 3, h of the tender document.
146.		a. Cutting of unwanted Tress, Plants, Bushes and Shrubs etc. and removing the same form Site. However, necessary approval for the same shall be arranged by the KMC.	3.4 Extent of capital works Sub-clause 3. Site Development	It is noted that site clearance, including tree cutting is under the bidder's scope. The bidder request clarification on whether compensatory/new tree plantation is required as part of the scope. Bidder request Client/Authority/Owner to confirm: - Applicability of tree plantation requirements. - Quantity, location, and specifications (if applicable). - Whether plantation is included in bidder's scope or will be handled by client/owner. - Please confirm the cost shall be paid directly by Client to concerned agency or In case it is in Bidder's scope, it will be reimbursed by Owner/Client at actuals.	As per NIT
147.		g. Construction of Site Offices (One for KMC's Staff and one for Bidder's Staff) with required Furniture, Air-conditioners, Personal Computers and Printers, Wi Fi/ Internet facility etc.		Bidder request clarification, whether Owner/Client is required a temporary or permanent site office.	Temporary site office with all the amenities as mentioned in the NIT shall be provided by the bidder till the completion of DLP. During O&M the office arrangement for KMC/NTPC officials shall be made in the AC monitoring room
148.		Obtaining incoming HT Power Supply from State Electricity Authority from nearby Source to the TTP Site.		Kindly provide us the distance of the nearby source from the TTP plant boundary.	The CSPDCL will provide power upto the compound wall / entrance gate.
149.		Obtaining incoming HT Power Supply from State Electricity Authority from nearby Source to the TTP Site.		We understand that the cost for obtaining the HT power supply will be in Clients scope. Kindly confirm.	Yes, The HT power supply shall be made available upto the entrance of TTP premises.
150.		17) Defects Liability Period of 12 months from the date of successful completion of capital works including trial run.		We understand that the DLP period shall be of 12 months after the trial run. Kindly confirm.	As per NIT
151.	Annexure F (Main)		Price/Payment Schedule	We request owner/client to share the editable excel format of Annexure – F (Main) : Price/Payment Schedule, Annexure – F-1, ANNEXURE – F2, ANNEXURE – F-3 & F-4, Annexure – F-5, ANNEXURE – F-6, ANNEXURE – F	Editable formats cannot be provided

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				– 7.	
152.		The Bidder shall have to submit performance security of amount equal to 5.00% of the accepted cost at the time of signing of the contract in the form of Bank Guarantee issued by any Nationalized/Scheduled banks.	SPECIAL CONDITIONS	We understand the Performance Security for Construction period will be calculated on CAPEX /Construction value only. Kindly confirm.	Performance Security for capex and opex will be separate as per ANNEXURE H – SPECIAL CONDITIONS Cl 5 pg no 263
153.		Bidder may submit the same amount of Bank Guarantee on a yearly basis. However, it is solely the responsibility of the Bidder to ensure that the Bank Guarantee is renewed before 02 (two) months from the date of expiry each year. This renewal process must continue until the Bank Guarantee covers a duration The performance security deposited for construction shall be released only after the performance security for O&M is submitted by the bidder.	Performance Security	From the cited clauses, We understand that the percentage for the performance security for O&M period is also 5%. Also we understand that the performance Security for O&M will be reduced annually. Kindly confirm.	As per NIT
154.		(ii) 5% security deposit shall be deducted from each running bill. One moiety of security deposit shall be refunded on completion of work as certified by the engineer in charge. The balance 50% amount shall be refunded on completion of defect liability period or settlement of final bill, whichever is later.	SECURITY DEPOSIT Sub-clause (iii)	Bidder request that the balance 50% of the Security Deposit shall be release upon completion of works against the submission of a Bank Guarantee which shall be valid till the completion of DLP of 18 months. Kindly confirm.	As per NIT, Cl 7
155.		The Security Deposit for O & M period shall be returned after the 15 years period is over and the property has been taken over by KMC.		The Bidder requests waiver of the clause pertaining to deduction of Security Deposit during the O&M period, as such deduction imposes an additional financial burden on the Contractor in maintaining the plant effectively. The Bidder has already submitted the required Performance Security for the O&M period, which adequately safeguards the Client against any potential financial losses. Accordingly, the Bidder submits that separate deduction of Security Deposit during the O&M period is redundant and may be waived.	As per NIT, Cl 7
156.		The Security Deposit for O & M period shall be returned after the 15 years period is over and the property has been taken over by KMC.		Bidder request to provide us the Security deposit percentage Deducted from each Bill during O&M and Max Limit of Security Deposit. Further, we also request client to kindly provide the same percentage of SD for Construction during O&M.	As per NIT, Cl 7
157.		Mobilization advance up to 5.00 % (Five percent) of the contract value shall be given if requested by the bidder within one month of the date of order to commence the work.	8. Mobilization Advance	We request you to provide interest free mobilization advance of amount equal to 10% of the contract value, which shall be released in a single stage against a Bank Guarantee which shall be reduced progressively upon recoveries in the RA Bills. Kindly accept and confirm.	As per NIT, Cl 8

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification															
158.		An amount of 5% for the defect liability period shall be deducted from each running bill of whole work. The deducted amount shall be refunded after 18 months of completion work in all respect	10. Defect liability	We understand that the deduction is referred to the security Deposit for the Construction period no other deductions shall be made. Kindly confirm.	As per NIT, Cl 10															
159.			Appendix – 4	We understand that the appendix will be submitted on company letter head. There is no requirement for any certification. Kindly confirm.	Appendix 4 shall be submitted on company letter head. For ongoing projects, Certificate from not below the rank of executive engineer or Statutory Auditor along with UDIN no. with sufficient proof such as work order shall be accepted.															
160.		Electromechanical Items B) Sub Breakup of each item under F3 & F4 <table><tr><th>Sr. No.</th><th>Description of work Details</th><th>% Break-up</th></tr><tr><td>1</td><td>On supply of equipment at site</td><td>60%</td></tr><tr><td>2</td><td>On erection of equipment at site including all civil work</td><td>35%</td></tr><tr><td>3</td><td>On testing and commissioning , PG Test</td><td>5%</td></tr><tr><td></td><td>Total</td><td>100%</td></tr></table>	Sr. No.	Description of work Details	% Break-up	1	On supply of equipment at site	60%	2	On erection of equipment at site including all civil work	35%	3	On testing and commissioning , PG Test	5%		Total	100%	B) Sub Breakup of each item under F3 & F4	Bidder proposes the following payment terms for Electro-Mechanical Items and request In order to facilitate improved cash flow for the Contractor during Supply and delivery to site of mechanical and electrical equipment: 1. On supply of equipment at site on a pro-rata basis - 80% 2. On erection of equipment at site on a pro-rata basis - 15% 3. On testing and commissioning, PG Test - 5% Kindly accept the same.	As per NIT
Sr. No.	Description of work Details	% Break-up																		
1	On supply of equipment at site	60%																		
2	On erection of equipment at site including all civil work	35%																		
3	On testing and commissioning , PG Test	5%																		
	Total	100%																		
161.			Technical submittals	The tender does not specify the details of technical documents to be submitted with bid. Request you to provide the list of technical submittals.	As per NIT															
162.	General		Right of way	We understand that the right of way is excluded from bidder's scope. Bidder will only help with necessary documentation, if required Please confirm.	Right of way for tertiary treated water pipe line is available with KMC															
163.			MoU with registered sub-station bidder	We hereby request the client to kindly remove this requirement. Kindly confirm.	If the main bidder has executed the similar nature of work then no separate MOU shall be required.															
164.		Clause no 11 page 9/310	Submission of bid documents	We request to kindly accept the document in envelope A& B by hand also in addition to speed post/registered post as these deptt are govt owned and may delayed tp deliver the documents in time. Please confirm.	As per NIT															
165.		S No 3 page no 2/310	EMD	We request to kindly allow the bidders the submit the EMD by BG also from any scheduled bank. This is a standard practice across the country for similar projects.	As per NIT															
166.			Plant Insurance	As the plant shall be handed over to KMC after commissioning and PG test, we	As per NIT															

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				understand that the insurance of the plant during O&M period shall be taken by KMC. Please confirm.	
167.		Point No 1(i) Page 13/310	PQ criteria (waste water)	We understand the secondary sewage is considered as waste water. Please confirm.	Shall be read as UF RO based treatment plant
168.		Point No 1(iv) Page 13/310	Non judicial agreement	We understand that non judicial agreement is applicable to the bidders who do not have experience of UF+RO system of their own. If any bidder who has experience of UF+RO system of their own, this non judicial agreement is not required. Please confirm.	Bidder shall submit MOU in bid with UF membrane manufacturer / authorised distributor However the counter guarantee must be submitted by the successful bidder within 15 days of issue of LOA
169.		Point No 1(v) Page 13/310	Non judicial agreement with counter guarantee of 10 Lac	We understand that Non judicial agreement with counter guarantee of 10 Lac from the membrane manufacturer is required only for the bidders who do not have experience of UF+RO system of their own. If any bidder who has the similar experience of his own, this Non judicial agreement with counter guarantee of 10 Lac is not required. Please confirm.	Bidder shall submit MOU in bid with UF membrane manufacturer / authorised distributor However the counter guarantee must be submitted by the successful bidder within 15 days of issue of LOA
170.		Financial qualification B2 page 14/310	Bid capacity	Please elaborate more what is PAC.	PAC is Probable Amount of Contract.
171.			PG test	Please confirm the duration of PG test.	Duration of PG test during trial run shall be executed for 72 uninterrupted operational hours
172.					
173.			ROW	We understand that ROW/EC/any other compensation except CTE, CTO and electrical license shall be in the scope of client.	As per NIT, Pg 269, Pt 20.
174.		Page 300/310	Spare list	Kindly confirm whether the spares as per the list on page no 300 shall be considered in the scope of bidder while quoting. If yes please provide the quantity of each item.	As per NIT, The bidder has to keep inventory of all the spares as per the requirement of the project
175.		Vendor list page no 306	UF system	Please note that the vendor for UF system provided in the tender are very new and none of the vendor has any proven track record /installation in the country nor they have any sale/ service centre in India. As UF is a very sensitive equipment and the plant has to be operated for 15 Years, we request to kindly allow to go with proven reputed vendors for UF membranes like Torray, Dupont, LG, Hydronautics so that NTPC can get the required quality of water for 15 years.	Please refer additional clarification

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
176.		Dual Media Filter	General	<p>Please note the flow and parameters of STP fluctuate with respect to time and for better</p> <p>and consistent parameter Dual media Filter is mandatory to protect UF membranes</p> <p>from any damage. Hence, we strongly recommend that Dual Media Filter before UF system should be mandatory for all..</p>	<p>The bidders is free to install any additional component as they may feel to be required for successful operation of the plant, They may consider the cost of such equipment's in their offer. However the necessity of such components shall be once again verified during design approval stage. No extra payment on this account shall be admissible to KMC</p>
177.		Table 3, Pg. No 51 of 310.		<p>We understand that the plant needs to be designed as per Table-2 inlet parameters of TTP and to achieve the outlet parameters specified in Table-3 of TTP. In case the inlet parameters exceed the Table-2 limits, the plant performance will change accordingly. In such a scenario, KMC and the bidder shall jointly review the situation and take suitable decisions on a mutually agreed basis.</p> <p>Kindly confirm.</p>	<p>The essence of the contract is quantity and quality of TTRO water to be supplied to NTPC. In case of any constitutional dispute, the decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35</p>
178.		Permeate pipe line 1300 m page no 49/310		<p>Kindly provide the route survey for this pipeline. Is there any Nala, railway crossing or highway crossing in between. Please confirm.</p>	<p>The L-section is now attached in annexure for reference purpose only</p>
179.		Disposal of RO reject		<p>Please confirm distance between the RO reject tank to nearest Nala for the disposal of RO reject after blending it with STP water.</p>	<p>Please refer Site Visit</p>
180.		Approval of drawings		<p>Kindly confirm whether the drawing submitted by contractor shall be reviewed and approved by NTPC ?</p>	<p>Yes</p>
181.		Defect liability		<p>Kindly confirm the defect liability period of the project as it is 18 months at one place and 12 months at another place.</p>	<p>Defect Liability period of 18 months and fifteen years O&M of all components of whole scheme shall start concurrently after successful completion of 03 months trial run (i.e. completion of capital work) as certified by Engineer-in-Charge/Competent authority.</p>
182.		Page 63/310	Recovery of RO plant	<p>Kindly confirm the minimum recovery of RO plant as at one place it is 75% and at another place it is 80%.</p>	<p>80%</p>
183.		Page 65/310	UF Feed Stainer	<p>It is good engg practice to have a basket strainer of 100 Micron in the upstream of UF system to protect the membrane from any possible damage. Hence request you to kindly allow the basket strainer in place of punched hole type rotating drum as mentioned in the tender.</p>	<p>1 mm automatic screen typically rotary screen with punched holes shall be provided</p>

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
184.		Page 66/310	High Pressure pump	There is no mentioned of stand by high pressure pump in the tender. Hence, we request you to kindly include 100% stand by or at least 50% stand by pump in order to run the plant for 15 years smoothly.	Adequate no. of pumps with 100% standby shall be provided
185.		Page no 247	Payment terms	The payment terms for the supply part of 89.88% is very stringent and it will affect the cash flow very badly. Hence we request you to kindly modify the payment terms.	As per NIT, Revised payment schedule is attached in additional clarifications
186.		Clause No. 5.5 (b)/Page No.63	UF Membrane Flux Design Basis	Tender specifies UF flux limits (150 LMH normal, 80 LMH during one train cleaning). Kindly confirm whether membrane sizing shall be based on 80 LMH (one train off condition) or bidder can optimize based on vendor recommendation.	The tender limits the maximum flux exposure to 150 LMH (including situation of cleaning when N-1 trains are in operation). When all N trains are in operation, the maximum flux shall not be more than 110 LMH and shall not go below 80 LMH for Ceramic Membranes, for PVDF membranes please refer additional clarifications
187.			RO Reject Water disposal	Kindly clarify whether RO reject water disposal to nala shall be by gravity or through pumping arrangement, along with details of disposal point elevation, pipe length, routing.	Shall be ascertained by the bidder
188.			RO Reject Water disposal	RO Reject water shall be discharge into a Hasdeo river or a nallah, please clarify.	As per NIT, The safe drainage and disposal arrangements shall be done by the contractor in the nearby nala which intern meets Hasdeo river
189.			Plot Plan/ Layout Drawing	Kindly provide detailed plot plan / layout drawing, indicating plot boundaries, available area, levels, and location of existing/proposed units for proper system design and space planning.	Attached in Annexure. Shall be considered for reference purpose only. Bidder need to ascertain and finalize the layout post detail survey.
190.			Tertiary Treatment Plant (P&ID)	Kindly provide Process & Instrumentation Diagram (P&ID) of proposed TTP.	Bidder has to prepare detail design based on the parameters stated in the NIT
191.		Page No. 65	RO High Pressure Pump Capacity Clarification	Tender specifies RO high pressure pump capacity as minimum 150 m ³ /hr at 100 mwc for a 25 MLD plant. However, this flow appears to be inadequate with respect to the overall plant capacity. Kindly clarify the required number of	Bidder has to prepare detail design based on the parameters stated in the NIT. Adequate no. of pumps with 100% standby shall be provided

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				pumps/streams and confirm the design basis for pump sizing.	
192.		Clause 1/Page no. 47	Flow Distribution Clarification	As per the water balance diagram provided, 33 MLD STP outlet is fed to UF system, however flow mentioned in UF feed as 27.17 MLD. Kindly clarify the handling of the remaining 5.83 MLD.	The remaining 5.83 MLD water Shall be used for dilution of UF-RO Reject to achieve safe disposal norms which is also within scope of this project
193.		SCOPE OF WORK & TECHNICAL SPECIFICATIONS, Page 47 of 309	UF permeate water used for balancing of RO reject.	Considering the feed TDS as 1000 ppm, the reject water TDS shall be approx. 5000 ppm with 80% recovery, the TDS of RO reject blended with rest of STP cannot be less than 2100 ppm for discharge to Nallah, as per the EPA Act, 1986. Please advise.	Bidder has to prepare detail design based on the parameters stated in the NIT. However additional water for dilution if required may be provided by KMC from the STP outlet. In worst scenario the contractor has to adjust the recoveries and in no case the safe disposal norms shall be violated. The records of such adjustment in recoveries shall be furnished by the contractor for Non levy of penalty
194.		49 of 310	Providing erecting and commissioning 1500 KVA/33/3.3 KV electric sub station	1. We understand, this sub-station is nothing but a part of TTP and if so the KVA rating shall be as per plant load. 2. Please confirm whether the source supply is 33 KV or 11 KV so that we can consider Transformer primary accordingly.	1. The successful bidder shall have to give the complete electrical plant load and get it approved by the ULB / PMC. 2. Based on the approved plant load the transformer sizing (kVA) is to be installed. The source supply shall be 33 KVA.
195.		102 of 310	It shall be the Bidder's responsibility to obtain adequate incoming HT power from State Electricity Authority based on the maximum demand load. The KMC will	We understand that bidder to co-ordinate with Electricity Authority however, all expenses like HT Cables, Excavation, any other material and Deposits etc shall be borne by client (KMC). Please confirm	The CSPDCL will provide power upto the compound wall / entrance gate. The excavation, laying of HT / LT cables with proper cable trenches, cable makers with danger sign, etc will be in the scope of the bidder. The required letters, fees and deposits will be borne by the ULB. However, all liaisoning pertaining to the approvals from chief electrical safety officer & CSPDCL will be in the scope of the bidder.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
			<p>pay the charges</p> <p>for obtaining the above connection whereas necessary licensing for the same shall be done</p> <p>by the Bidder in consultation with Engineer-in-charge.</p>		
196.		103 of 310	HT Cable with Termination Kit from "Source" to the Electrical HT Substation located at the Sewage Treatment Plant.	<p>1. This scope is contradictory with the above one. Please clarify the scope.</p> <p>2. If it is in bidder's scope then pl. confirm the distance between HT source feeder and proposed TTP plant.</p>	The CSPDCL will provide power upto the compound wall / entrance gate. The excavation, laying of HT / LT cables with proper cable trenches, cable makers with danger sign, etc will be in the scope of the bidder.
197.		157 of 310	<p>Work also includes providing 1500 KVA DG set for TTP of repute make including</p> <p>all cabling paneling etc</p>	We understand bidder to consider 1500 KVA DG set only irrespective of plant load. Pl. confirm	The successful bidder shall have to give the complete electrical plant load and get it approved by the ULB / PMC. Based on the approved plant load the DG set sizing (kVA) is to be done.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
			complete including required connection, commissioning etc complete		
198.		1.4 Construction Works Page 112	HFL of the Nalas and Hasdeo River .	The finished GL of the TTPs premises shall be above HFL. Kindly provide HFL of the site	Attached in Annexure. Shall be consider for reference purpose only. Bidder need to ascertain and finalize the layout post detail survey.
199.			Natural Ground Levels(NG L) and Finish Ground Levels (FGL)	Please provide Contour survey map , average NGL and FGL of the site.	Attached in Annexure. Shall be consider for reference purpose only. Bidder need to ascertain and finalize the layout post detail survey.
200.		1.2 Geotechnical Investigation	Geotechnical Investigation Report	Please provide Geotechnical Investigation report of the site for our reference and civil estimation.	Attached in Annexure. Shall be consider for reference purpose only. Bidder need to ascertain and finalize the layout post detail survey.
201.		1.3 Structural Design, Page 111	Design Water Table	We understand that civil structure and tank shall be designed for uplift as per the water table indicated in Geotechnical Investigation Reoprt. Kindly confirm	As per contractor's design
202.		MISCELENEOUS POINTS OF CIVIL WORKS, Page 90	All the reinforcement steel to be used for the RCC work for the proposed tertiary sewage treatment plants at all levels, shall be CRS type of Fe	We understand that reinforcement steel shall be Fe 500, CRS type. Kindly confirm.	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
			500 Grade		
203.		Annexure – E-V, DI K-9 Pumping main from STP sump to NTPC premises	Page 178 Providing, lowering, laying, jointing successfully testing and commissioning. 500 mm dia DI K-9 Pumping main from STP sump to NTPC premises- Road Restoration work	Kindly provide the quantity of dismantling of the road/pavement etc for laying of the DI pipe. We understand that that dismantling and restoration of existing road/ pavement is not applicable in the scope of the bidder. If in case any requirement of dismantling / restoration of road arises during the construction stage same shall be payable extra as per actual cost for the same. Kindly confirm.	Dismantling and restoration shall be in the scope of bidder as per Annexure – F-5 S.N 4 & 16
204.		Annexure – E-V, DI K-9 Pumping main from STP sump to NTPC premises	Page 178 Providing, lowering, laying, jointing successfully testing and commissioning. 500 mm dia DI K-9 Pumping main from STP sump to NTPC premises- Road Restoration work	Kindly provide details of railway, road, nallah and river crossings. Also please let us know the details of trenchless work with specifications if any in the scope of the bidder. Kindly confirm	Please refer L-section as attached in annexure
205.			Details of existing structure,	Kindly provide details of existing structure, services proposed to be dismantled/ shifted for laying of the DI K- 9 pumping main, construction of the TTP	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
			services proposed to be dismantled/shifted	and other associated structures.	
206.			Cutting of the tress and permission thereof.	Please let us know the scope for the cutting of the tress for the project.	As per NIT Pg no.59,Point 3 Scope of work
207.			Dumping Yard	Please let us know thee location of the dumping yard assigned for the project for the disposal of the construction waste and debris.	It shall be the responsibility of contractor for safe disposal of all the materials/Components/Membranes throughout the Contract period in line with prevailing statutory norms of Central/State Pollution control board
208.			Price Bid Format	Could not find Price Bid format anywhere in the tender document. Request to please provide the same.	As per NIT, Bidders Lumpsum offer shall be quoted in the prescribed online format only. No physical financial bid shall be accepted.
209.	Annexure F- 7 pg.no 260 of 310		O&M payments	<p>During the O&M phase, in case Korba Municipal Corporation (KMC) is unable to supply the required quantity and/or quality of treated sewage water to the TTP due to unavoidable circumstances, the bidder may face constraints in supplying the stipulated 20,000 KL of water to NTPC Limited. As a result, raising the full invoice may become difficult/not possible.</p> <p>In such situations, while the bidder's fixed expenses would largely remain unchanged, the variable costs may vary depending on actual plant operation.</p> <p>In view of the above, we kindly request you to consider providing a breakup of fixed and variable costs for the O&M phase, so that such situations can be addressed in a fair and practical manner.</p>	As per NIT, The essence of the contract is quantity and quality of TTRO water to be supplied to NTPC. In case of any constitutional dispute, the decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35
210.	Page no 75/310		UF train	As per tender the minimum no of train required for UF system is 4 No with 1 train as stand by. Hence the total no of train for UF system shall be 5 No (4W+1S). Kindly confirm.	The bidder shall ensure the average feed flow into the UF system remains constant even in the instance of streams going out of service for cleaning, i.e. for a plant with N number of streams the plant must continuously deliver the same output even in N-1 condition
211.	Page no 91/310		DG Tower	In the scope of supply there is no DG tower in the scheme however in the technical scope on page no 91/310 the DG	The query seems irrelevant. However, DG tower is not required.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				tower has been advised with acid/alkali tile lining. Please confirm whether we need to put a DG tower or not?	
212.	Page no 79/310		CIP Pump	In the required scope of UF system, the CIP pump is 1 No. whereas on page no 95/310 it is 2 No Please clarify whether it is 1 no or 2 nos, We strongly recommend to have 1W+1S pump in the event of any damage to 1 No pump.	1Working + 1standby per CIP pump shall be provided
213.	Page no 81/310		RO Train	As per tender the minimum no of train required for RO system is 4 No with 1 train as stand by. Hence the total no of train for RO system shall be 5 No (4W+1S). Kindly confirm.	Bidder need to ascertain and finalise design considering Min requirements of NIT.
214.	Page 82/310		Reject cum waste water treatment	As per tender the reject from UF/RO will be subject to chemical treatment for rejection of mainly suspended solid and organics matter. Please confirm what chemical treatment is expected by bidder ?	The bidders shall consider neutralisation pit in RCC epoxy lining with 24 hrs retention and acid/ alkalinity dosing system for UF CIP & CEB and RO CIP. Bidders shall also consider 2 no N Pit transfer pumps to transfer the waste from N pit to RO reject tank.
215.	Page no 71 and 93 of 310		UF Feed Pump	Page n0 71/310 says that UF feed pump should be 50% stand by where as page no 93 says that it should be 100% stand by. Please clarify.	1Working + 1standby per feed pump shall be provided
216.	Page 94/310		Inlet feed quality	The pH of feed water as per page no 50/310 is 6.5-9 where as at page no 94/310 it is 5.5-7.5. Similarly, the TSS at the inlet at page no 50/310 is <10 ppm where as at page no 94/310 it is < 30 PPM. Please clarify.	As per Table 2 Inlet parameters of TTP
217.			RO CIP pump	Please confirm whether the RO CIP shall be 1 no or 1W+1S.	1Working + 1standby shall be provided
218.	Page no 98/310		RO HPP	RO high pressure pump as per tender is 6W+8SB.Please confirm as it seems to be on higher side.	Adequate no. of pumps with 100% standby shall be provided
219.	Page 99/310		MOC of UF and RO	Please confirm the MOC for UF and RO system as it is not mentioned in the tender.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications For RO MOC please refer NIT Pg no.80.
220.	Page 115/310		Lab equipment and chemical	The list of Lab equipment and chemical given is too long and most of the item are not related to this TTP and hence can be reduced. Please confirm whether we can consider the required equipment or we have to go with complete list as per tender.	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalised design post detail Engineering as per the quality required at the Product outlet of TTP.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
221.	Page no 121/310		UF Feed sump	Kindly confirm whether the UF feed sump shall be open or covered from top and if it is open there may be possibility of contamination. We suggest that it should be closed.	UF feed sump shall be covered with RCC Slab with covered openings
222.	Page no 247/310		Payment terms	We understand that the sub breakup of civil work (Annexure F-1, B-2). The breakup of 25% civil work shall be similar to Annexure F-2 B) Sub break up. Please confirm.	As per NIT
223.	Page no 247/310		Payment term	We understand that the sub breakup of supply and procurement of UF-RO equipment shall be similar to sub break up under F3 & F4 of page no 249. Please confirm.	As per NIT
224.	General		Short of sewage parameters	Please confirm in the event of inlet parameter exceed from the tender parameter, how this issue will be addressed as the TTP may not perform as per tender.	The essence of the contract is quantity and quality of TTRO water to be supplied to NTPC. In case of any constitutional dispute, the decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35
225.	General		Short of sewage	Please confirm in the event of shortage of sewage available, how the fixed expenses shall be recovered as the contractor will be paid as per actual supply of water to NTPC.	As per NIT, The essence of the contract is quantity and quality of TTRO water to be supplied to NTPC. In case of any constitutional dispute, the decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35
226.			No sewage	There is no clarity of fixed and variable expenses during O&M. In case of no sewage form STP due to any reason, or no demand from NTPC, how the fixed expenses of the contractor will be recovered.	As per NIT, The essence of the contract is quantity and quality of TTRO water to be supplied to NTPC. In case of any constitutional dispute, the decision of JOC shall be final and binding on the contractor. For JOC please refer Conditions of Contract (I) Page 35
227.	Technical		Ultra Filtration Membrane	We are unable to trace Contact details of UF Membrane Manufacturers (Ceramic) in Vendor List.. Kindly provide the same	Contacts of Ceramic and PVDF UF membranes may be taken from the market
228.	Page No. 13 A. Technical Qualification Sr. No. 1	Construction of at least one UF–RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		From a project implementation perspective, it is observed that UF–RO based systems have relatively limited adoption in India, which may constrain competitive participation. It is therefore recommended that experience in comparable wastewater reuse technologies be considered for qualification. Such an approach will promote wider participation while maintaining the intended design and performance objectives.	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
229.	Page No. 13 A. Technical Qualification Sr. No. 2	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		We submit that the current O&M eligibility condition may be restrictive in nature, given the limited adoption of UF-RO systems in India. Kindly allow experience in operation of wastewater reuse plants based on similar and proven technologies.	As per NIT
230.	PQ (A). (i)		A. TECHNICAL QUALIFICATION (i) Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.	Construction of UF-RO for waste water based treatment plants/sewage treatment plants are very recent trends. Therefore, very few of the bidders may have such experience. Hence, to have fair and healthy competition, it is requested to accept the experience of Fiber Disc Filter based waste water treatment plant/sewage treatment plant in addition to UF-RO. Please confirm.	As per NIT
231.	PQ (A). (ii)		A. TECHNICAL QUALIFICATION (ii) Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.	Operation and Maintenance of UF-RO for waste water based treatment plants/sewage treatment plants are very recent trends. Therefore, very few of the bidders may have such experience. Hence, to have fair and healthy competition, it is requested to accept the experience of Fiber Disc Filter based waste water treatment plant/sewage treatment plant in addition to UF-RO. Please confirm.	As per NIT
232.	PQ (B) Note: (1)		B. FINANCIAL	In the definition of the “Similar Work” – only completed Tertiary Treatment Plant	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification																																																
			L QUALIFICATION "Similar work" means - successfully completed Tertiary Treatment Plant UF RO waste water system.	on UF-RO waste water system is accepted. However, it is to highlight that UF-RO for waste water based treatment plants/sewage treatment plants/tertiary treatment plants are very recent trends. Therefore, very few of the bidders may have such experience. Hence, to have fair and healthy competition, it is requested to modify the definition of the “Similar Work” as “Similar Work” means successfully completed Tertiary Treatment plant on Fiber Disc Filter (FDF)/UF-RO. Please confirm.																																																	
233.	General		Date of Submission	Looking to the volume of work involved in tender preparation, we request to extend the date of submission at least by 3-4 weeks after receipt of reply to Prebid queries.	Please refer the corrigendum																																																
234.	Secondary Treated Sewage / TTP Feed Water Characteristics And TTP Treated Water Characteristics (Page - 49)	Table 2: Inlet parameters of TTP (Page - 50) <table><tr><th>Sr. No.</th><th>Parameters/ Pollutants</th><th></th><th>Values after secondary treatment</th></tr><tr><td>1</td><td>pH</td><td>:</td><td>6.5 to 9.0</td></tr><tr><td>2</td><td>Biochemical Oxygen Demand (BOD₅)</td><td>:</td><td>≤ 10 mg/l</td></tr><tr><td>3</td><td>Chemical Oxygen Demand (COD)</td><td>:</td><td>≤ 50 mg/l</td></tr><tr><td>4</td><td>Total Suspended Solids (TSS)</td><td>:</td><td>≤10 mg/l</td></tr><tr><td>5</td><td>Total Phosphorous (TP)</td><td>:</td><td>≤ 1mg/l</td></tr><tr><td>6</td><td>Total Nitrogen (TN)</td><td>:</td><td>≤ 10 mg/l</td></tr><tr><td>7</td><td>Ammoniacal Nitrogen (NH3-N)</td><td>:</td><td>≤ 5 mg/l</td></tr><tr><td>8</td><td>Faecal Coliform (MPN/100 ml)</td><td>:</td><td>≤ 230 MPN/100 ml</td></tr><tr><td>9</td><td>TDS</td><td>:</td><td>632 (system to be designed for 1000 ppm)</td></tr><tr><td>10</td><td>Chlorides</td><td>:</td><td>333.7 (system to be designed for 350 ppm)</td></tr><tr><td>11</td><td>Hardness</td><td>:</td><td>218 (system to be designed for 600 ppm)</td></tr></table>	Sr. No.	Parameters/ Pollutants		Values after secondary treatment	1	pH	:	6.5 to 9.0	2	Biochemical Oxygen Demand (BOD ₅)	:	≤ 10 mg/l	3	Chemical Oxygen Demand (COD)	:	≤ 50 mg/l	4	Total Suspended Solids (TSS)	:	≤10 mg/l	5	Total Phosphorous (TP)	:	≤ 1mg/l	6	Total Nitrogen (TN)	:	≤ 10 mg/l	7	Ammoniacal Nitrogen (NH3-N)	:	≤ 5 mg/l	8	Faecal Coliform (MPN/100 ml)	:	≤ 230 MPN/100 ml	9	TDS	:	632 (system to be designed for 1000 ppm)	10	Chlorides	:	333.7 (system to be designed for 350 ppm)	11	Hardness	:	218 (system to be designed for 600 ppm)		The tender only mentions TDS , Hardness and Chlorides. However detailed ionic break-up is not provided. We request you to kindly provide concentrations of other ionic constituents that are required for RO design.	Bidder has to ascertain and analyse Ionic balance for RO design as per water quality in Tender pg. no 50
Sr. No.	Parameters/ Pollutants		Values after secondary treatment																																																		
1	pH	:	6.5 to 9.0																																																		
2	Biochemical Oxygen Demand (BOD ₅)	:	≤ 10 mg/l																																																		
3	Chemical Oxygen Demand (COD)	:	≤ 50 mg/l																																																		
4	Total Suspended Solids (TSS)	:	≤10 mg/l																																																		
5	Total Phosphorous (TP)	:	≤ 1mg/l																																																		
6	Total Nitrogen (TN)	:	≤ 10 mg/l																																																		
7	Ammoniacal Nitrogen (NH3-N)	:	≤ 5 mg/l																																																		
8	Faecal Coliform (MPN/100 ml)	:	≤ 230 MPN/100 ml																																																		
9	TDS	:	632 (system to be designed for 1000 ppm)																																																		
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11	Hardness	:	218 (system to be designed for 600 ppm)																																																		
235.	Pre- Qualification Criteria (Page -12)	(iv) The Technology provider/ integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.		The technology proposed for tertiary treatment is ultrafiltration (UF) process followed by reverse osmosis (RO). Ultrafiltration system is the one of the most critical aspect of the tertiary treatment plant as the system guarantee and RO performance is dependent upon the UF design and membrane technology . Hence, considering the same, the Non-Judicial agreement (MoU) with	As per NIT																																																

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>technology provider shall be as per the following experience criteria :-</p> <p>“The technology provider or OEM shall have experience of providing the proposed UF system in at least One (1) TTP of at least 10 MLD capacity for sewage/water treatment application in India during last seven year for any State / Central Government organizations / ULBs. The said TTP must in operation for at least 2 years as on date. The technology provider or its authorised representative should have a registered office in India, with the trained manpower in process design, detailed engineering, commissioning and support during O&M period. Technology provider shall be registered with any Central/State government.”</p> <p>Kindly confirm.</p>	
236.	1.3 ADVANCED ULTRAFILTRATION MEMBRANE WITH COMPLETE PERMEATE, BACKWASH, CEB AND CIP SYSTEM (Page - 73-75)	The UF system must be designed at a flux of minimum 150 LMH. (Page - 75)		<p>The various specifications for advanced ultrafiltration such as flux, module arrangement, system configuration, number of trains/units, pertain to a specific type of ultrafiltration system based on ceramic membranes.</p> <p>In order to ensure fair bidding, it is requested to allow other advanced ultrafiltration systems such as Submerged Ultrafiltration System based on PVDF membranes that have widespread applications in tertiary treatment of waste water.</p> <p>Kindly refer to Annexure 1 for List of projects in India based on Submerged Ultrafiltration System with PVDF Membranes for STP water reuse application.</p> <p>Hence, we understand that the bidder is allowed to design the ultrafiltration</p>	<p>PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications</p>

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>system utilising PVDF membranes as per the design criteria of the OEM /technology provider.</p> <p>Kindly confirm.</p>	
237.	1.3.1 Minimum design criteria for UF System (Page - 76)	<p>b. UF Membranes: The UF System shall use a membrane sheet made of microporous amorphous membrane structure, manufactured from either Alumina (Al₂O₃), Zirconia (ZrO₂), titanium dioxide. (Page - 77)</p>		<p>The MoC of UF membranes mentioned in tender pertain to different type of ceramic membranes.</p> <p>We request you, to also allow the bidder to offer Submerged Ultrafiltration Systems based on PVDF membranes having pore size < 0.04 microns considering their proven performance and widespread use in tertiary treatment applications.</p> <p>Kindly Confirm.</p>	<p>PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications</p>
238.	Approved Make List C. ELETROMECHANICAL & INSTRUMENTATION WORK (Page - 306)	UF System - CERAFILTEC, Meidensha & Nano Stone (Page - 306)		<p>The UF system makes mentioned in tender pertain to ceramic membranes only. We request you to include “Dupont” Make for Ultrafiltration Systems utilising PVDF Membranes.</p> <p>Dupont is one of the leading supplier of pressurized , submerged ultrafiltration and MBR membranes ; having more than 1000 worldwide installations. Membranes offered by Dupont are robust , offering high fouling resistance and high recovery.</p> <p>Kindly confirm.</p>	<p>PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications</p>
239.	<p>3. Performance Guarantee 5.1 Ultrafiltration (UF) System (Page - 62)</p> <p>&</p> <p>1.3.2 Scope of supply f. Membrane Element Life (Page - 78)</p>	<p>Life of Ultrafiltration membranes shall have warranty to cover the total membrane life of minimum 15 years.</p> <p>&</p> <p>f. Membrane Element Life</p>		<p>Life of UF membranes differs amongst various UF membrane makes and generally ranges from 5 to 15 years.</p> <p>In order to ensure fair bidding, we understand that any UF membrane replacement occurring in the 15 years of</p>	<p>It shall be the responsibility of bidder to run the entire plant for 15 years including all the guarantees, warranties and replacements for successful performance of the entire plant.</p>

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
		Contractor shall provide a warranty to cover the total membrane life of 15 years. The first 5 years of Warranty must be cliff (full replacement warranty/ no cost warranty) while the remaining 10 years shall be pro-rated replacement warranty.		<p>O&M shall be under the scope of the contractor .</p> <p>The Membrane warranty terms are generally an agreement reached between the contractor and technology provider/OEM for the duration of the O&M. The contractor has to account for the design membrane life and consider the required membrane replacement in his O&M calculation.</p> <p>Hence we assume that contractor has to replace the UF membranes as per the design life of the selected UF Membranes during 15 years of O&M.</p> <p>Please confirm.</p>	
240.	1. ULTRA FILTRATION (UF) SYSTEM PROCESS (Page - 68)	<p>a. Manual strainer (Page - 68)</p> <p>&</p> <p>iv. UF feed strainers Type - Punched hole type rotating drum, Automatic, size - 1mm (Page - 94)</p>		<p>We propose the inclusion of disc filter instead of manual strainer or rotary drum screen upstream of the UF system, to improve the performance of downstream processes and to provide enhanced protection to the downstream membranes.</p> <p>Kindly confirm.</p>	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, So Bidder shall adopt appropriate pre-treatment as per technology requirement without any financial implication to KMC
241.	Tertiary Treatment Plant (TTP) Construction (Page - 66)	<p>2. Reverse Osmosis System</p> <p>Reverse Osmosis process is a membrane process in which a synthetic semi-permeable membrane is used to separate water from dissolved impurities. When a semi-permeable membrane separates a dilute and concentrates solution of salts, due to osmosis, the water from the dilute solution side passes through the membrane to the concentrated side till osmotic equilibrium is attained.</p> <p>(Page - 80)</p>		<p>As per tender, conventional RO System is to be provided after Ultrafiltration for TDS removal.</p> <p>We request you to kindly allow Advanced Reverse Osmosis System - Closed Circuit RO (CCRO), an advanced high-recovery RO system that can recover up to 90 % of inlet water in single stage eliminating the need for multiple stages as required in Conventional RO systems. Also, CCRO systems consume less power and chemicals than that required for Conventional RO systems. Advanced Reverse Osmosis / Closed Circuit Reverse Osmosis will deliver substantial savings in OPEX of the plant during 15 years of O&M.</p> <p>Please refer Annexure 2 for list of recent projects in India where CCRO has been implemented in place of conventional RO. Also refer to Annexure 3 for CCRO</p>	Bidder to assess and can offer any advanced upgraded technology to meet system requirements without any financial implication as an alternative technical offer. (Keeping base offer as same as NIT) However, JOC shall reserve the right to accept or reject the proposed advanced technology

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>specifications of recently published 16 MLD TTP, Lucknow PM Mitra Park tender.</p> <p>Therefore, we request you, to also allow the bidder to provide advanced RO (Closed Circuit Reverse Osmosis) process in addition to the conventional multistage RO process.</p> <p>Kindly confirm.</p>	
242.	Pre- Qualification Criteria (Page -12)	(iv) The Technology provider/ integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.		<p>The technology proposed for tertiary treatment is ultrafiltration (UF) process followed by reverse osmosis (RO). Reverse Osmosis System is the one of the most critical aspect of the tertiary treatment plant as the system guarantee is dependent upon the RO design and membrane technology</p> <p>Hence, considering the same, the Non-Judicial agreement (MoU) with technology provider shall be as per the following experience criteria :-</p> <p>“The technology provider or OEM shall have experience of providing the proposed RO/Advanced RO system in at least One (1) TTP of 10 MLD capacity for sewage/water treatment application in India or abroad during last seven year for any Private/State/Central Government organizations / ULBs. The said TTP must in operation for at least 2 years as on date. The technology provider or its authorised representative should have a registered office in India, with the trained manpower in process design, detailed engineering, commissioning and support during O&M period. Technology provider shall be registered with any Central/State government.”</p>	As per NIT,

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
243.	Approved Make List C. ELETROMECHANICAL & INSTRUMENTATION WORK (Page - 307)	RO Membrane - Toray, Dow, Hydranautics, Veolia (Page - 307)		Kindly confirm. As per the tender specifications, DOW is mentioned as an approved make for RO membranes. Since , the earlier Dow RO membranes are now DuPont RO membranes it is understood that DuPont RO membranes will be acceptable under the approved makes. Please confirm.	Yes, Bidders understanding is correct
244.	6. Technical Datasheet (Page - 96)	As per Tender datasheet - RO Trains / RO skids Reverse Osmosis System (RO) - (Min. 5-6 trains) (Page - 96)		The tender mentions that 5 - 6 number of RO Skids need to be provided. Considering the output capacity of 20 MLD , 2 Working + 1 Standby Skid are sufficient. Increasing the RO skid will unnecessarily increase the CAPEX of system. Kindly confirm that the bidder can offer 2 Working + 1 Standby Skid configuration for RO system.	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalised design post detail Engineering as per the quality and quantity required at the Product outlet of TTP.
245.	PRE - QUALIFICATION CRITERIA Page 12	1 To qualify in the Tender bidder must have technical experience in last 7 (seven) years of following items: (i) Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		The tender specifies the requirement of a technology provider for the UF & RO system, considering this is a technology-driven plant. However, it also requires bidders to have prior construction experience of UF & RO systems. In India, UF–RO systems are predominantly used for smaller-capacity plants, mainly in the industrial sector. Restricting eligibility only to UF–RO experience may therefore limit broader participation. We request you to kindly consider bidders with construction experience in advanced tertiary treatment technologies such as fibre disc filters with similar capacities as mentioned in the tender document. This will help enable more competitive participation while still ensuring the	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification																																				
				desired performance standards as mentioned in the bid.																																					
246.	Page No. 13 A. Technical Qualification Sr.No.2	1 To qualify in the Tender bidder must have technical experience in last 7 (seven) years of following items: Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		<p>The tender specifies the requirement of a technology provider for the UF & RO system, considering this is a technology-driven plant.</p> <p>However, it also requires bidders to have prior O&M experience of UF & RO systems.</p> <p>In India, UF-RO systems are predominantly used for smaller-capacity plants, mainly in the industrial sector. Restricting eligibility only to UF-RO experience may therefore limit broader participation.</p> <p>We request you to kindly consider bidders with O&M experience in advanced tertiary treatment technologies such as fibre disc filters with similar capacities as mentioned in the tender document.</p> <p>This will help enable more competitive participation while still ensuring the desired performance standards as mentioned in the bid.</p>	Aas per NIT																																				
247.	Secondary Treated Sewage / TTP Feed Water Characteristics And TTP Treated Water Characteristics (Page - 49)	Table 2: Inlet parameters of TTP (Page - 50) <table><tr><th>Sr. No.</th><th>Parameters/ Pollutants</th><th>Values after secondary treatment</th></tr><tr><td>1</td><td>pH</td><td>: 6.5 to 9.0</td></tr><tr><td>2</td><td>Biochemical Oxygen Demand (BOD₅)</td><td>: ≤ 10 mg/l</td></tr><tr><td>3</td><td>Chemical Oxygen Demand (COD)</td><td>: ≤ 50 mg/l</td></tr><tr><td>4</td><td>Total Suspended Solids (TSS)</td><td>: ≤10 mg/l</td></tr><tr><td>5</td><td>Total Phosphorous (TP)</td><td>: ≤ 1mg/l</td></tr><tr><td>6</td><td>Total Nitrogen (TN)</td><td>: ≤ 10 mg/l</td></tr><tr><td>7</td><td>Ammoniacal Nitrogen (NH3-N)</td><td>: ≤ 5 mg/l</td></tr><tr><td>8</td><td>Faecal Coliform (MPN/100 ml)</td><td>: ≤ 230 MPN/100 ml</td></tr><tr><td>9</td><td>TDS</td><td>: 632 (system to be designed for 1000 ppm)</td></tr><tr><td>10</td><td>Chlorides</td><td>: 333.7 (system to be designed for 350 ppm)</td></tr><tr><td>11</td><td>Hardness</td><td>: 218 (system to be designed for 600 ppm)</td></tr></table>	Sr. No.	Parameters/ Pollutants	Values after secondary treatment	1	pH	: 6.5 to 9.0	2	Biochemical Oxygen Demand (BOD ₅)	: ≤ 10 mg/l	3	Chemical Oxygen Demand (COD)	: ≤ 50 mg/l	4	Total Suspended Solids (TSS)	: ≤10 mg/l	5	Total Phosphorous (TP)	: ≤ 1mg/l	6	Total Nitrogen (TN)	: ≤ 10 mg/l	7	Ammoniacal Nitrogen (NH3-N)	: ≤ 5 mg/l	8	Faecal Coliform (MPN/100 ml)	: ≤ 230 MPN/100 ml	9	TDS	: 632 (system to be designed for 1000 ppm)	10	Chlorides	: 333.7 (system to be designed for 350 ppm)	11	Hardness	: 218 (system to be designed for 600 ppm)		<p>The tender only mentions TDS, Hardness and Chlorides. However detailed ionic break-up is not provided.</p> <p>We request you to kindly provide concentrations of other ionic constituents that are required for RO design.</p>	Bidder has to ascertain and analyse Ionic balance for RO design as per water quality in Tender pg. no 50
Sr. No.	Parameters/ Pollutants	Values after secondary treatment																																							
1	pH	: 6.5 to 9.0																																							
2	Biochemical Oxygen Demand (BOD ₅)	: ≤ 10 mg/l																																							
3	Chemical Oxygen Demand (COD)	: ≤ 50 mg/l																																							
4	Total Suspended Solids (TSS)	: ≤10 mg/l																																							
5	Total Phosphorous (TP)	: ≤ 1mg/l																																							
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7	Ammoniacal Nitrogen (NH3-N)	: ≤ 5 mg/l																																							
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248.	Pre- Qualification Criteria (Page -12)	(iv) The Technology provider/ integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.		The technology proposed for tertiary treatment is ultrafiltration (UF) process	As per NIT,																																				

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>followed by reverse osmosis (RO). Ultrafiltration system is the one of the most critical aspect of the tertiary treatment plant as the system guarantee and RO performance is dependent upon the UF design and membrane technology .</p> <p>Hence, considering the same, the Non-Judicial agreement (MoU) with technology provider shall be as per the following experience criteria :-</p> <p>“The technology provider or OEM shall have experience of providing the proposed UF system in at least One (1) TTP of at least 10 MLD capacity for sewage/water treatment application in India during last seven year for any State / Central Government organizations / ULBs. The said TTP must in operation for at least 2 years as on date. The technology provider or its authorised representative should have a registered office in India, with the trained manpower in process design, detailed engineering, commissioning and support during O&M period. Technology provider shall be registered with any Central/State government.”</p> <p>Kindly confirm.</p>	
249.	1.3 ADVANCED ULTRAFILTRATION MEMBRANE WITH COMPLETE PERMEATE, BACKWASH, CEB AND CIP SYSTEM (Page - 73-75)	The UF system must be designed at a flux of minimum 150 LMH. (Page - 75)		<p>The various specifications for advanced ultrafiltration such as flux, module arrangement, system configuration, number of trains/units, pertain to a specific type of ultrafiltration system based on ceramic membranes.</p> <p>In order to ensure fair bidding, it is requested to allow other advanced ultrafiltration systems such as Submerged Ultrafiltration System based on PVDF membranes that have widespread applications in tertiary treatment of waste water.</p>	<p>PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications</p>

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>Kindly refer to Annexure 1 for List of projects in India based on Submerged Ultrafiltration System with PVDF Membranes for STP water reuse application.</p> <p>Hence, we understand that the bidder is allowed to design the ultrafiltration system utilising PVDF membranes as per the design criteria of the OEM /technology provider.</p> <p>Kindly confirm.</p>	
250.	1.3.1 Minimum design criteria for UF System (Page - 76)	<p>b. UF Membranes:</p> <p>The UF System shall use a membrane sheet made of microporous amorphous membrane structure, manufactured from either Alumina (Al₂O₃), Zirconia (ZrO₂), titanium dioxide.</p> <p>(Page - 77)</p>		<p>The MoC of UF membranes mentioned in tender pertain to different type of ceramic membranes.</p> <p>We request you, to also allow the bidder to offer Submerged Ultrafiltration Systems based on PVDF membranes having pore size < 0.04 microns considering their proven performance and widespread use in tertiary treatment applications.</p> <p>Kindly Confirm.</p>	<p>PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications</p>
251.	Approved Make List C. ELETROMECHANICAL & INSTRUMENTATION WORK (Page - 306)	UF System - CERAFILTEC, Meidensha & Nano Stone (Page - 306)		<p>The UF system makes mentioned in tender pertain to ceramic membranes only. We request you to include “Dupont” Make for Ultrafiltration Systems utilising PVDF Membranes.</p> <p>Dupont is one of the leading supplier of pressurized , submerged ultrafiltration and MBR membranes ; having more than 1000 worldwide installations. Membranes offered by Dupont are robust , offering high fouling resistance and high recovery.</p> <p>Kindly confirm.</p>	<p>PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications</p>

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
252.	3. Performance Guarantee 5.1 Ultrafiltration (UF) System (Page - 62) & 1.3.2 Scope of supply f. Membrane Element Life (Page - 78)	Life of Ultrafiltration membranes shall have warranty to cover the total membrane life of minimum 15 years. & f. Membrane Element Life Contractor shall provide a warranty to cover the total membrane life of 15 years. The first 5 years of Warranty must be cliff (full replacement warranty/ no cost warranty) while the remaining 10 years shall be pro-rated replacement warranty.		Life of UF membranes differs amongst various UF membrane makes and generally ranges from 5 to 15 years. In order to ensure fair bidding, we understand that any UF membrane replacement occurring in the 15 years of O&M shall be under the scope of the contractor . The Membrane warranty terms are generally an agreement reached between the contractor and technology provider/OEM for the duration of the O&M. The contractor has to account for the design membrane life and consider the required membrane replacement in his O&M calculation. Hence we assume that contractor has to replace the UF membranes as per the design life of the selected UF Membranes during 15 years of O&M. Please confirm.	It shall be the responsibility of bidder to run the entire plant for 15 years including all the guarantees, warranties and replacements for successful performance of the entire plant.
253.	1. ULTRA FILTRATION (UF) SYSTEM PROCESS (Page - 68)	b. Manual strainer (Page - 68) & iv. UF feed strainers Type - Punched hole type rotating drum, Automatic, size - 1mm (Page - 94)		We propose the inclusion of disc filter instead of manual strainer or rotary drum screen upstream of the UF system, to improve the performance of downstream processes and to provide enhanced protection to the downstream membranes. Kindly confirm.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, So Bidder shall adopt appropriate pre-treatment as per technology requirement without any financial implication to KMC
254.	Tertiary Treatment Plant (TTP) Construction (Page - 66)	2. Reverse Osmosis System Reverse Osmosis process is a membrane process in which a synthetic semi-permeable membrane is used to separate water from dissolved impurities. When a semi-permeable membrane separates a dilute and concentrates solution of salts, due to osmosis, the water from the dilute solution side passes through the membrane to the concentrated side till osmotic equilibrium is attained.		As per tender, conventional RO System is to be provided after Ultrafiltration for TDS removal. We request you to kindly allow Advanced Reverse Osmosis System - Closed Circuit RO (CCRO), an advanced high-recovery	Bidder to assess and can offer any advanced upgraded technology to meet system requirements without any financial implication as an alternative technical offer (Keeping base offer as same as NIT) However, JOC shall reserve the right to accept or reject the proposed advanced technology

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
		(Page - 80)		<p>RO system that can recover up to 90 % of inlet water in single stage eliminating the need for multiple stages as required in Conventional RO systems. Also, CCRO systems consume less power and chemicals than that required for Conventional RO systems. Advanced Reverse Osmosis / Closed Circuit Reverse Osmosis will deliver substantial savings in OPEX of the plant during 15 years of O&M.</p> <p>Please refer Annexure 2 for list of recent projects in India where CCRO has been implemented in place of conventional RO. Also refer to Annexure 3 for CCRO specifications of recently published 16 MLD TTP, Lucknow PM Mitra Park tender.</p> <p>Therefore, we request you, to also allow the bidder to provide advanced RO (Closed Circuit Reverse Osmosis) process in addition to the conventional multistage RO process.</p> <p>Kindly confirm.</p>	
255.	Pre- Qualification Criteria (Page -12)	(iv) The Technology provider/ integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.		<p>The technology proposed for tertiary treatment is ultrafiltration (UF) process followed by reverse osmosis (RO). Reverse Osmosis System is the one of the most critical aspect of the tertiary treatment plant as the system guarantee is dependent upon the RO design and membrane technology</p> <p>Hence, considering the same, the Non-Judicial agreement (MoU) with technology provider shall be as per the following experience criteria :-</p>	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>“The technology provider or OEM shall have experience of providing the proposed RO/Advanced RO system in at least One (1) TTP of 10 MLD capacity for sewage/water treatment application in India or abroad during last seven year for any Private/State/Central Government organizations / ULBs. The said TTP must in operation for at least 2 years as on date. The technology provider or its authorised representative should have a registered office in India, with the trained manpower in process design, detailed engineering, commissioning and support during O&M period. Technology provider shall be registered with any Central/State government.”</p> <p>Kindly confirm.</p>	
256.	Approved Make List C. ELETROMECHANICAL & INSTRUMENTATION WORK (Page - 307)	RO Membrane - Toray, Dow, Hydranautics, Veolia (Page - 307)		<p>As per the tender specifications, DOW is mentioned as an approved make for RO membranes. Since , the earlier Dow RO membranes are now DuPont RO membranes it is understood that DuPont RO membranes will be acceptable under the approved makes.</p> <p>Please confirm.</p>	Yes, Bidders understanding is correct
257.	6. Technical Datasheet (Page - 96)	As per Tender datasheet - RO Trains / RO skids Reverse Osmosis System (RO) - (Min. 5-6 trains) (Page - 96)		<p>The tender mentions that 5 - 6 number of RO Skids need to be provided. Considering the output capacity of 20 MLD , 2 Working + 1 Standby Skid are sufficient.</p> <p>Increasing the RO skid will unnecessarily increase the CAPEX of system.</p> <p>Kindly confirm that the bidder can offer 2 Working + 1 Standby Skid configuration for RO system.</p>	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalised design post detail Engineering as per the quality and quantity required at the Product outlet of TTP.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
258.	PRE - QUALIFICATION CRITERIA Page 12	1 To qualify in the Tender bidder must have technical experience in last 7 (seven) years of following items: Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		<p>Tender mentions Construction of at least one UF – RO wastewater-based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.</p> <p>However in many STP with tertiary treatment reuse projects, Membrane Bioreactor (MBR) technology which uses the same type of membranes as ultrafiltration membranes are provided with downstream RO systems to generate the desired quality of treated water/effluent.</p> <p>Hence, we presume that STP with tertiary treatment plant based on MBR technology followed by RO system for tertiary treatment of sewage in India are eligible for qualification under the relevant tender clauses.</p> <p>Kindly confirm.</p>	As per NIT
259.	PRE - QUALIFICATION CRITERIA Page 12	1 To qualify in the Tender bidder must have technical experience in last 7 (seven) years of following items: Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		<p>We request you to allow experience of commissioning of TTP's under this specific clause, since in many projects, O&M of TTP is part of separate contract and not part of design build contract. Hence the required O&M experience is not part of the certificates.</p> <p>Also, the performance guarantees to be met during the O&M period such as quality of treated water are given by the technology provider.</p> <p>Hence please allow Commissioning experience of the bidder under this contract. Please confirm.</p>	As per NIT
260.	Eagle Infra India Ltd				

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
261.		<input type="checkbox"/> Construction of at least one UF-RO wastewater-based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD. <input type="checkbox"/> Should have experience in Operation and Maintenance of UF-RO wastewater-based treatment plant for a period of 1 year.		<p>We request for modification as below</p> <p>Bidder should have experience of Construction and Commissioning and O&M of at least one plant of 10 MLD Wastewater Treatment Plant based on PVDF UF membrane and UV/RO in last 5 years with O&M of at least two years.</p>	As per NIT
262.		Satisfactorily completed at least one similar work equal in value 50% (fifty percent) of the probable amount of contract as on date of submission of financial offer.		<p>We request for modification as below</p> <p>Satisfactorily completed at least one similar work equal in value 40% (forty percent) of the probable amount of contract as on date of submission of financial offer</p>	As per NIT
263.	Detailed NIT, Page No. - 08 and Page No. - 16	<p>1. Registration and subsequent empanelment for e-tendering website (https://eproc.cgstate.gov.in) through Sub Portal https://eproc.cgstate.gov.in and department's sub-portal is mandatory.</p> <p>I. Registration in Class 'A' in Unified Registration (Single Window) System on (https://eproc.cgstate.gov.in) and subsequent empanelment for e-tendering website (https://eproc.cgstate.gov.in) and department's sub-portal is mandatory.</p>		In many other Municipal Corporations registration of Contractors is done after award of work. We request you to kindly allow registration within one month after award of work.	As per NIT
264.	NOTICE INVITING TENDER, Page No 1, Earnest money (EMD)	Rs 82.20 Lakh (Eighty two lakhs twenty thousand only) TDR/FDR in favour of Commissioner, Municipal Corporation Korba		We request to accept EMD in form of Bank Guarantee (BG)	As per NIT
265.	INSTRUCTION TO BIDDERS, Page No 22, 16. PRICE ADJUSTMENT / ESCALATION	The scope of work includes all costs and no claim for price adjustment/Escalation or on account of any reason whatsoever shall be entertained.		We request to keep Price Escalation Clause as per RBI/WPI/CPI Index as the period of contract is long and prices of Labour, Material & Fuel varies	As per NIT
266.	INSTRUCTION TO BIDDERS, Page No 24, 20. INSURANCE	The Bidder shall take all such insurance in connection with the work in accordance with the tender condition as acceptable to COMMISSIONER. The cost of all the insurance premiums shall be paid by the Bidder.		We request to give specific requirement of Insurance as this will be major Cost Element	As per NIT, Cl 19.3
267.	INSTRUCTION TO BIDDERS, Page No 24, 23. TAXES	(i) All tendered rates shall be inclusive of any tax, levy or cess applicable on last stipulated date of receipt of tender including extension if any. No adjustment i.e. increase or decrease shall be made for any variation in the rate of GST, Building and Other Construction Workers Welfare Cess or any tax, levy or cess applicable on inputs. However, effect of variation in rates of GST or Building and Other Construction Workers Welfare Cess or imposition or repeal of any other tax, levy or cess applicable on output of the works contract shall be adjusted on either side, increase or decrease. Provided further that such increase including GST shall not be made in the extended period of contract for which the contractor alone is responsible for delay as determined by authority for extension of time under Schedule F		We understand that any variation in rate of GST or other taxes will be reimburse or recover at actual. Please Confirm	As per NIT
268.	Annexures, Page No 246, Annexure – F (Main) : Price/Payment Schedule	Note:- 5% after the defect liability period shall be deducted from each running bill of whole works and the same shall be refunded after period is over as per condition of contract.		This clause is not clear. Kindly confirm the retention % and retention deduction and release methodology and conditions.	Please refer additional clarification

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
269.	PRE QUALIFICATION CRITERIA, A. TECHNICAL QUALIFICATION and B. FINANCIAL QUALIFICATION	Under Technical qualification - To qualify in the Tender bidder must have technical experience in last 7 (seven) years of following items: Under Financial qualification - To qualify in the Tender bidder must have financial experience in last Five years.		We understand that the experience of bidder during last 7 years will be considered for technical & financial qualification. Please Confirm.	As per NIT
270.	PRE QUALIFICATION CRITERIA, A. TECHNICAL QUALIFICATION and B. FINANCIAL QUALIFICATION	Regarding similar work: Under Technical qualification - it is mentioned as "UF- RO waste water based treatment plant" Under Financial qualification - Similar works (written in 3 places) Notes: "Similar work" means- successfully completed Tertiary Treatment Plant UF RO waste water system.		We understand that "Similar Work" refers to successful completion of UF-RO based tertiary treatment plants for municipal sewage. Please Confirm.	Similar work refers to successful completion of UF RO based treatment plant
271.	Appendix – 11, Point 3	I am/ We are neither black listed nor debarred by Govt. of India/ Other State Govt. Departments/ Chhattisgarh State Govt. Departments/Urban Local Body.		We understand that bidders blacklisted or debarred by Govt. of India/ Other State Govt. Departments/Chhattisgarh State Govt. Departments/Urban Local Body as on date of submission of Bid will not be considered. Bidder need to submit an undertaking to this effect. Please Confirm.	Yes, Agreed
272.	General	Right of way for transmtion/distribution pipeline from TTP to NTPC		We understand that the right of way is excluded from bidder's scope. Bidder will only help with necessary documentation, if required. Please confirm.	Yes, Agreed
273.	General	Electrical Connetion Point for New Plant		The Distance of the Electrical Connection point for Proposed is specified in the tender document. Kindly provide the Location and distance of New Electrical Connection point from the Proposed Site.	The scope of bidder shall start from the incoming power supply to the sub-station
274.	General	Feed Flow for TTP Plant		We understand the feed flow to TTP plant will 33MLD from STP plant, however only the flow 27.17 MLD need to be treated.	Bidders understanding is correct
275.	NOTICE INVITING TENDER	Rs 82.20 Lakh (Eighty two lakhs twenty thousand only) TDR/FDR in favour of Commissioner, Municipal Corporation Korba.		We kindly request the KMC (Owner) to accept the EMD in form of bank guarantee. Kindly confirm.	As per NIT
276.	NOTICE INVITING TENDER	Probable amount of contract (Rs. in Lacs) (incl 15 years O&M) - 16438.95 Lacs (Capital work - 8,005.05 lacs, O&M - 8,433.90 lacs)		Bidder understand that the probable amount of contract shown in NIT is excluding GST. Kindly confirm if our understanding is correct.	Bidders understanding is correct, However the bidders offer shall be inclusive of all the taxes.
277.	NOTICE INVITING TENDER	Plot Plan/Layout		Kindly provide the Plot Plan/layout details for Proposed TTP plant in PDF & AutoCAD format.	Attached in Annexure. Shall be consider it only for reference purpose only. Bidder need to ascertain and finalised the layout post detail survey.
278.	NOTICE INVITING TENDER	Topography Layout/Contour Levels		Kindly provide the Topography layout/contour levels to assess the site condition and also provide Finished	The location of proposed TTP is besides the On going STP of 33 MLD at Pragati Nagar Korba

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				Ground level (FGL) for proposed TTP plant.	
279.	NOTICE INVITING TENDER, 16. PRICE ADJUSTMENT / ESCALATION	The scope of work includes all costs and no claim for price adjustment/Escalation or on account of any reason whatsoever shall be entertained.		We request KMC (Owner) to consider price adjustment & escalation for this contract and provide the following: 1.Price Escalation formula for O&M since the contract duration is 15 years for Manpower, Chemicals, Materials, etc. 2. Kindly also provide the reference indices and the weightages.	As per NIT
280.	NOTICE INVITING TENDER, 1.3 ADVANCED ULTRAFILTRATION MEMBRANE WITH COMPLETE PERMEATE, BACKWASH,CEB AND CIP SYSTEM	UF system with UPVC piping		Considering the tender clause, we assume that UF System and Backwash piping shall be UPVC/GRP. Kindly confirm.	UF System and Backwash piping shall be UPVC/GRP.
281.	NOTICE INVITING TENDER, 1.4 UF permeate Tank cum RO feed tank with overhead wash water tank and backwash / CIP pumps	Provision of backwash pump shall have to provide for UF backwash facility with necessary electrical / mechanical instruments, interconnecting pipe, with necessary arrangements of knife gate valves/ penstock gates and UF clarified water – backwash pumping arrangement by SS304 pipeline upto UF.		Considering the tender clause, we assume that UF System and Backwash piping shall be UPVC/GRP. Kindly confirm.	UF System and Backwash piping shall be UPVC/GRP.
282.	NOTICE INVITING TENDER, 1500 KVA DG SET FOR TTP	Work also includes providing 1500 KVA DG set for TTP of reputed make including all cabling panelling etc. complete including required connection, commissioning etc.		The bidder considered that the specified DG rating is not mandatory and bidder is free to modify the DG capacity as per the bidder's requirements. Kindly confirm.	The successful bidder shall have to give the complete electrical plant load and get it approved by the ULB / PMC. Based on the approved plant load the DG set sizing (kVA) is to be done.
283.	Appendix -15, Non-Judicial Agreement for Technology provider of UF/ RO system	Non-Judicial Agreement for Technology provider of UF/ RO system		We request Owner to remove requirement of Non-Judicial Agreement for RO Technology provider. Kindly confirm.	If the main bidder has executed the similar nature of work then no separate MOU shall be required, However the counter guarantee must be submitted by the successful bidder within 15 days of issue of LOA
284.	6. TECHNICAL DATA SHEETS, iii. ULTRAFILTRATION (UF) SYSTEM, Page No.-93 3. Performance Guarantee 5.1 Ultrafiltration (UF) System, Point d & e, Page No.-62	Details of UF Recovery Rate of Min 90% e. Process recovery: The UF system shall achieve a minimum product recovery of 92% percent (minimum) on a daily average basis (even under worst case scenario as defined by the feed water analysis). Product recovery is defined as net filtrate produced over a 24-hour period divided by the raw water fed to the process over the same time 24-hour period. The Contractor shall provide calculations that show an individual UF stream, can achieve a minimum recovery of 92% based on the duty membrane loading rate, the minimum expected backwash interval and the maximum volume of water discharged during the backwash cycle.		We kindly request you to consider the recovery to be minimum 90% subject to current feed conditions. However incase of improved feed quality the plant can be optimized for better performance including recovery.	Yes, Agreed
285.	6. TECHNICAL DATA SHEETS, iii. ULTRAFILTRATION (UF) SYSTEM, Page No.-93	Details of UF as per design The complete UF system must be split into 04 independent streams with each stream comprising several trains to provide 3 (4-1) functionalities. Each stream must be equipped with a dedicated backwashing, chemical cleaning & aeration system.		It is understood that the minimum total train count shall be 4 Nos operable in N-1 condition. Whereas the bidder can increase the no. of trains for better and optimal operation. However the bidder shall maintain operability in N-1	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalised design post detail Engineering as per the quality and quantity required at the Product outlet of TTP.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
	Clause 1.3, 9th bullet point, Page No.-75			condition and shall not breach the stipulated maximum flux conditions	
286.	Page No. 13 A. Technical Qualification Sr. No. 1	Construction of at least one UF–RO waste water-based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		<p>We respectfully submit that the current requirement centered on UF-RO technology may restrict the number of eligible bidders due to its limited implementation.</p> <p>It is requested to broaden the criteria to include equivalent wastewater treatment technologies.</p> <p>This will enhance participation without impacting technical outcomes.</p>	As per NIT
287.	Page No. 13 A. Technical Qualification Sr. No. 2	Should have experience in Operation and Maintenance of UF-RO waste water-based treatment plant for a period of 1 year.		<p>The current requirement focusing on UF-RO based O&M experience may inadvertently exclude capable operators.</p> <p>It is requested to include experience in operation of equivalent tertiary treatment systems of similar scale.</p>	As per NIT
288.	Page No. 13A. Technical Qualification Sr. No. 1	Construction of at least one UF–RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		<p>We respectfully bring to notice that UF–RO technology has relatively limited implementation in India, which may restrict the number of eligible bidders. It is requested that experience in comparable wastewater reuse technologies be considered for qualification. This will enhance competition while safeguarding technical performance expectations.</p>	As per NIT
289.	Page No. 13A. Technical Qualification Sr. No. 2	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		<p>The stipulation of one-year O&M experience specifically in UF–RO plants appears restrictive due to limited project exposure in India. We request inclusion of bidders having operated similar wastewater reuse plants using equivalent treatment technologies.</p>	As per NIT
290.	Page No. 13 A. Technical Qualification Sr.No.1	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		<p>Given that UF–RO installations are currently limited in number across India, restricting eligibility to this technology may reduce bidder participation. It is therefore requested to allow experience in equivalent wastewater treatment systems such as Fiber Disc Filters or similar processes. This will support competitive bidding while ensuring project quality.</p>	As per NIT
291.	Page No. 13 A. Technical Qualification Sr.No.2	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		<p>We respectfully submit that specifying one-year O&M experience exclusively for UF–RO based wastewater treatment plants may limit participation, considering the relatively limited number of such operational facilities in India. It is</p>	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				therefore requested to consider bidders having experience in operation and maintenance of wastewater reuse plants of similar capacity employing equivalent treatment technologies.	
292.	Page No. 13 A. Technical Qualification Sr.No.1	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		<p>We note that UF–RO technology is still at a relatively early stage of adoption in India, resulting in limited qualifying experience.</p> <p>Hence, it is requested to consider bidders having executed projects using equivalent treatment technologies.</p> <p>This will enable broader competition while ensuring technical adequacy.</p>	As per NIT
293.	Page No. 13 A. Technical Qualification Sr.No.2	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		<p>We would like to submit that restricting O&M qualification to UF–RO based systems may limit participation due to its limited implementation.</p> <p>Kindly consider bidders with experience in operating wastewater reuse plants using equivalent treatment processes.</p>	As per NIT
294.	Page No. 13 A. Technical Qualification Sr.No.1	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		<p>It is observed that UF-RO based systems are relatively new in the Indian market, and eligibility under this criterion is limited to a small pool of players. This may constrain competitive bidding.</p> <p>We therefore request inclusion of bidders with experience in comparable wastewater reuse technologies such as Fiber Disc Filters or equivalent systems.</p> <p>Such consideration will ensure broader competition without compromising project requirements.</p>	As per NIT
295.	Page No. 13 A. Technical Qualification Sr.No.2	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		<p>We respectfully submit that limiting O&M eligibility to UF-RO based plants may constrain participation, as such systems are relatively few in India.</p> <p>It is requested to consider experience in operation of comparable wastewater reuse facilities employing alternate proven technologies.</p>	As per NIT
296.	A. Technical Qualification Sr.No.1 Pg No. 13	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		We respectfully submit that UF–RO technology has seen limited deployment in India to date, with only a few firms meeting this specific requirement, which may inadvertently limit competition. Accordingly, it is requested that bidders have experience in wastewater reuse	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				projects using equivalent proven technologies such as UF-RO, Fiber Disc Filters, or similar advanced filtration systems be considered. This approach will facilitate wider participation while maintaining the technical objectives of the project.	
297.	A. Technical Qualification Sr.No.2 Pg No. 13	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		It is observed that the requirement of one-year O&M experience exclusively for UF-RO based systems may restrict wider participation considering the limited adoption of this technology in India. Accordingly, it is requested to allow bidders with O&M experience in wastewater reuse plants utilizing equivalent technologies such as Fiber Disc Filters, Gravity Sand Filters, or other similar tertiary treatment systems.	As per NIT
298.	Page No. 13 A. Technical Qualification Sr.No.1	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		It is submitted that the number of UF-RO installations in India is currently limited, which may reduce the pool of eligible bidders. In view of this, experience in similar wastewater reuse technologies may kindly be accepted. This will promote wider participation while maintaining project objectives.	As per NIT
299.	Page No. 13 A. Technical Qualification Sr.No.2	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		Given that UF-RO technology is still evolving in India, the current O&M requirement may reduce the pool of eligible operators. It is therefore requested to allow experience in comparable reuse systems based on alternative proven technologies.	As per NIT
300.	Page No. 13 A. Technical Qualification Sr.No.1	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		We respectfully submit that the current requirement centered on UF-RO technology may restrict the number of eligible bidders due to its limited implementation. It is requested to broaden the criteria to include equivalent wastewater treatment technologies. This will enhance participation without impacting technical outcomes.	As per NIT
301.	Page No. 13 A. Technical Qualification Sr.No.2	Should have experience in Operation and Maintenance of UF RO waste water-based treatment Plant for a period of 1 year.		The current requirement focusing on UF-RO based O&M experience may inadvertently exclude capable operators. It is requested to include experience in operation of equivalent tertiary treatment systems of similar scale.	As per NIT
302.		PRE - QUALIFICATION CRITERIA A. TECHNICAL QUALIFICATION S. No.1 PQ Criteria (i) Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD. PRE - QUALIFICATION CRITERIA A. TECHNICAL QUALIFICATION S. No.1 PQ Criteria (i) Construction of at least one Sewerage Treatment Plant (SBR Technology) / UF – RO waste water based treatment plant of minimum 50% capacity of the tender		Amendment required : PRE - QUALIFICATION CRITERIA A. TECHNICAL QUALIFICATION S. No.1 PQ Criteria (i) Construction of at least one Sewerage Treatment Plant (SBR Technology) / UF – RO waste water based	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
		capacity i.e. 10 MLD. (ii) Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year. Page No.-12		treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD. (ii) Should have experience in Operation and Maintenance of Sewerage Treatment Plant (SBR Technology) / UF-RO waste water based treatment Plant for a period of 1 year. Page No.-12	
303.		PRE - QUALIFICATION CRITERIA B. FINANCIAL QUALIFICATION Note: - 1. "Similar work" means- successfully completed Tertiary Treatment Plant UF RO waste water system. Page No.-13		Amendment required: PRE - QUALIFICATION CRITERIA B. FINANCIAL QUALIFICATION Note: - 1. "Similar work" means- successfully completed Sewerage Treatment Plant (SBR Technology) / Tertiary Treatment	As per NIT
304.				1. Laid down specification for the tertiary treatment plant is not in line with the latest edition of CPHEEO w.r.t. Ultrafiltration technology. It has ignored the most prevalent & used technology of PVDF UF membranes in India at various municipal Corporation, which have been also recommended by CPHEEO latest edition.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
305.				2. The technical data sheet for the UF System (Sr No 6, Page 93 of the NIT document) specifies the UF membrane material of construction (MOC) as ceramic. This is a developing technology mainly for drinking water project & under development stage yet due to very rigorous maintenance and handling required for ceramic membranes.	As per NIT
306.				3. Almost all membrane-based Tertiary Treatment Plant (TTP) facilities in India, used by various municipal corporations, utilize ultrafiltration technology with PES/PVDF polymeric membranes instead of ceramic membranes. Some examples follow: a) Delhi Jal Board b) BWSSB, Bangalore c) CMWSSB, Chennai d) Surat Municipal Corporation (Supplies water to one of the NTPC Plant) e) GMADA, Punjab f) BMC, Mumbai g) PMC, Pune h) Mangalore SEZ (MRPL), Mangalore i) Ahmedabad Municipal Corporation j) Reva MP Municipal Corporation (Under Construction) & many more across India	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
307.				4. The UF technology pertains to specific ceramic membrane manufacturers that lack any reference for TTP in India	As per NIT
308.				5. Unlike drinking water, municipal sewage waste water contain high degree of organics, which need to be removed constantly from the membranes through high pH of 14 with help of NaOH.	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				Ceramic membranes have very poor tolerance w.r.t. NaOH due to Aluminium oxide, which is used as binders for these membranes.	
309.				6. Aluminium, as a substance, is also hazardous to human health, similar to aluminium metals, which shall leach out from the Ceramic Membranes during its cleaning for removal of organics contaminants	Vendor shall provide required NSF/ANSI or equivalent certifications for UF membrane to avoid such leaching and to assure better performance of UF in order to achieve better RO performance.
310.				7. We request for inclusion of UF technology with PVDF membranes with high Chlorine tolerance of 7.2 Million ppm during its life time of 10-15 years & NaOH tolerance of 4% for effective removal of organics.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
311.				8. We request for inclusion of name of "ASHAI KASEI CORPORATION" Japan as one of the technology provider for UF membranes. 9. Asahi Kasei has largest share of Membrane installation (PVDF MOC) in most of the above project including world famous NEWATER at Singapore (Govt owned Projects of TTP).	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
312.				10. The replacement cost of ceramic membranes are very expensive in compare to polymeric UF membranes with equal life span of membranes	It shall be the responsibility of bidder to run the entire plant for 15 years including all the guarantees ,warranties and replacements for successful performance of the entire plant.
313.				We request your kind consideration regarding the confirmation/information above. Please extend the prebid meeting till 20-04-2026 to enable us to plan and deliver a technology presentation to your team, covering best practices for TTP project of unique importance	Please refer corrigendum
314.	Page No. 13 – A. Technical Qualification on, Sr. No. 1	Construction of at least one UF–RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD		Considering that UF–RO based projects are not widely executed in India, the current criterion may limit par cipa on to a few en es. We request that bidders with experience in alterna ve but proven reuse treatment systems be allowed. This will ensure a compe ve environment without dilu on of technical requirements.	As per NIT
315.	Page No. 13 – A. Technical Qualification on, Sr. No. 2	Should have experience in Opera on and 2 Page No. 13 – A. Technical Qualification on, Sr. No. 2 Maintenance of UF–RO wastewater-based treatment plant for a period of 1 year		Restricng the O&M eligibility requirement to only UF–RO based wastewater treat	As per NIT
316.				With our understanding, the CPHEEO recommend for the most prevalent technology of polymeric ultrafiltration membranes for tertiary treatment plant. We request for inclusion of UF membranes with a PVDF membrane that has an absolute warranty of 10 years and	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				a remaining 5 years on a prorated basis. This will provide the lowest life cycle cost for the owner in compare to very expensive ceramic membranes.	
317.				The technical data sheet for the UF System (Sr No 6, Page 93 of the NIT document) specifies the UF membrane material of construction (MOC) as ceramic. We request the most advanced & proven UF membrane technology with PVDF as the material of construction (MOC)	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
318.				Many small, medium & large municipal corporation are using Polymeric UF membranes for their existing & also upcoming TTP projects across India.	As per NIT
319.				Upto our best of knowledge, there is no Ceramic UF installation in India for STP-TTP project of similar capacity.	As per NIT
320.				Municipal sewage waste water contain high degree of organics, which need to be removed constantly from the membranes through high pH of 14 with help of NaOH. Ceramic membranes have very poor tolerance w.r.t. NaOH due to Aluminium oxide, which is used as binders for these membranes.	As per NIT
321.				Aluminium leaching from UF membranes shall be damaging the downstream RO membranes, & thus affect the overall performance of the plant.	Vendor shall provide required NSF/ANSI or equivalent certifications for UF membrane to avoid such leaching and to assure better performance of UF in order to achieve better RO performance.
322.				7. We request for inclusion of UF technology with PVDF membranes with high Chlorine tolerance of 7.2 Million ppm during its life time of 10-15 years & NaOH tolerance of 4% for effective removal of organics.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
323.				We request for inclusion of name of Hydranautics/ Toray/ Asahi as one of the technology provider for UF membranes.	Please refer additional clarifications
324.	Page No. 13 – A. Technical Qualification on, Sr. No. 1	Construction of at least one UF–RO wastewater based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD		Since UF–RO based treatment plants are not widely prevalent in India, restricting eligibility to this technology may limit participation. We request inclusion of experience in similar wastewater reuse systems using alternative proven processes. This will help achieve competitive bidding while maintaining required standards.	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
325.	Page No. 13 – A. Technical Qualification on, Sr. No. 2	Should have experience in Operation and 2 Page No. 13 – A. Technical Qualification on, Sr. No. 2 Maintenance of UF–RO wastewater-based treatment plant for a period of 1 year		<p>As UF–RO installations are limited in number, the present O&M eligibility condition may narrow competition. We request that experience in similar wastewater reuse plants employing other proven technologies be accepted.</p> <p>It is observed that the requirement of one-year O&M experience exclusively for UF–RO based systems may restrict wider participation, considering the limited adoption of this technology in India. Accordingly, it is requested to allow bidders with O&M experience in wastewater reuse plants utilizing equivalent technologies such as Fiber Disc Filters, or similar systems.</p>	As per NIT
326.	File name Section C System description and specific requirements page no : 307 of 310 Approved make List Electro-mechanical and instrumentation Sr no :	UF System CERAFILTEC, Meidensha & Nano stone		<p>PVDF membranes are globally favored because they balance cost, performance, and ease of operation, while ceramic membranes are reserved for harsh or industrial conditions where chemical/thermal resistance is critical. We humbly request you please approve “Qurem” Brand membranes for UF System. Qurem membranes are manufactured in India and your approval will help to gain the strong momentum under government initiatives like Make in India, Atmanirbhar Bharat, and the Public Procurement (Preference to Make in India) Order. We can provide faster and more reliable service support due to our proximity, ensuring quick resolution of technical issues and reduced downtime. Availability of spare parts is more consistent and cost effective, as it eliminates delays associated with imports and customs clearance. This will also help the main contractors to increase the percentage of make in India products as UF System is one the core component in this system. We trust you will consider the provisions of the Public Procurement (Preference to Make in India) Order, 2017 issued by DPIIT. Other credential are attached for your reference</p>	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
327.	Page No. 13 A. Technical Qualification Sr. No.1	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		<p>We respectfully submit that restricting eligibility to experience in construction of only UF–RO based wastewater treatment plants appears to be technology-specific and may significantly limit fair competition. It is therefore requested to revise the clause to allow bidders having</p>	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>experience in execution of wastewater reuse / tertiary treatment plants of similar capacity, irrespective of the specific treatment configuration adopted.</p> <p>UF-RO is only one of multiple established and proven treatment configurations for achieving reuse-quality water. In industry practice, qualification is generally aligned with plant capacity, treated water quality, and end-use application rather than a specific process combination. The current condition may lead to exclusion of capable and experienced bidders who have successfully executed similar reuse projects using alternative technologies. Revising the criteria to a performance-based approach will ensure wider participation, competitive pricing, and selection of technically competent bidders without compromising project objectives.</p>	
328.	<p>Page No. 13 A. Technical Qualification Sr. No.2</p>	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.		<p>We respectfully submit that restricting O&M eligibility exclusively to UF-RO based plants appears to be restrictive in nature and may limit the participation of qualified and experienced operators. It is requested to revise the clause to include operation and maintenance experience of wastewater reuse / tertiary treatment plants of similar capacity and complexity, irrespective of the technology adopted.</p> <p>Operation and maintenance complexity is primarily governed by plant capacity, system integration, automation level, and treated water quality compliance, and not solely by the presence of UF-RO units. The current requirement may unnecessarily exclude operators with substantial experience in managing advanced wastewater reuse systems. A broader, performance-based criterion will ensure adequate competition, availability of experienced operators, and efficient long-term plant performance.</p>	As per NIT

Sr No.	Particulars in NIT	Tender Specifications		Subject	Pre-Bid Query	Clarification
329.	Form “F” (Lump-sum Contract)	S. No.	PQ Criteria	'Pre- Qualificatio ns Criteria	1 To qualify in the Tender bidder must have technical experience in last 10 (ten) years of following items: (i) Construction of at least one TMF / UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD. (ii) Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year. (iii) Should have supplied, laid, jointed, tested and completed MS/DI/CI pipes of 500 mm dia. or above to a minimum length 650 m. (iv) The Technology provider/ integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder. (v) The operator/contractor should go under non judicial agreement along with counter guarantee of Rs. 10 Lakhs from manufacturer of membrane and system integrator having experience of UF RO. The counter guarantee shall be submitted along with the Bid. 2 Joint Venture – It is requested to allow joint venture	As per NIT
		1	To qualify in the Tender bidder must have technical experience in last 7 (seven) years of following items:			As per NIT
		(i)	Construction of at least one UF – RO waste water based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.			As per NIT
		(ii)	Should have experience in Operation and Maintenance of UF-RO waste water based treatment Plant for a period of 1 year.			As per NIT
		(iii)	Should have supplied, laid, jointed, tested and completed MS/DI/CI pipes of 500 mm dia. or above to a minimum length 650 m.			
		(iv)	The Technology provider/ integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.			
		(v)	The operator/contractor should go under non judicial agreement along with counter guarantee of Rs. 10 Lakhs from manufacturer of membrane and system integrator having experience of UF RO. The counter guarantee shall be submitted along with the Bid.			As per NIT
		2	Joint Venture - Not Allowed			As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification																					
330.	Form “F” (Lump-sum Contract)	<div>To qualify in the Tender bidder must have financial experience in last Five years.</div> <table><thead><tr><th>S. No.</th><th>PQ Criteria</th><th>Value of work (Qualifying Value)</th><th>PAC Value</th></tr></thead><tbody><tr><td rowspan="4">1</td><td>Experience for Last 5 years will be considered</td><td></td><td></td></tr><tr><td>Achieved in "any one financial year" a financial turnover (in all classes of Construction Works (Civil)), value of construction work of at least 60% (Sixty percent) the amount equal to the probable amount of contract for which bid has been invited. And Satisfactorily completed at least one similar work equal in value 50% (fifty percent) of the Probable amount of contract as on date of submission of financial offer.</td><td>Rs. 9863.37 In Lacs</td><td>60%</td></tr><tr><td>Or Satisfactorily completed at least two similar works each costing minimum 40% (forty percent) of the probable amount of contract for which the tender is invited as on date of submission of financial offer.</td><td>Rs. 8219.475 In Lacs</td><td>50%</td></tr><tr><td>Or Satisfactorily completed at least two similar works each costing minimum 40% (forty percent) of the probable amount of contract for which the tender is invited as on date of submission of financial offer.</td><td>Rs. 6575.58 In Lacs Each</td><td>40%</td></tr><tr><td></td><td>Or Satisfactorily executing at least one similar work having received payment of value not less than 60% (Sixty percent) of the value of probable amount of contract as on date of submission of financial offer.</td><td>Rs. 9863.37 In Lacs</td><td>60%</td></tr></tbody></table>	S. No.	PQ Criteria	Value of work (Qualifying Value)	PAC Value	1	Experience for Last 5 years will be considered			Achieved in "any one financial year" a financial turnover (in all classes of Construction Works (Civil)), value of construction work of at least 60% (Sixty percent) the amount equal to the probable amount of contract for which bid has been invited. And Satisfactorily completed at least one similar work equal in value 50% (fifty percent) of the Probable amount of contract as on date of submission of financial offer.	Rs. 9863.37 In Lacs	60%	Or Satisfactorily completed at least two similar works each costing minimum 40% (forty percent) of the probable amount of contract for which the tender is invited as on date of submission of financial offer.	Rs. 8219.475 In Lacs	50%	Or Satisfactorily completed at least two similar works each costing minimum 40% (forty percent) of the probable amount of contract for which the tender is invited as on date of submission of financial offer.	Rs. 6575.58 In Lacs Each	40%		Or Satisfactorily executing at least one similar work having received payment of value not less than 60% (Sixty percent) of the value of probable amount of contract as on date of submission of financial offer.	Rs. 9863.37 In Lacs	60%	A. Financial Qualification	We request to consider as follows Experience for Last 10 years will be considered Achieved in "any one financial year" a financial turnover (in all classes of Construction Works (Civil)), value of construction work of at least 60% (Sixty percent) the amount equal to the probable amount of contract for which bid has been invited. And Satisfactorily completed at least one similar work equal in value 50% (fifty percent) of the Probable amount of contract as on date of submission of financial offer. Or Satisfactorily completed at least two similar works each costing minimum 40% (forty percent) of the probable amount of contract for which the tender is invited as on date of submission of financial offer. Or Satisfactorily executing at least one similar work having received payment of value not less than 60% (Sixty percent) of the value of probable amount of contract as on date of submission of financial offer.	As per NIT
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331.		TDS - 632 (system to be designed for 1000 ppm)		Kindly provide balance parameters as per below: Inorganic Parameters (mg/L)- Calcium as Ca Magnesium as Mg Potassium as K Sodium as Na Iron as Fe2+ Bicarbonate as HCO3 Carbonate as CO3 Nitrate as NO3 Fluoride as F Sulphate as SO4 Reactive Silica as SiO2 Colloidal Silica as SiO2 Alkalinity-M Balanced cations and anions are essential for RO design, kindly provide ionically balanced parameters which essential for RO design.	Bidder has to ascertain and analyse Ionic balance for RO design as per water quality in Tender pg. no 50																					
332.		A) The TDS concentration in RO reject tank for disposal into the nallah shall be <2100 ppm as per EPA 1986. Bidder shall adhere to compliance as per CECB directives in addition to NGT Norms B) c. For the design water quality and the permeate water capacity, RO plant shall give an undiminished recovery of 80% up to the end of 3 years of operation with replacement guarantee of membrane elements.		The feed TDS 1000 ppm and recovery 80% reject TDS shall be 5000 ppm (>2100 ppm) which shall not be discharged to nallah as per the norms. Evaporation system shall be required and discharged salt shall be disposed of to	As per NIT																					

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification																						
		C) Compliance: CPCB standards for reject water quality (e.g., TDS <2100 mg/L, BOD <10 mg/L, COD <50 mg/L), Environment (Protection) Rules, 1986, and amendments.		TSDF.																							
333.				Kindly confirm the feed flow of the UF and RO system along with the number of skids, with respect to the total flow of 20,000 m³/day. Also, please clarify whether the 20 MLD flow refers to permeate flow or feed flow	The bidder must ensure the average feed flow into the UF/RO system remains constant even in the instance of streams going out of service for cleaning, i.e. for a plant with N number of streams the plant must continuously deliver the same output even in N-1 condition. 20 MLD shall be product output at NTPC’s end																						
334.		<p>A) e. Process recovery: The UF system shall achieve a minimum product recovery of 92% percent (minimum) on a daily average basis (even under worst case scenario as defined by the feed water analysis). Product recovery is defined as net filtrate produced over a 24-hour period divided by the raw water fed to the process over the same time 24-hour period. The Contractor shall provide calculations that show an individual UF stream, can achieve a minimum recovery of 92% based on the duty membrane loading rate, the minimum expected backwash interval and the maximum volume of water discharged during the backwash cycle.</p> <table><tr><td colspan="2">iii. ULTRAFILTRATION (UF) SYSTEM</td></tr><tr><td colspan="2">Details of UF</td></tr><tr><td>No of trains</td><td>As per Design</td></tr><tr><td>UF Membrane trains finish</td><td>Acid / Alkali tile lining</td></tr><tr><td>Total feed flow</td><td>As per the design by the membrane supplier</td></tr><tr><td>Total Design Required Average feed flow</td><td>As per the design by the membrane supplier</td></tr><tr><td>Total Average Design permeate flow</td><td>As per the design by the membrane supplier</td></tr><tr><td>Recovery rate</td><td>Min. 90 %</td></tr><tr><td>Avg. Filtration Flux at (n-1)</td><td>155 LMH</td></tr><tr><td>Avg. Backwash Flux</td><td>375-450 LMH</td></tr><tr><td>Casting material</td><td>Noryl with fiberglass reinforced</td></tr></table>	iii. ULTRAFILTRATION (UF) SYSTEM		Details of UF		No of trains	As per Design	UF Membrane trains finish	Acid / Alkali tile lining	Total feed flow	As per the design by the membrane supplier	Total Design Required Average feed flow	As per the design by the membrane supplier	Total Average Design permeate flow	As per the design by the membrane supplier	Recovery rate	Min. 90 %	Avg. Filtration Flux at (n-1)	155 LMH	Avg. Backwash Flux	375-450 LMH	Casting material	Noryl with fiberglass reinforced		Kindly confirm UF Recovery as both the statements are contradictory to each other.	Min product recovery of 90% is admissible
iii. ULTRAFILTRATION (UF) SYSTEM																											
Details of UF																											
No of trains	As per Design																										
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335.	'Technical Data Sheet	'x. High Pressure Pump Quantity - 14 Nos. (6W+8S)		Kindly confirm No. of working & Standby pumps	Adequate no. of pumps with 100% standby shall be provided																						
336.	Form “F” (Lump-sum Contract)	1.3.2. Soil investigation		Soil investigation is in contractor scope but soil condition such as strata, SBC and water table needs to be specified prior to bid as significant construction is involved, cost of which is dependent on soil conditions. Hence request you to provide following data as it is required by all contractors for civil cost estimation: 1. Water Table 2. Soil Bearing Capacity (SBC) 3. Soil Strata 4. Highest Flood Level (HFL) 5. Natural Ground Level (NGL) 6. Design Finished Ground Level (FGL) 7. Design Plinth Level 8. Contour Plan	Soil investigation report of SBR basin of on going STP is attached in annexure for reference purpose only However the responsibility of correctness of bidders design shall totally lie with the bidder																						
337.	C. ELETROMECHANICAL &	UF System - CERAFILTEC, Meidensha & Nano stone			Please refer additional clarifications																						

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification																					
	INSTRUMENTATION WORK			Kindly allow Memstar / Dupont / Qua / Mann+Hummel make UF Membrane																						
338.		<table><thead><tr><th><u>Task</u></th><th><u>Date</u></th><th><u>Time</u></th></tr></thead><tbody><tr><td>Bid Start Date</td><td>30-03-2026</td><td>17:31</td></tr><tr><td>Date of Site Visit</td><td>08-04-2026</td><td>11:30</td></tr><tr><td>Prebid Meeting</td><td>08-04-2026 At Saket Bhawan ITI Chowk, Korba (C.G.)</td><td>14:00</td></tr><tr><td>Bid Due Date</td><td>20-04-2026</td><td>17:30</td></tr><tr><td>Physical Doc Submission End Date</td><td>24-04-2026</td><td>15:30</td></tr><tr><td>Bid Open Date (Scheduled)</td><td>24-04-2026</td><td>17:00</td></tr></tbody></table>	<u>Task</u>	<u>Date</u>	<u>Time</u>	Bid Start Date	30-03-2026	17:31	Date of Site Visit	08-04-2026	11:30	Prebid Meeting	08-04-2026 At Saket Bhawan ITI Chowk, Korba (C.G.)	14:00	Bid Due Date	20-04-2026	17:30	Physical Doc Submission End Date	24-04-2026	15:30	Bid Open Date (Scheduled)	24-04-2026	17:00		Kindly allow a 21 days (three weeks) for submission of the proposal from the receipt of the pre-bid responses.	Please refer Corrigendum
<u>Task</u>	<u>Date</u>	<u>Time</u>																								
Bid Start Date	30-03-2026	17:31																								
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339.	ANNEXURE H – SPECIAL CONDITIONS	'20. For Obtaining all statutory, legal and regulatory permissions/NOC such as PWD, NH, railways, Forest, Telecom, etc. from respective authorities, ULB shall submit application, necessary fees shall be paid by ULB. The contractor has to depute dedicated Liasoning Officer to coordinate with concerned departments for obtaining relevant NOCs/ approvals. It would be contractor’s responsibility to obtain all statutory, legal and regulatory permissions/NOC from respective authorities.		Kindly confirm whether Environmental Clearance and Consent for Establishment is obtained or not. Obtaning such statutory, legal and regulatory approval in client's scope and to be excluded from biddder's scope.	As per NIT, Pg 269, Pt 20.																					
340.	Secondary Treated Sewage/TTP Feed Water Characteristics And TTP Treated Water Characteristics (Page-49)	Table 2: Inlet parameters of TTP (Page - 50)		The tender only mentions TDS, Hardness and Chlorides. However detailed ionic break-up is not provided. We request you to kindly provide concentrations of other ionic constituents that are required for RO design.	Bidder has to ascertain and analyse Ionic balance for RO design as per water quality in Tender pg. no 50																					

Sr No.	Particulars in NIT	Tender Specifications				Subject	Pre-Bid Query	Clarification
		Sr. No.	Parameters / Pollutants	:	Values after secondary treatment			
		1	pH	:	6.5 to 9.0			
		2	Biochemical Oxygen Demand (BOD)	:	≤10 mg/l			
		3	Chemical Oxygen Demand (COD)	:	≤50 mg/l			
		4	Total Suspended Solids (TSS)	:	≤10 mg/l			
		5	Total Phosphorous (TP)	:	≤1 mg/l			
		6	Total Nitrogen (IN)	:	≤10 mg/l			
		7	Ammoniacal Nitrogen (NH3-N)	:	≤5 mg/l			
		8	Faecal Coliform (MPN/100 ml)	:	≤ 230 MPN/100 ml			
		9	TDS	:	632 (system to be designed for 1000 ppm)			
		10	Chlorides	:	333.7 (system to be designed for 350 ppm)			
		11	Hardness	:	218 (system to be designed for 600 ppm)			
341.	Pre-Qualification Criteria (Page-12)	(iv) The Technology provider/integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.					<p>The technology proposed for tertiary treatment is ultrafiltration (UF) process followed by reverse osmosis (RO). Ultrafiltration system is the one of the most critical aspect of the tertiary treatment plant as the system guarantee and RO performance is dependent upon the UF design and membrane technology.</p> <p>Hence, considering the same, the Non-Judicial agreement (MoU) with technology provider shall be as per the following experience criteria :-</p>	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				"The technology provider or OEM shall have experience of providing the proposed UF system in at least One (1) TTP of at least 10 MLD capacity for sewage/water treatment application in India during last seven year for any State / Central Government organizations / ULBs. The said TTP must in operation for at least 2 years as on date. The technology provider or its authorized representative should have a registered office in India, with the trained manpower in process design, detailed engineering,	
342.				Commissioning and support during O&M period. Technology provider shall be registered with any Central/State government." Kindly confirm.	As per NIT
343.	1.3 ADVANCED ULTRAFILTRATION MEMBRANE WITH COMPLETE PERMEATE, BACKWASH, CEB AND CIP SYSTEM (Page – 73-75)	The UF system must be designed at a flux of minimum 150 LMH. (Page –75)		The various specifications for advanced ultrafiltration such as flux, module arrangement, system configuration, number of trains/units, pertain to a specific type of ultrafiltration system based on ceramic membranes. In order to ensure fair bidding, it is requested to allow other advanced ultrafiltration systems such as Submerged Ultrafiltration System based on PVDF membranes that have widespread applications in tertiary treatment of waste water. Kindly refer to Annexure 1 for List of projects in India based on Submerged Ultrafiltration System with PVDF Membranes for STP water reuse application. Hence, we understand that the bidder is allowed to design the ultrafiltration system utilising PVDF membranes as per	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				the design criteria of the OEM/technology provider. Kindly confirm.	
344.	1.3.1 Minimum design criteria for UF System (Page-76)	b. UF Membranes: The UF System shall use a membrane sheet made of microporous amorphous membrane structure, manufactured from either Alumina (Al ₂ O ₃), Zirconia (ZrO ₂), titanium dioxide. (Page-77)		The MoC of UF membranes mentioned in tender pertain to different type of ceramic membranes. We request you, to also allow the bidder to offer Submerged Ultrafiltration Systems based on PVDF membranes having pore size << 0.04 microns considering their proven performance and widespread use in tertiary treatment applications. Kindly Confirm.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
345.	Approved Make List C. ELETROMECHANICAL & INSTRUMENTATION WORK (Page-306)	UF System - CERAFILTEC, Meidensha & Nano Stone (Page-306)		The UF system makes mentioned in tender pertain to ceramic membranes only. We request you to include "Dupont" Make for Ultrafiltration Systems utilising PVDF Membranes. Dupont is one of the leading supplier of pressurized, submerged ultrafiltration and MBR membranes, having more than 1000 worldwide installations. Membranes offered by Dupont are robust, offering high fouling resistance and high recovery Kindly confirm.	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, subject to meeting the performance and technical specifications and functional guarantees including the pretreatment as per the requirement of PVDF membranes. Please refer additional clarifications
346.	3. Performance Guarantee 5.1 Ultrafiltration (UF) System (Page-62) & 1.3.2 Scope of supply f. Membrane Element Life (Page-78)	Life of Ultrafiltration membranes shall have warranty to cover the total membrane life of minimum 15 years & f. Membrane Element Life Contractor shall provide a warranty to cover the total membrane life of 15 years. The		Life of UF membranes differs amongst various UF membrane makes and generally ranges from 5 to 15 years. In order to ensure fair bidding, we understand that any UF membrane replacement occurring in the 15 years of O&M shall be under the scope of the contractor.	It shall be the responsibility of bidder to run the entire plant for 15 years including all the guarantees, warranties and replacements for successful performance of the entire plant.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
		first 5 years of Warranty must be cliff (full replacement warranty/ no cost warranty) while the remaining 10 years shall be pro-rated replacement warranty		<p>The Membrane warranty terms are generally an agreement reached between the contractor and technology provider/OEM for the duration of the O&M. The contractor has to account for the design membrane life and consider the required membrane replacement in his O&M calculation.</p> <p>Hence we assume that contractor has to replace the UF membranes as per the design life of the selected UF Membranes during 15 years of O&M.</p> <p>Please confirm</p>	
347.	1. ULTRA FILTRATION (UF) SYSTEM PROCESS (Page-68)	<p>a. Manual strainer (Page-68)</p> <p>& Type - Punched hole type rotating drum, Automatic, size - 1mm</p> <p>iv. UF feed strainers (Page-94)</p>		<p>We propose the inclusion of disc filter instead of manual strainer or rotary drum screen upstream of the UF system, to improve the performance of downstream processes and to provide enhanced protection to the downstream membranes.</p> <p>Kindly confirm.</p>	PVDF type membranes for Ultrafiltration (UF) systems are acceptable, along with ceramic membranes, So Bidder shall adopt appropriate pre-treatment as per technology requirement without any financial implication to KMC
348.	Tertiary Treatment Plant (TTP) Construction (Page 66)	<p>2. Reverse Osmosis System</p> <p>Reverse Osmosis process is a membrane process in which a synthetic semi-permeable membrane is used to separate water from dissolved impurities. When a semi-permeable membrane separates a dilute and concentrates solution of salts, due to osmosis, the water from the dilute solution side passes through the membrane to the concentrated side till osmotic equilibrium is attained.</p> <p>(Page-80)</p>		<p>As per tender, conventional RO System is to be provided after Ultrafiltration for TDS removal.</p> <p>We request you to kindly allow Advanced Reverse Osmosis System-Closed Circuit RO (CCRO), an advanced high-recovery RO system that can recover up to 90% of inlet water in single stage eliminating the need for multiple stages as required in Conventional RO systems. Also, CCRO systems consume less power and chemicals than that required for Conventional RO systems. Advanced Reverse Osmosis / Closed Circuit Reverse Osmosis will deliver substantial savings in OPEX of the plant during 15 years of O&M.</p>	Bidder to assess and can offer any advanced upgraded technology to meet system requirements without any financial implication as an alternative technical offer (Keeping base offer as same as NIT) However, JOC shall reserve the right to accept or reject the proposed advanced technology.

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>Please refer Annexure 2 for list of recent projects in India where CCRO has been implemented in place of conventional RO. Also refer to Annexure 3 for CCRO specifications of recently published 16 MLD TTP, Lucknow PM Mitra Park tender.</p> <p>Therefore, we request you, to also allow the bidder to provide advanced RO (Closed Circuit Reverse Osmosis) process in addition to the conventional multistage RO process.</p> <p>Kindly confirm.</p>	
349.	Pre- Qualification Criteria (Page-12)	(iv) The Technology provider/integrator of UF & RO waste water system shall submit Non-judicial agreement as a part of bid to the bidder.		<p>The technology proposed for tertiary treatment is ultrafiltration (UF) process followed by reverse osmosis (RO). Reverse Osmosis System is the one of the most critical aspect of the tertiary treatment plant as the system guarantee is dependent upon the RO design and membrane technology</p> <p>Hence, considering the same, the Non-Judicial agreement (MoU) with technology provider shall be as per the following experience criteria:</p> <p>"The technology provider or OEM shall have experience of providing the proposed RO/Advanced RO system in at least One (1) TTP of 10 MLD capacity for sewage/water treatment application in India or abroad during last seven year for any Private/State/Central Government organizations/ULBS. The said TTP must in operation for at least 2 years as on date. The technology provider or its authorised representative should have a registered office in India, with the trained manpower in process design, detailed engineering,</p>	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				commissioning and support during O&M period. Technology provider shall be registered with any Central/State government." Kindly confirm.	
350.	Approved Make List C. ELETROMECHANICAL & INSTRUMENTATION WORK (Page-307)	RO Membrane Toray, Dow, Hydranautics, Veolia (Page-307)		As per the tender specifications, DOW is mentioned as an approved make for RO membranes. Since, the earlier Dow RO membranes are now DuPont RO membranes it is understood that DuPont RO membranes will be acceptable under the approved makes. Please confirm.	Yes, Bidders understanding is correct
351.	6. Technical Datasheet (Page-96)	System (RO)-(Min. 5-6 trains) As per Tender datasheet - RO Trains / RO skids Reverse Osmosis (Page-96)		The tender mentions that 5-6 number of RO Skids need to be provided. Considering the output capacity of 20 MLD, 2 Working + 1 Standby Skid are sufficient. Increasing the RO skid will unnecessarily increase the CAPEX of system. Kindly confirm that the bidder can offer 2 Working + 1 Standby Skid configuration for RO system.	Bidder shall Consider this only for reference purpose. Bidder need to ascertain and finalised design post detail Engineering as per the quality and quantity required at the Product outlet of TTP.
352.	12. PRE-QUALIFICATION 1 CRITERIA Page 12	1 To qualify in the Tender bidder must have technical experience in last 7 (seven) years of following items: (i) Construction of at least one UF RO waste water-based treatment plant of minimum 50% capacity of the tender capacity i.e. 10 MLD.		The tender specifies the requirement of a technology provider for the UF & RO system, considering this is a technology-driven plant. However, it also requires bidders to have prior construction experience of UF & RO systems. In India, UF-RO systems are predominantly used for smaller-capacity plants, mainly in the industrial sector. Restricting eligibility only to UF-RO	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
				<p>experience may therefore limit broader participation.</p> <p>We request you to kindly consider bidders with construction experience in advanced tertiary treatment technologies such as fibre disc filters with similar capacities as mentioned in the tender document.</p> <p>This will help enable more competitive participation while still ensuring the desired performance standards as mentioned in the bid.</p>	
353.	<p>Page No. 13 A. Technical Qualification</p> <p>Sr.No.2</p>	<p>1 To qualify in the Tender bidder must have technical experience in last 7 (seven) years of following items:</p> <p>(i) Should have experience in Operation and Maintenance of UF-RO waste water-based treatment Plant for a period of 1 year.</p>		<p>The tender specifies the requirement of a technology provider for the UF & RO system, considering this is a technology-driven plant.</p> <p>However, it also requires bidders to have prior O&M experience of UF & RO systems.</p> <p>In India, UF-RO systems are predominantly used for smaller-capacity plants, mainly in the industrial sector. Restricting eligibility only to UF-RO experience may therefore limit broader participation.</p> <p>We request you to kindly consider bidders with O&M experience in advanced tertiary treatment technologies such as fibre disc filters with similar capacities as mentioned in the tender document.</p> <p>This will help enable more competitive participation while still ensuring the desired performance standards as mentioned in the bid.</p>	As per NIT

Sr No.	Particulars in NIT	Tender Specifications	Subject	Pre-Bid Query	Clarification
354.	Page No. 13 (A) Technical Qualification 1. (iii)	Should have supplied, laid, jointed, tested and completed MS/DI/CI pipes of 500 mm dia. or above to a minimum length 650 m.		Kindly Allow MOU with Vendor	As per NIT
355.	Page No. 09 Sr. no.11 Clause no. (iv)	CG PWD Registration in appropriate Class in Unified Registration System (Single Window) on GoCG e-Procurement System Portal of (https://cgeprocurement.gov.in) through sub portal https://uadd.cgeprocurement.gov.in and (Partnership Deed, registration amendment certificate as the case may be)		Kindly allow Registration of similar class with any state government other than CG state.	As per NIT

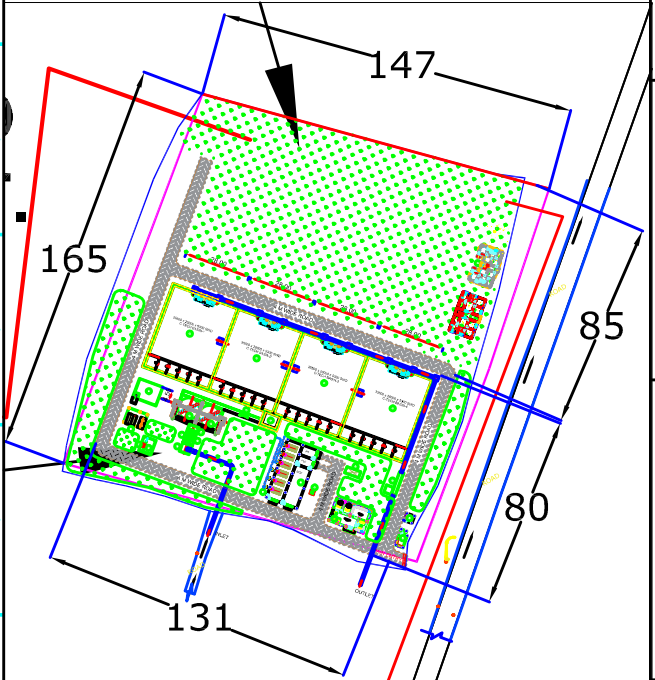
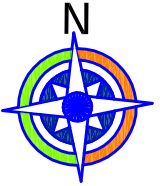
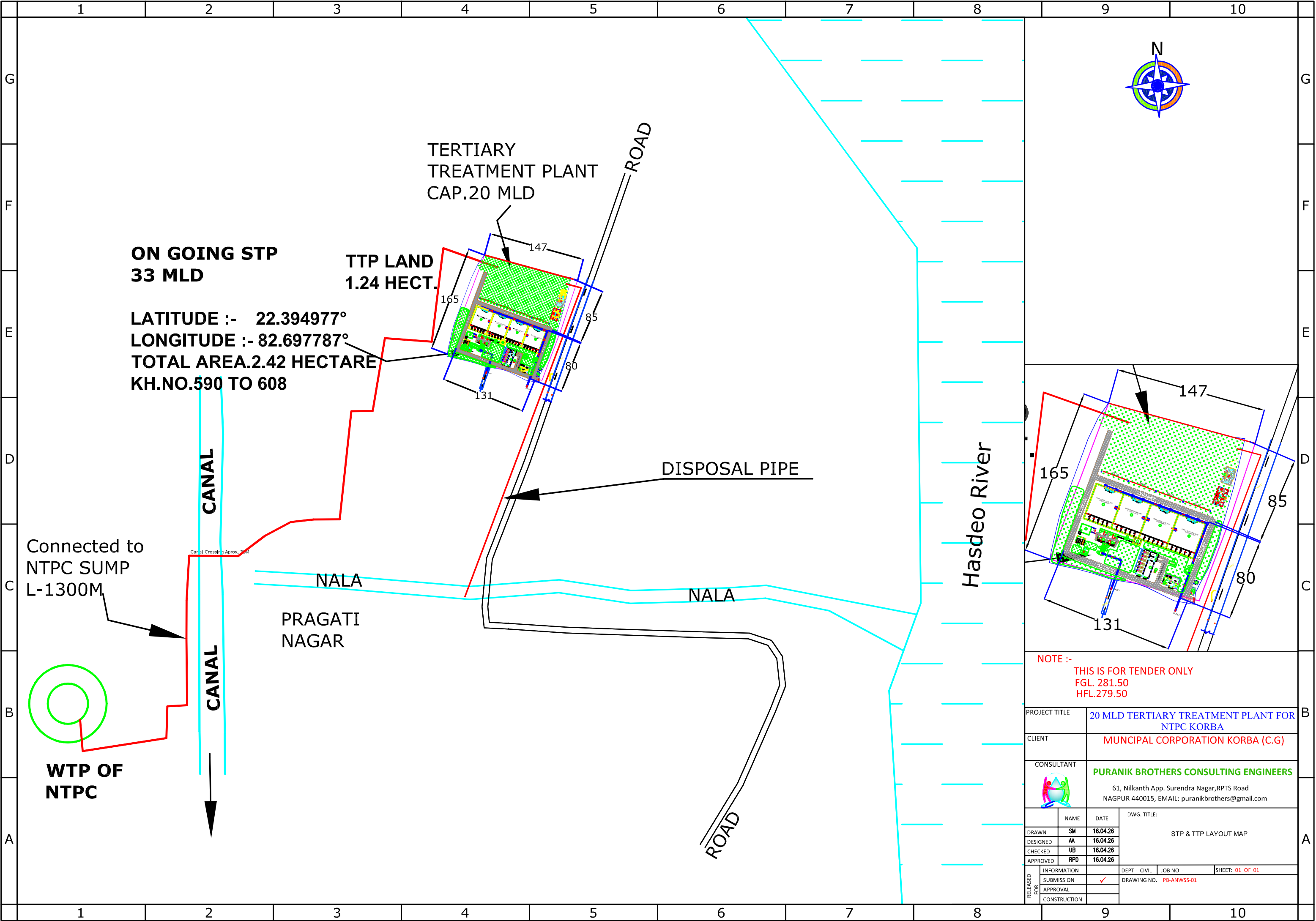
Additional Clarifications

Sr No.	Clarifications
1	Membranes: 1. At any moment in N/N-1 condition the flux should be in range of min 25 LMH to max 35 LMH for PVDF UF Membrane. 2. The UF membrane having following specification are allowed in addition to the ones mentioned in tender: MOC Material- PVDF, Operation-Out to In, Pore Size- 0.05 micron 3. Additional Approved vendors for membranes – Toray, DUPONT, Hydronautics, Veolia/Suez, Asahi Kasei, Inge, LG
2	Payment Terms: After Testing, Commissioning, and PG tests mentioned in Annexure F-1, F-III, F-IV & F-VI and on Page Nos. 247, 249 & 257 shall be read as “After Testing and Commissioning.”
3	General: Bidder shall provide suitable Energy recovery devices in RO System

Note: All other conditions in the tender shall remain unchanged.

Annexure - 1

Key Plan



NOTE :-
THIS IS FOR TENDER ONLY
FGL. 281.50
HFL.279.50

PROJECT TITLE		20 MLD TERTIARY TREATMENT PLANT FOR NTPC KORBA	
CLIENT		MUNCIPAL CORPORATION KORBA (C.G)	
CONSULTANT		PURANIK BROTHERS CONSULTING ENGINEERS	
		61, Nilkanth App. Surendra Nagar, RPTS Road NAGPUR 440015, EMAIL: puranikbrothers@gmail.com	
	NAME	DATE	DWG. TITLE: STP & TTP LAYOUT MAP
DRAWN	SM	16.04.26	
DESIGNED	AA	16.04.26	
CHECKED	UB	16.04.26	
APPROVED	RPD	16.04.26	

RELEASED FOR	INFORMATION		DEPT - CIVIL	JOB NO -	SHEET: 01 OF 01
	SUBMISSION	✓	DRAWING NO.	PB-ANWSS-01	
	APPROVAL				
	CONSTRUCTION				

Annexure - 2

Plot Plan

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10



TERTIARY TREATMENT PLANT
CAP.20 MLD
1.24 Hec

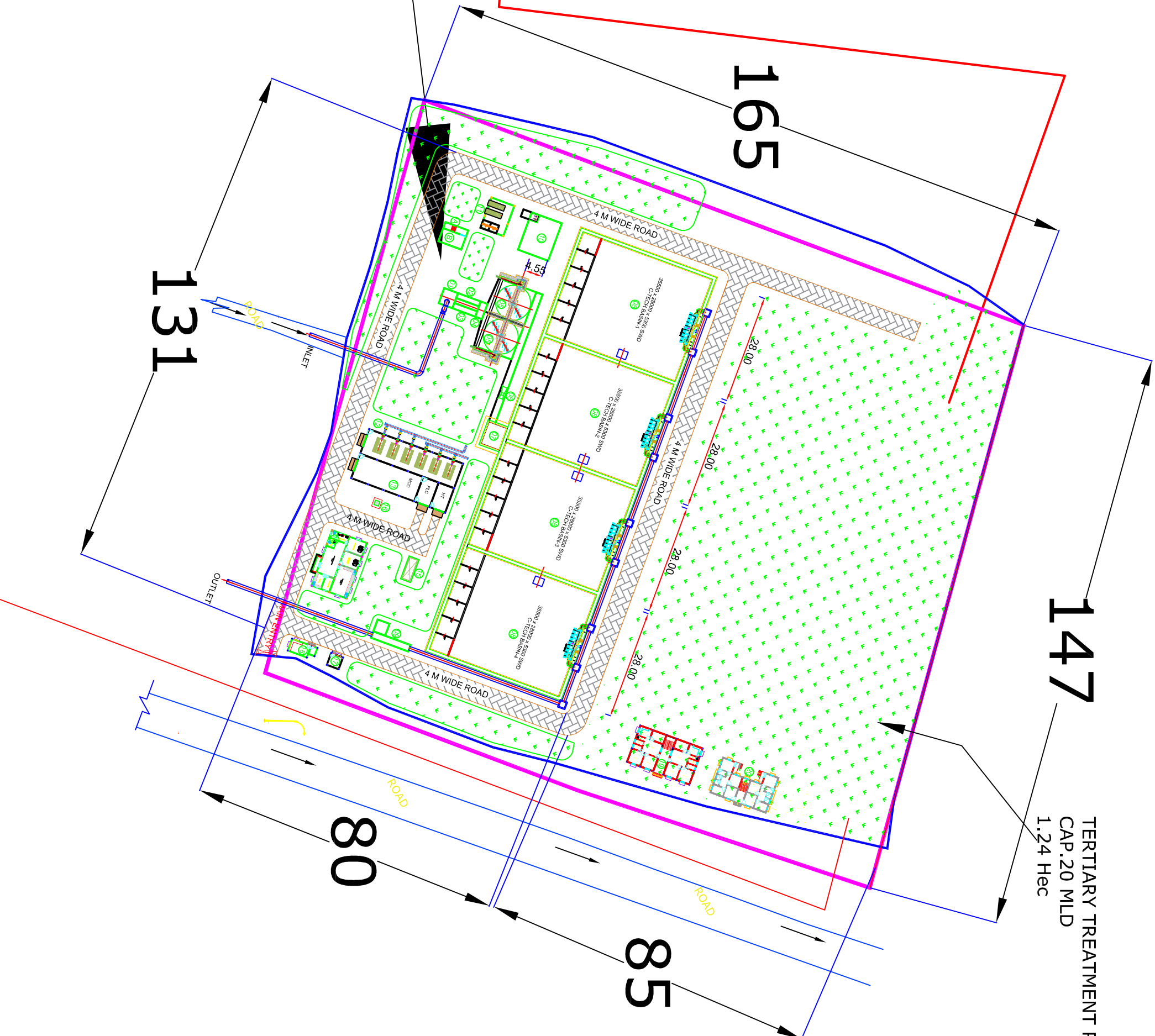
147

165

85

80

131



NOTE :- THIS IS FOR TENDER ONLY
FGL. 281.50
HFL.279.50

PROJECT TITLE		20 MLD TERTIARY TREATMENT PLANT FOR	
CLIENT		NTPC KORBA	
CONSULTANT		PURANIK BROTHERS CONSULTING ENGINEERS	
		61, Nilkanth App. Surenra Nagar, RPT5 Road	
		NAGPUR 440015, EMAIL: puranikbrothers@gmail.com	
		DWG. TITLE:	
		PLOT PLAN	
DRAWN		NAME	DATE
DESIGNED		SM	16.04.26
CHECKED		JA	16.04.26
APPROVED		UB	16.04.26
INFORMATION		RPD	16.04.26
SUBMISSION			
APPROVAL			
RELEASED FOR CONSTRUCTION			
		DEPT - CIVIL	JOB NO. -
		DRAWING NO. PB-ANWSS-01	SHEET: 01 OF 01

Annexure - 3

L- Section

Annexure - 4

Soil Report

4.5 DETERMINATION OF BEARING CAPACITY AS PER IS: 6403-1981**BH-1 AT DEPTH- 1.5M****Size of Foundation**

Depth of Foundation, $D_f = 1.5$ M (Below EGL)
 Width of Foundation, $B = 2$ M
 Length of Foundation, $L = 2$ M
 $B + D_f = 3.5$
 Water Table Correction Factor, $w' = 0$
 $\alpha =$ (Inclination of the Load to the vertical, in Degree) = 0°
 Void Ratio, $e =$

As per the soil Report

$\phi = 22.00^\circ$ $\phi' = 15.15^\circ$
 $C = 0$ t/sqm $C' = 0$ t/sqm
The Net Ultimate Bearing Capacity is given as: $q_u = C.N_c.Sc.Dc.Ic + q.(Nq-1).Sq.Dq.Iq + 0.5.B.\gamma.N\gamma.S\gamma.D\gamma.I\gamma.w'$
FOS = 2.5

Bearing Capacity Factors:

$N_c = 16.88$	$N_c' = 11.08$	Overburden Pressure, $q = 1.173$ t/sqm
$N_q = 7.82$	$N_q' = 4.00$	Width of Foundation, $B = 2$ m
$N_\gamma = 7.13$	$N_\gamma' = 2.71$	Bulk Density below Foundation, $\gamma = 1.782$ t/sqm
		Submerge Density = 0.782 t/sqm

Shape Factors: [IS: 6403-1981]

[Table 2]

$Sc = [1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	$= 1.2$
$Sq = [1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	$= 1.2$
$S\gamma = [1 - 0.4 \times (B/L)]$	$= (1 - 0.4 \times (2/2))$	$= 0.6$

Depth Factors: [IS:6403-1981]

$N\phi = \tan^2 (45^\circ + \phi/2)$	$N\phi' = \tan^2 (45^\circ + \phi'/2)$
2.20	1.71
$Dc = 1.22$	$Dc' = 1.2$
$Dq = 1.11$	$Dq' = 1.1$
$D\gamma = 1.11$	$D\gamma' = 1.1$

Inclination Factors: [IS:6403-1981]

$Ic = [1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	$= 1.00$
$Iq = [1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	$= 1.00$
$I\gamma = [1 - (f/\alpha)]^2$	$= (1 + 0.1 (0/22))^2$	$= 1.00$

Net Safe Bearing Capacity

For General Shear Failure Criteria = 4.26 t/sqm
 For Local Shear Failure Criteria = 1.86 t/sqm
Recommended Net Safe Bearing Capacity = 4.26 t/sqm

4.5 DETERMINATION OF BEARING CAPACITY AS PER IS: 6403-1981

BH-1 AT DEPTH- 3M

Size of Foundation

Depth of Foundation, D_f = 3 M (Below EGL)
Width of Foundation, B = 2 M
Length of Foundation, L = 2 M
 $B + D_f$ = 5
Water Table Correction Factor, w' = 0
 α = (Inclination of the Load to the vertical, in Degree) = 0 °
Void Ratio, e =

As per the soil Report

ϕ = 25.00 ° ϕ' = 17.35 °
 C = 0 t/sqm C' = 0 t/sqm
The Net Ultimate Bearing Capacity is given as: $q_u = C \cdot N_c \cdot S_c \cdot D_c \cdot I_c + q \cdot (N_q - 1) \cdot S_q \cdot D_q \cdot I_q + 0.5 \cdot B \cdot \gamma \cdot N_\gamma \cdot S_\gamma \cdot D_\gamma \cdot I_\gamma \cdot w'$
FOS = 2.5

Bearing Capacity Factors:

N_c =	20.72	N_c' =	12.61	Overburden Pressure, q =	2.355 t/sqm
N_q =	10.66	N_q' =	4.94	Width of Foundation, B =	2 m
N_γ =	10.88	N_γ' =	3.72	Bulk Density below Foundation, γ =	1.785 t/sqm
				Submerge Density =	0.785 t/sqm

Shape Factors: [IS: 6403-1981]

[Table 2]

S_c =	$[1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	=	1.2
S_q =	$[1 + 0.2 \times (B/L)]$	$= (1 + 0.2 \times (2/2))$	=	1.2
S_γ =	$[1 - 0.4 \times (B/L)]$	$= (1 - 0.4 \times (2/2))$	=	0.6

Depth Factors: [IS: 6403-1981]

$N\phi$ =	$\tan^2 (45^\circ + \phi/2)$	$N\phi'$ =	$\tan^2 (45^\circ + \phi'/2)$
	2.46		1.85
D_c =	1.47	D_c' =	1.41
D_q =	1.24	D_q' =	1.2
D_γ =	1.24	D_γ' =	1.2

Inclination Factors: [IS: 6403-1981]

I_c =	$[1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	=	1.00
I_q =	$[1 - (\alpha/90)]^2$	$= (1 - (0/90))^2$	=	1.00
I_γ =	$[1 - (f/\alpha)]^2$	$= (1 + 0.1 (0/25))^2$	=	1.00

Net Safe Bearing Capacity

For General Shear Failure Criteria = 13.54 t/sqm
For Local Shear Failure Criteria = 5.35 t/sqm
Recommended Net Safe Bearing Capacity = 13.54 t/sqm

4.5 DETERMINATION OF BEARING CAPACITY AS PER IS: 6403-1981**BH-1 AT DEPTH- 4.5M****Size of Foundation**Depth of Foundation, D_f = 4.5 M (Below EGL)

Width of Foundation, B = 2 M

Length of Foundation, L = 2 M

B + D_f = 6.5

Water Table Correction Factor, w' = 0

 α = (Inclination of the Load to the vertical, in Degree) = 0°

Void Ratio, e =

As per the soil Report ϕ = 25.60° ϕ' = 17.80°

C = 0 t/sqm C' = 0 t/sqm

The Net Ultimate Bearing Capacity is given as: $q_u = C.N_c.Sc.Dc.Ic + q.(N_q-1).Sq.Dq.Iq + 0.5.B.\gamma.N_\gamma.S_\gamma.D_\gamma.I_\gamma.w'$

FOS = 2.5

Bearing Capacity Factors:

N _c =	21.64	N _c ' =	12.95	Overburden Pressure, q =	3.537 t/sqm
N _q =	11.37	N _q ' =	5.16	Width of Foundation, B =	2 m
N _γ =	11.88	N _γ ' =	3.96	Bulk Density below Foundation, γ =	1.786 t/sqm
				Submerge Density =	0.786 t/sqm

Shape Factors: [IS: 6403-1981]

[Table 2]

Sc =	[1 + 0.2 X (B/L)]	= (1 + 0.2 x (2/2))	=	1.2
Sq =	[1 + 0.2 X (B/L)]	= (1 + 0.2 x (2/2))	=	1.2
S _γ =	[1 - 0.4 X (B/L)]	= (1 - 0.4 x (2/2))	=	0.6

Depth Factors: [IS: 6403-1981]

N ϕ =	$\tan^2 (45^\circ + \phi/2)$	N ϕ' =	$\tan^2 (45^\circ + \phi'/2)$
	2.52		1.88
D _c =	1.71	D _c ' =	1.62
D _q =	1.36	D _q ' =	1.31
D _γ =	1.36	D _γ ' =	1.31

Inclination Factors: [IS: 6403-1981]

I _c =	[1 - (α/90)] ²	= (1 - (0/90)) ²	=	1.00
I _q =	[1 - (α/90)] ²	= (1 - (0/90)) ²	=	1.00
I _γ =	[1 - (f/α)] ²	= (1 + 0.1 (0/25.6)) ²	=	1.00

Net Safe Bearing Capacity

For General Shear Failure Criteria = 23.95 t/sqm

For Local Shear Failure Criteria = 9.25 t/sqm

Recommended Net Safe Bearing Capacity = 23.95 t/sqm

4.5 DETERMINATION OF BEARING CAPACITY AS PER IS: 6403-1981**BH-1 AT DEPTH- 6M****Size of Foundation**

Depth of Foundation, Df= 6 M (Below EGL)
 Width of Foundation, B= 2 M
 Length of Foundation, L= 2 M
 B+D_f = 8
 Water Table Correction Factor, w'= 0
 α= (Inclination of the Load to the vertical, in Degree) = 0 °
 Void Ratio, e =

As per the soil Report

φ = 27.80 ° φ' = 19.46 °
 C= 0 t/sqm C' = 0 t/sqm
The Net Ultimate Bearing Capacity is given as: q_u= C.Nc.Sc.Dc.lc+q.(Nq-1).Sq.Dq.lq+0.5.B.γ.Nγ.Sγ.Dγ.lγ.w'
 FOS = 2.5

Bearing Capacity Factors:

Nc= 25.43	Nc' = 14.34	Overburden Pressure, q= 4.764 t/sqm
Nq= 14.42	Nq' = 6.07	Width of Foundatio, B= 2 m
N _γ = 16.29	N _γ ' = 5.00	Bulk Density below Foundation, γ= 1.794 t/sqm
		Submerge Density= 0.794 t/sqm

Shape Factors: [IS: 6403-1981]

[Table 2]

Sc=	= [1 + 0.2 X (B/L)]	= (1 + 0.2 x (2/2))	= 1.2
Sq=	= [1 + 0.2 X (B/L)]	= (1 + 0.2 x (2/2))	= 1.2
S _γ =	= [1 - 0.4 X (B/L)]	= (1 - 0.4 x (2/2))	= 0.6

Depth Factors: [IS:6403-1981]

Nφ=	tan ² (45° + φ/2)	Nφ'=	tan ² (45° + φ'/2)
	2.75		2.00
Dc=	1.99	Dc'=	1.85
Dq=	1.5	Dq'=	1.42
D _γ =	1.5	D _γ '=	1.42

Inclination Factors: [IS:6403-1981]

lc=	= [1 - (α/90)] ²	= (1 - (0/90)) ²	= 1.00
lq=	= [1 - (α/90)] ²	= (1 - (0/90)) ²	= 1.00
l _γ =	= [1 - (f/α)] ²	= (1 + 0.1 (0/27.8)) ²	= 1.00

Net Safe Bearing Capacity

For General Shear Failure Criteria = 46.02 t/sqm
 For Local Shear Failure Criteria = 16.48 t/sqm
Recommended Net Safe Bearing Capacity = 46.02 t/sqm