Bidder's Data Sheet

_____
(Bidder's Name)

2.8.5 Steam Turbine and Auxiliary Equipment

2.8.5.1 Steam Turbine

1) Steam Turbine

(1) Type *_____

(2) Number of Units *_____

(3) Manufacturer & Place *_____

(4) Speed (rpm) *_____

(5) Direction of Rotation viewed from Gas Turbine *_____

(6) Number of Cylinder *_____

(7) Number of Exhaust Flows *_____

(8) Direction of Exhaust *_____

(9) Performance Data at Design Conditions		Shurtan gas	Bukhara gas
Steam pressure			
HP	(bar)	*	
IP	(bar)	*	
LP	(bar)	*	
Steam temperature			
HP	(℃)	*	
IP	(℃)	*	
LP	(℃)	*	
Steam flow			
HP	(kg/h)	*	
IP	(kg/h)	*	
LP	(kg/h)	*	
Exhaust steam pressure	(kPa)	*	
Exhaust steam flow	(kg/h)	*	
Make up water	(%)	*	
Temperature at outlet of Feed Water Pump	(℃)	*	

(10) Dimension

Rotor length
- HP turbine
- IP turbine
- LP turbine

Maximum Width

Turbine bearing span
- HP turbine
- IP turbine

- LP turbine _____

Height of top above operating floor _____

(11) Weight (approx.)

Rotor (kg)
- HP turbine _____
- IP turbine _____
- LP turbine _____

Upper half casing (kg)
- HP turbine _____
- IP turbine _____
- LP turbine _____

Lower half casing (kg)
- HP turbine _____
- IP turbine _____
- LP turbine _____

Assembled total weight (kg) *_____

(12) Length of last stage rotor blade (mm) *_____

(13) Fundamental lateral and torsional natural frequencies of the last stage rotor blade *_____

(14) Annulus area at last stage rotor blade outlet (m^2) *_____

(15) Journal Bearing

Type *_____

Number *_____

Size *_____

(16) Thrust bearing type (if applicable)

Type *_____

Location *_____

(17) Diaphragm flexible coupling (if applicable)

Manufacturer *_____

Type

Model No. *_____

Allowable axial movement (mm) *_____

Allowable deflection angle (degree) *_____

Diaphragm size (mm) *_____

Allowable transmitted continuous torque (times the rated torque) *_____

Allowable transmitted transient torque (times the rated torque) *_____

(18) Auto-synchronising clutch (if applicable)

Manufacturer *_____

Type *_____

Model No. *_____

Allowable transmitted continuous torque (times the rated torque) *_____

Allowable transmitted transient torque (times the rated torque) *_____

(19) Material	HP	IP	LP
Turbine rotor	*	*	*
Casing	*	*	*
Blade			
• Stator	*	*	*
• Rotor	*	*	*
Casing bolt			
Steam chest			
(20) Type of blading(reaction degree %)	*	*	*

(21) Stop Valves

Number *_____ *_____ *_____

Size (mm) *_____ *_____ *_____

Material of

- Body *_____ *_____ *_____
- Stem *_____ *_____ *_____
- Plug *_____ *_____ *_____
- Sheet *_____ *_____ *_____

(22) Control valves

Type *_____ *_____ *_____

Number *_____ *_____ *_____

Size (mm) *_____ *_____ *_____

Material of

- Body *_____ *_____ *_____
- Stem *_____ *_____ *_____
- Plug *_____ *_____ *_____
- Sheet *_____ *_____ *_____

2) Protection System

(1) Protection devices

Turbine Overspeed trip

- Type *_____
- Set value (%) *_____

Thrust failure alarm & trip(if thrust bearing separately applied from the gas turbine) *_____

*_____

Low vacuum trip device *_____

Low bearing oil pressure alarm and trip device *_____

High shaft vibration alarm & trip *_____

High turbine exhaust temperature alarm & trip *_____

(2) Vacuum breaker

Type and size *_____

Number *_____

(3) Atmospheric relief diaphragm

dia. x thickness (mm) *_____

Material *_____

(4) Turbine exhaust water spray device *_____

3) Lubricating and Control Oil System (if provided separately from that of the gas turbine)

(1) Brand of

Lubrication oil *_____

Control oil *_____

(2) Oil capacity of system *_____

(3) Bearing oil circulation rate *_____

(4) Bearing oil pressure *_____

(5) Control oil pressure *_____

(6) Oil reservoir tank

Type *_____

Manufacturer *_____

Number *_____

Capacity (m^3) *_____

Dimension (mm) _____

			_____X_____X_____
	Material		
	Weight complete	(kg) approx.	
	Type of interior coat		

(7) Main oil pump

Type		
Manufacturer		*
Capacity		*
Discharge and suction pressure	(bar(g))	*
Material		*
Casing		
Shaft		*
Impeller		*
Weight complete	(kg) approx.	*

(8) Oil cooler

Type		
Number		*
Manufacturer		*
Cooling surface area	(m^2)	*
Cooling water inlet temp.	(℃)	*
Cooling water outlet temp.	(℃)	*
Oil inlet temperature	(℃)	*
Oil outlet temperature	(℃)	*
Cooling water flow	(m^3/h)	*
Oil flow	(m^3/h)	

Tube size (outside diameter x thickness)	(mm)	*_____ _____x_____
Design pressure		
Tube side	(bar(g))	
Shell side	(bar(g))	*_____
Material		*_____
Tube		
Shell		_____
Water chamber		_____
Tube sheet		_____
Dimension	(mm)	_____
Weight (each)	(kg) approx.	_____
(9) Auxiliary oil pump		_____
Type		
Manufacturer		*_____
Number		*_____
Capacity	(m^3/h)	*_____
Discharge pressure	(bar(g))	*_____
Speed	(rpm)	*_____
Material		_____
• Casing		
• Shaft		_____
• Impeller		
Motor		_____
		_____

	Weight (assembly)	approx.	The Bidder shall indicate the motor specification in accordance with Bidder's Data Sheet of Low Voltage Motor
(10)	Emergency oil pump		
	Type		_____
	Manufacturer		
	Number		*_____
	Capacity	(m^3/h)	*_____
	Discharge pressure	(bar(g))	*_____
	Speed	(rpm)	*_____
	Material		_____
	• Casing		_____
	• Shaft		
	• Impeller		_____
	Motor		_____
			_____
			The Bidder shall indicate the motor specification in accordance with Bidder's Data Sheet of Low Voltage Motor.

(11) Oil Purifier

Type		*
Manufacturer		*
Number		*
Capacity	(m^3/h)	*
Weight complete	(kg) approx.	*

(12) Control oil booster pump

Type		*
Manufacturer		*
Number		*
Capacity	(m^3/h)	*
Discharge pressure	(bar(g))	
Speed	(rpm)	
Material		
• Casing		
• Shaft		
• Impeller or gear		
Motor		The Bidder shall indicate the motor specification in accordance with Bidder's Data Sheet of Low Voltage Motor.
Weight (assembly)	(kg) approx.	

(13) Vapor extractor for oil reservoir tank

Type		*_____
Manufacturer		*_____
Number		*_____
Capacity	(m^3/h)	*_____
Motor		The Bidder shall indicate the motor specification in accordance with Bidder's Data Sheet of Low Voltage Motor.
Weight complete	(kg) approx.	_____

(14) Vapour extractor for oil purifier

Type		*_____
Manufacturer		*_____
Number		*_____
Capacity	(m^3/h)	*_____
Motor		The Bidder shall indicate the motor specification in accordance in Bidder's Data Sheet. of Low Voltage Motor.
Weight complete	(kg) approx.	_____

4) Gland Steam Seal System

(1) Gland steam seal regulator

Type		*_____
Size		_____
Regulating pressure	(bar(g))	*_____

(2) Gland steam exhaust blower

Type		* _____
Manufacturer		* _____
Number		* _____
Capacity	(m^3/h)	* _____
Exhaust pressure	(mmHg abs.)	* _____
Speed	(rpm)	_____
Material		
• Casing		_____
• Shaft		_____
• Impeller		_____
Motor		The Bidder shall indicate the motor specification in accordance with Bidder's Data Sheet of Low Voltage Motor
Weight (assembly)	(kg) approx.	_____

3) Gland steam condenser

Type		* _____
Manufacturer		* _____
Number		* _____
Cooling surface area	(m^2)	_____
Cooling water flow	(m^3/h)	_____
Cooling water temp. rise	(℃)	_____
Tube size and thickness	(mm)	_____
Number of tube		_____
Heat transfer coefficient	(kJ/h/m^2/℃)	_____

Friction loss through tubes	(bar)	*
Dimension		
• Total length	(mm)	
• Shell diameter	(mm)	
Design pressure		
• Tube side	(bar(g))	
• Shell side	(bar(g))	*
Design temperature		*
• Tube side	(℃)	
• Shell side	(℃)	*
Material		*
• Tube		
• Shell		
• Water box		
• Tube sheet		
Weight complete	(kg) approx.	

Bidder's Data Sheet

Bidder's Name

2.8.5.2 Steam Turbine Bypass System

		HP	IP	LP
1) Bypass Valve				
Type		*	*	*
Manufacturer & Place		*	*	*
Size		*	*	*
Number		*	*	*
Design conditions				
• flow rate	(kg/h)	*	*	*
• temperature	(℃)	*	*	*
• pressure (bar)		*	*	*
Material				
• Body		*	*	*
• Stem		*	*	*
• Seat		*	*	*
• plug		*	*	*
2) Desuperheating Valve				
Type		*	*	*
Manufacturer & Place		*	*	*
Size		*	*	*
Number		*	*	*
Material				

- Body *_____*_____*_____
- Stem *_____*_____*_____
- Seat *_____*_____*_____
- Plug *_____*_____*_____

Bidder's Data Sheet

_____
Bidder's Name

2.8.5.3 Surface Condenser

(1) Condenser

Type		* _____
Manufacturer		* _____
Number		* _____
Design Code/Standard		* _____
Design heat duty (at Rating)	(kJ/H)	* _____
Design absolute pressure(mmHg abs.)		* _____
Heat transfer coefficient	($kJ/h/m^2/℃$)	* _____
Circulating water quantity	(m^3/h)	* _____
Circulating water inlet temperature	(℃)	* _____
Circulating water outlet Temperature	(℃)	* _____
Circulating water temperature rise across the condenser	(℃)	* _____
Cleanliness factor	(%)	* _____
Condensate oxygen content	(cc/l)	* _____
Water velocity in tube	(m/s)	* _____
Pressure loss	(m WC)	* _____
Total effective tube surface	(m^2)	* _____

Tubes;

Effective tube length	(mm)	_____

Size and thickness	(mm)	*
Number of tube		*
Number of tube in air cooling zone		*
Dimension;		
Overall length	(mm)	
High (including neck)	(mm)	
Overall width	(mm)	
Material;		
Shell		*
Water box		*
Tube		*
Tube sheet		*
Hot well		*
Tube support plate		*
Metal thickness;		
Shell	(mm)	
Water box	(mm)	
Tube sheet	(mm)	
Hot well	(mm)	
Hot well capacity	(m^3)	*
Design pressure		
Water box and tube	(bar(g))	*
Shell	(bar(g))	*

Maximum allowable % of plugged tubes to

meet the rated output (%) *

Weight;

Empty (kg) approx.

Operating (kg) approx.

Flooded (kg) approx.

Divided package number of shipping

(2) Expansion joint for turbine exhaust connection

Design vacuum pressure (mm Hg ab)

Material

Thickness (mm)

(3) Butterfly valves (including water box outlet and internal valves)

Type *

Manufacturer *

Number *

Size (mm)

Material

Motor

The Bidder shall indicate the motor specification in accordance with Bidder's Data Sheet of Low Voltage Motor

(4) Expansion joints for circulating water piping inlet and outlet

Type

Number

Size (mm) _____

Material _____

(5) Ball cleaning equipment

Type * _____

Manufacturer * _____

Number * _____

Automatic operation * Yes No

Materials

- Recirculation pump _____
- Collector _____
- Ball injector nozzle _____
- Ball distributor _____
- Strainer _____
- Strainer Casing _____
- Piping _____

Control box

Type _____

Size (mm) _____

Bidder's Data Sheet

_____
Bidder's Name

2.8.5.4 Air Extraction Pump

(1) Vacuum pumps

Type		* _____
Manufacturer		* _____
Number		* _____
Air suction capacity	(kg/h)	* _____
Suction vacuum	(mmHg abs.)	* _____
Number of stages		_____
Speed	(rpm)	_____
Seal water capacity	(m^3/h)	_____
Vacuum raising time from 0 mmHg to the design vacuum		* _____
Material		
• Casing		* _____
• Impeller		* _____
• Shaft		* _____
Motor		The Bidder shall indicate the motor specification in accordance with Bidder's Data Sheet of Low Voltage Motor.

Bidder's Data Sheet

_____
(Bidder's Name)

2.8.5.5 Priming Vacuum Equipment

(if applicable)

(1) Priming vacuum pump (if applicable)

Type		*_____
Manufacturer		*_____
Number		*_____
Air suction capacity	(m^3/h)	*_____
Suction vacuum	(mmHg abs.)	*_____
Speed	(rpm)	_____
Material		
• Casing		*_____
• Impeller		*_____
• Shaft		*_____
Motor		The Bidder shall indicate the motor specification in accordance with Bidder's Data Sheet of Low Voltage Motor.

Bidder's Data Sheet

Bidder's Name

2.8.6 Hot Water Supply System

Item NO.	Description	Units	Bidder to fill in
1.0	**Design Conditions**		
	Maximum flow of hot water	t/h	*
	Water temperature		*
	a) Inlet of heater	°C	*
	b) Outlet of heater	°C	*
	Expected minimum load of gas turbine for 100 Gcal/h heat supply	%	*
2.0	**Main Hot Water Pumps**		
	Manufacturer		*
	Number		*
	Type		*
	Capacity	m^3/s	*
	Inlet pressure	bar(g)	*
	Discharge pressure	bar(g)	*
	Total head	bar	*
	Maximum fluid temperature	°C	*
	Required NPSH	m	*
	Efficiency	%	
	Speed	rpm	*
	Rated power	kW	*
	Materials - Casing		*
	- Impeller		*
	- Shaft		*
	- Shaft sleeve		*
	Type of bearing		
2.1	**Auxiliary Hot Water Pumps**		

Item NO.	Description	Units	Bidder to fill in
	Manufacturer		
	Number		*
	Type		*
	Capacity	m^3/s	*
	Inlet pressure	bar(g)	*
	Discharge pressure	bar(g)	*
	Total head	bar	*
	Maximum fluid temperature	°C	*
	Required NPSH	m	*
	Efficiency	%	
	Speed	rpm	*
	Rated power	kW	*
	Materials - Casing		*
	- Impeller		*
	- Shaft		*
	- Shaft sleeve		*
	Type of bearing		
3.0	**Hot Water Heaters**		
	Manufacturer		*
	Number		*
	Type		*
	Water flow	t/h	*
	Inlet water temperature	°C	*
	Outlet water temperature	°C	*
	Heating steam - Pressure	bar	*
	- Temperature	°C	*
	Internal pressure at design conditions	bar	*
	Drain cooling zone	yes/no	*
	Drain outlet temperature	°C	*
	Total heating surface	m^2	*

Item NO.	Description	Units	Bidder to fill in
	Materials - Tube		*
	- Tube plate		*
	- Shell		*
	Approx. dimensions: - Diameter	m	
	- Length	m	
3.1	**Condensate Tank**		
	Number		*
	Capacty	m^3	*
	Material		*
4.0	**Main Condensate Return Pumps**		
	Manufacturer		*
	Number		*
	Type		*
	Capacity	m^3/s	*
	Inlet pressure	bar(g)	*
	Discharge pressure	bar(g)	*
	Total head	bar	*
	Maximum fluid temperature	°C	*
	Required NPSH	m	*
	Efficiency	%	
	Speed	rpm	*
	Rated power	kW	*
	Materials - Casing		*
	- Impeller		*
	- Shaft		*
	- Shaft sleeve		*
	Type of bearing		
4.1	**Auxiliary Condensate Return Pumps**		
	Manufacturer		

Item NO.	Description	Units	Bidder to fill in
	Number		*
	Type		*
	Capacity	m^3/s	*
	Inlet pressure	bar(g)	*
	Discharge pressure	bar(g)	*
	Total head	bar	*
	Maximum fluid temperature	°C	*
	Required NPSH	m	*
	Efficiency	%	
	Speed	rpm	*
	Rated power	kW	*
	Materials - Casing		*
	- Impeller		*
	- Shaft		*
	- Shaft sleeve		*
	Type of bearing		
5.0	**Reserve Water Tank**		
	Manufacturer		
	Number		*
	Type		*
	Capacity		*
	Dimensions - Diameter	m	*
	- Height	m	*
	Plate thickness - Side Plate	mm	*
	- Roof	mm	*
	- Bottom	mm	*
	Material		*
	Sealing method		*
5.1	**Reserve Water Pumps**		
	Manufacturer		*

Item NO.	Description	Units	Bidder to fill in
	Number		*
	Type		*
	Capacity	m^3/s	*
	Inlet pressure	bar(g)	*
	Discharge pressure	bar(g)	*
	Total head	bar	*
	Maximum fluid temperature	°C	*
	Required NPSH	m	*
	Efficiency	%	
	Speed	rpm	*
	Rated power	kW	*
	Materials - Casing		*
	- Impeller		*
	- Shaft		*
	- Shaft sleeve		*
	Type of bearing		
6.0	**Make-up Water Deaerator**		
	Manufacture		*
	Number		*
	Type		*
	Capacity	t/h	*
	Dissolved oxygen - Inlet	μ g/l	*
	- Outlet	μ g/l	*
	Water temperature	°C	*
	Internal operating pressure	bar	*
	Design pressure	bar(g)	
	Vacuum pump - Number		*
	- Type		*
	- Capacity	m^3/min.	*
	- Rated power	kW	*

Item NO.	Description	Units	Bidder to fill in
	Materials - Shell plate		*
	- Internal parts		*
6.1	**Water Heater for Deaerator**		
	Manufacturer		*
	Number		*
	Type		*
	Capacity	t/h	*
	Inlet water temperature	°C	*
	Outlet water temperature	°C	*
	Heating steam - Pressure	bar	*
	- Temperature	°C	*
	Materials - Tube		*
	- Shell		*

Bidder's Data Sheet

_____
Bidder's Name

2.8.7 Condensate and Feedwater System

2.8.7.1 Condensate Pump

(1) Condensate pump

Type *_____

Manufacturer *_____

Number *_____

Performance

- Rated Capacity (kg/h) *_____
- Total head (bar) *_____
- Shut off head (bar(g)) *_____
- Pump efficiency at rated (%) *_____
- Shaft horse power (kW) *_____
- NPSH required (m) *_____
- Speed (rpm) *_____

Number of stages *_____

Connection size

- Suction (mm) *_____
- Discharge (mm) *_____

Material *_____

- Impeller *_____
- Casing *_____
- Shaft *_____
- Shaft sleeves *_____
- Outer barrel _____

Type of gland packing _____

Motor — The Bidder shall indicate the motor specification in accordance with the Bidder's Data Sheet. of Medium Voltage Motor.

Pump characteristic curves submitted — Yes No

(2) **Power consumption at 100 % power output** (kW) *_____

Bidder's Data Sheet

_____
Bidder's Name

2.8.8 Drain Recovery System

(1) Drain Recovery Pumps

Type		* _____
Manufacturer		* _____
Number provided		* _____
Performance		
• Capacity	(m^3/h)	* _____
• Total head	(bar)	* _____
• Shut off head	(bar(g))	* _____
• Shaft horse power	(kW)	* _____
Speed	(rpm)	_____
Connection size		
• Suction	(mm)	_____
• Discharge	(mm)	_____
Material		
• Impeller		* _____
• Casing		* _____
• Shaft		* _____
• Shaft sleeve		* _____
Motor capacity	(kW)	* _____

(2) Drain Recovery Tank

Type		*
Number provided		*
Capacity	(m^3)	*
Size		
• Width	(m)	*
• Height	(m)	*
• Depth	(m)	*
Material		*

(3) De-iron Filter

Type		*
Number provided		*
Capacity	(m^3/h)	*
Material of filter element		*
Expected iron content at outlet	(mg/l)	*

(4) HRSG Drain Recovery Pumps

Type		*
Manufacturer		*
Number provided		*
Performance		
• Capacity	(m^3/h)	*
		*

- Total head (bar) *_____
- Shut off head (bar(g)) *_____
- Shaft horse power (kW) _____

Speed (rpm)

Connection size

- Suction (mm) _____
- Discharge (mm) _____

Material

- Impeller *_____
- Casing *_____
- Shaft *_____
- Shaft sleeve *_____

Motor capacity (kW) *_____

(5) HRSG Drain Tank *_____

Type *_____

Number provided *_____

Capacity (m^3)

Size *_____

- Width (m) *_____
- Height (m) *_____
- Depth (m) *_____

Material

Bidder's Data Sheet

_____
Bidder's Name

2.8.9 Circulating Water System

(1) General Specification

Number of streams		* _____
Capacity of total	(m^3/h)	* _____
Operating floor level	(m)	* _____
Minimum water level	(m)	* _____
Maximum water level	(m)	* _____

(2) Inclined Bar Screen

Manufacturer		* _____
Number		* _____
Type		* _____
Capacity per each	(m^3/h)	* _____
Dimension (length x width)	(mm)	* _____
Submergence of screen	(m)	* _____
Effective screen area	(m^2)	* _____
Bar size and numbers of bars		_____
Clearance between bars	(mm)	* _____
Type of trash rake		* _____

Materials:

Frame	* _____
Bar	* _____
Guides	* _____

Chain _____

Roller _____

Motor capacity (kW) _____

(3) Traveling Screen

Manufacturer *_____

Number *_____

Type *_____

Duty of screen (m^3/h) *_____

Submergence of screen (m) * _____

Effective screening area (m^2) * _____

Operation speed of wheel rim:

High speed (m/min) * _____

Low speed (m/min) * _____

Head loss across screen:

When clean (mm) _____

When flushing required (mm) _____

Maximum diff. head loss (mm) *_____

Screen:

Screen mesh (mm) *_____

% open area (%) *_____

Method of adjustment of seal _____

Screen bearing type _____

Motor (kW) _____

*_____

Spray system:

Water capacity (m^3/h) _____

Spray pressure (bar(g)) _____

Material:

Frame work *_____

Hubs and gear wheels *_____

Screen panels *_____

Bearing *_____

Spray nozzle *_____

Spray pipe *_____

Trash basket *_____

Chains *_____

Dimensions:

Diameter of screen (m) *_____

Width of screen (m) *_____

(4) Washing Water Pumps

Manufacturer *_____

Number *_____

Type *_____

Capacity (m^3/h) *_____

Discharge pressure (bar(g)) *_____

Speed (rpm) _____

Shaft horse power (kW)

Discharge connection size	(mm)	_____
Type of strainer		_____
Material:		_____
Casing		* _____
Shaft		* _____
Impeller		* _____
Motor capacity	(kW)	* _____

(5) Gantry Crane (if applicable)

Manufacturer		_____
Type		_____
Capacity	(t)	_____
Lift	(m)	_____
Motor capacity	(kW)	_____

(6) Circulating Water Pumps

Manufacturer		* _____
Number		* _____
Type		* _____
Performance:		
Rated capacity	(m^3/h)	* _____
Total head	(m)	* _____
Shut off head	(m)	* _____
Pump efficiency	(%)	

Rated shaft horse power	(kW)	*
Motor capacity	(kW)	*
Speed	(rpm)	*
Submergence over bell mouth inlet	(m)	*
Dimension:		
Pump shaft length	(mm)	
Suction bell mouth diameter	(mm)	
Discharge connection dia.	(mm)	
Method of lubrication during start-up		
Lubricating water system		*
Type of seal		*
Material:		*
Impeller		
Suction bell mouth		*
Casing		*
Column and discharge elbow		*
Shaft		*
Seal		*
Bearing:		
Type of journal bearing		*
Type of thrust bearing		*
Motor capacity	(kW)	*

Pump characteristic curves provided (yes/no) *_____

(7) Discharge Valve

Manufacturer *_____

Number *_____

Type *_____

Size (mm) *_____

Material:

Body *_____

Disc *_____

Shaft *_____

Actuator:

Type *_____

Capacity (kW) *_____

Time (closing/opening) (sec) *_____

(8) Expansion Joints of Pump Discharge

Type *_____

Number *_____

Size (mm) *_____

Material *_____

(9) Circulating Water Pipes

Pump to condenser:

Material *_____

Size (mm) *_____

Thickness (mm) *_____

External corrosion protection *_____

Internal corrosion protection *_____

Condenser to seal weir:

Material *_____

Size (mm) *_____

Thickness (mm) *_____

External corrosion protection *_____

Internal corrosion protection *_____

Seal weir to the existing culvert:

Material *_____

Size (mm) *_____

Thickness (mm) *_____

External corrosion protection *_____

Internal corrosion protection *_____

(10) River Water Booster Pumps

Manufacturer *_____

Number *_____

Type *_____

Performance:

Capacity (m^3/h) *_____

Total head	(m)	*
Shut off head	(m)	
Motor capacity	(kW)	*
Speed	(rpm)	*
Type of seal		
Material:		
Impeller		*
Shaft		*
Casing		*
Seal		*

(11) Stop Gates

Manufacturer		*
Number		*
Type		*
Dimension	(mm)	
Material:		
Plate		
Sealing strips		
Guide track		
Wearing strips		

Bidder's Data Sheet

Bidder's Name

2.8.10 Water Treatment System

Item NO.	Description	Units	Bidder to fill in
1.0	**Raw water pump**		
1.1	Type		
1.2	Manufacturer		
1.3	Number		*
1.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
1.5	Weight complete (approx)	kg	
1.6	Material		
2.0	**Sulphuric acid dosing pump for clarifier**		
2.1	Type		
2.2	Manufacturer		
2.3	Number		*
2.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
2.5	Weight complete (approx)	kg	
2.6	Material		
3.0	**Clarifier**		
3.1	Type		*
3.2	Manufacturer		
3.3	Number of clarifier		*
3.4	Capacity	m^3/h	*

Item NO.	Description	Units	Bidder to fill in
	- Motor for agitator		
	- pump	m^3/h	
3.5	Weight complete (approx)	t	
3.6	Number of well		
3.7	Number of pump		
3.8	Material		
3.9	Total suspended solids for design	mg/l	
4.0	**Filter**		
4.1	Manufacturer		*
4.2	Country of origin		*
4.3	Number of Units		*
4.4	Water throughput rate per unit		
	a) Maximum	m^3/h	*
	b) Design	m^3/h	*
	c) Minimum	m^3/h	*
4.5	Type of vessel/tank construction		
4.6	Materials of vessel/tank construction		*
4.7	Thickness of vessel/tank lining	mm	
4.8	Dimensions		
	a) straight side length	mm	
	b) straight side thickness	mm	
	c) dished end thickness	mm	
	d) Diameter	mm	*
	e) overall height above floor	mm	*
4.9	Design pressure	bar(g)	
4.10	Design code		*
4.11	Inlet pressure		
	a) maximum (dirty)	bar(g)	

Item NO.	Description	Units	Bidder to fill in
	b) minimum (clean)	bar(g)	
4.12	Pressure drop in service at design rate, including top/bottom distributors		
	a) maximum (dirty)	bar	
	b) minimum (clean)	bar	
4.13	Filter bed surface area per unit	m^2	
4.14	Filtration service rate		
	a) Maximum	$m^3/m^2/h$	
	b) Design	$m^3/m^2/h$	
	c) Minimum	$m^3/m^2/h$	
4.15	Service period between cycles	h	*
4.16	Wash cycle		
	a) Drain down duration	min	
	b) Air scour		
	- Pressure	kPa(g)	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	
	c) Backwash		
	- Quantity	m^3	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	
	- Water source		
	d) Rinse		
	- Quantity	m^3	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	
	- Water source		
4.17	Filtered water used per wash	m^3	*
4.18	Waste water per wash	m^3	

Item NO.	Description	Units	Bidder to fill in	
4.19	Inlet distributor			
	a) Type			
	b) Materials of construction			
4.20	Under drain system			
	a) Type			
	b) Materials of construction			
4.21	Surface wash system			
	a) Type			
	b) Materials of construction			
4.22	Air distribution system			
	a) Type			
	b) Materials of construction			
4.23	Type of filter material			
4.24	Depth of filter	mm		
4.25	Size of grading of filter material	mm		
4.26	Type of supporting bed material			
4.27	Supplier of supporting bed material			
4.28	Depths/size grading of support bed material	mm		
5.0	**Chemical Treatment**			
5.1	Coagulant and coagulant aid		Coagulant	Coagulant aid
	a) Name		*	*
	b) Chemical formula as supplied			
	c) Concentration as supplied – wt/wt or wt/vol.		*	*
	d) Concentration as injected – wt/wt or wt/vol.		*	*
	e) Consumption per unit			
	- Maximum	kg/h	*	*

Item NO.	Description	Units	Bidder to fill in	
	- Design	kg/h	*	*
	- Minimum	kg/h		
5.2	Dosing rate			
	a) Maximum	mg/l	*	*
	b) Design	mg/l	*	*
	c) Minimum	mg/l		
5.3	Injection point location			
5.4	*Contact time before flocculating chamber*			
	a) Maximum	s	*	*
	b) Design	s	*	*
	c) Minimum	s	*	*
6.0	**Filtered water tank**			
6.1	Tank Capacity	m^3	*	
6.2	*Tank dimensions*			
	a) Length	mm	*	
	b) Width	mm	*	
	c) Height	mm	*	
6.3	Number		*	
6.4	Material			
7.0	**Filtered water pump**			
7.1	Type			
7.2	Manufacturer			
7.3	Number		*	
7.4	Capacity	m^3/h	*	
	- Head	m	*	
	- Motor			
7.5	Weight complete (approx)	kg		
7.6	Material			

Item NO.	Description	Units	Bidder to fill in
8.0	**Filter backwash pump**		
8.1	Type		
8.2	Manufacturer		
8.3	Number		*
8.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
8.5	Weight complete (approx)	kg	
8.6	Material		
9.0	**Service water pump**		
9.1	Type		
9.2	Manufacturer		
9.3	Number		*
9.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
9.5	Weight complete (approx)	kg	
9.6	Material		
10.0	**Cation Exhanger**		
10.1	Manufacturer		*
10.2	Country of origin		*
10.3	Number of Units		
10.4	Water throughput rate per unit		
	a) Maximum	m^3/h	*
	b) Design	m^3/h	*
	c) Minimum	m^3/h	
10.5	Materials of vessel construction		
10.6	Materials of vessel lining		
10.7	Thickness of vessel lining	mm	

Item NO.	Description	Units	Bidder to fill in
10.8	Dimensions		
	a) Straight side length	mm	
	b) Straight side thickness	mm	
	c) Dished end thickness	mm	
	d) Diameter	mm	*
	e) Overall height above floor	mm	*
10.9	Design pressure	bar(g)	
10.10	Design code		*
10.11	Ion exchange bed surface area per unit	m^2	
10.12	Ion exchange bed depths	mm	
10.13	Total resin volume	m^3	*
10.14	Active resign volume	m^2	*
10.15	Ion exchange resign resignation		
10.16	Service rate		
	a) Maximum	$m^3/m^2/h$	*
	b) Design	$m^3/m^2/h$	*
	c) Minimum	$m^3/m^2/h$	
10.17	Pressure drop in service at design rate including top/bottom distributors	kPa	
10.18	Design net output between regeneration	m^3	*
10.19	Service period between regeneration cycles		
	a) Maximum flow	h	*
	b) Design flow	h	*
	c) Minimum flow	h	
10.20	Type of regeneration procedure		
10.21	Regeneration Cycle:		
	a) Air Scour		

Item NO.	Description	Units	Bidder to fill in
	- Pressure	kPa(g)	
	- Quantity	Nm^3	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	
	b) 1st backwash		
	- Quantity	m^3	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	
	- Water source		
	c) 1st Acid Injection		
	- Acid		*
	- Acid strength	%wt/vol	*
	- Quantity of acid/resin	g/l	*
	- Quantity of solution	m^3	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	
	- Water source		
	d) 2nd Acid Injection		
	- Acid strength	%wt/vol	*
	- Quantity of acid	kg	*
	- Quantity of acid/resin	g/l	*
	- Quantity of solution	m^3	*
	- Rate	$Nm^3/m^2/min$	
	- Duration	min	
	- Water source		
	e) Displacement		
	- Quantity	m^3	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	

Item NO.	Description	Units	Bidder to fill in
	- Water source		
	f) Rinse		
	- Quantity	m^3	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	
	- Water source		
10.22	Total time for regeneration cycle	min	*
10.23	Total quantity of water used per regeneration cycle		
	a) Source/quantity	$/m^3$	*
	b) Source/quantity	$/m^3$	
10.24	Total wastewater per regeneration cycle	m^3	
10.25	Inlet distributor		
	a) Type		
	b) Materials of construction		
10.26	Under drain system		
	a) Type		
	b) Materials of construction		
10.27	Acid injection system		
	a) Type		*
	b) Materials of construction		*
10.28	Acid draw off system		
	a) Type		
	b) Materials of construction		
10.29	Air distributor system		
	a) Type		
	b) Materials of construction		
10.30	Resin compaction system		
	a) Type		*

Item NO.	Description	Units	Bidder to fill in
	b) Materials of construction		
10.31	Resin traps		
	a) Number		*
	b) Location		*
	c) Shell material		*
	d) Diameter	mm	
	e) Design pressure	bar(g)	
	f) Design code		
	g) Strainer mesh size	mm	
11.0	**Cation Exchanger – Resin Performance Particulars**		
11.1	Manufacturer of resin		*
11.2	Design Capacity	g. $CaCO_3$ per litre	*
11.3	Useful life	years	*
11.4	Attrition loss per annum:-		
	a) Up to 6 years	% vol	
	b) After 6 years	% vol	
11.5	Capacity loss per annum at design regeneration levels		
	a) Up to 6 years	g. $CaCO_3$ per litre	
	b) After 6 years	g. $CaCO_3$ per litre	
11.6	Guaranteed life of resin	years	*
12.0	**Decarbonator**		
12.1	Type		
12.2	Manufacturer		
12.3	Number of decarbonator		*
12.4	Capacity	m^3/h	*
	- Head	m	*

Item NO.	Description	Units	Bidder to fill in
	- Motor		
12.5	Weight complete (approx)	kg	
12.6	Material		
12.7	Number of blower		
12.8	Number of well		
13.0	**Booster pump**		
13.1	Type		
13.2	Manufacturer		
13.3	Number		*
13.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
13.5	Weight complete (approx)	kg	
13.6	Material		
14.0	**Anion Exchanger**		
14.1	Manufacturer		*
14.2	Country of origin		
14.3	Number of Units		
14.4	Water throughput rate per unit		
	a) Maximum	m^3/h	*
	b) Design	m^3/h	*
	c) Minimum	m^3/h	
14.5	Materials of vessel construction		*
14.6	Materials of vessel lining		
14.7	Thickness of vessel lining	mm	
14.8	Dimensions		
	a) straight side length	mm	
	b) straight side thickness	mm	
	c) dished end thickness	mm	

Item NO.	Description	Units	Bidder to fill in
	d) diameter	mm	*
	e) overall height above floor	mm	*
14.9	Design pressure	bar(g)	
14.10	Design code		*
14.11	Ion exchange bed surface area per unit	m^2	*
14.12	Ion exchange bed depths	mm	
14.13	Total resin volume	m^3	*
14.14	Active resign volume	m^3	*
14.15	Ion exchange resign resignation		
14.16	Service rate		
	a) Maximum	$m^3/m^2/h$	*
	b) Design	$m^3/m^2/h$	*
	c) Minimum	$m^3/m^2/h$	
14.17	Pressure drop in service at design rate including top/bottom distributors	kPa	
14.18	Design net output between regeneration	m^3	
14.19	Service period between regeneration cycles		
	a) Maximum flow		*
	b) Design flow		*
	c) Minimum flow		
14.20	Type of regeneration procedure		*
14.21	Regeneration Cycle:		
	a) Air Scour		
	- Pressure	kPa(g)	
	- Quantity	Nm^3	*
	- Rate	$Nm^3/m^2/mn$	*
	b) 1st backwash		

Item NO.	Description	Units	Bidder to fill in
	- Quantity	m^3	*
	- Rate	$Nm^3/m^3/min$	*
	- Duration	min	
	- Water source		
	c) 1st Alkali Injection		
	- Alkali		*
	- Alkali strength	% wt/vol.	*
	- Quantity of alkali	kg.	*
	- Quantity of alkali/resin	g/l	*
	- Quantity of solution	m^3	*
	- Rate	$Nm^3/m^2/min$	*
	- Duration	min	
	- Water source		
	d) Displacement		
	- Quantity	m^3	*
	- Rate	$Nm^3/m^3/min$	*
	- Duration	min	
	- Water source		
	e) 2nd Backwash		
	- Quantity	m^3	*
	- Rate	$m^3/m^3/min$	*
	- Duration	min	
	- Water source		
	f) Rinse		
	- Quantity	m^3	*
	- Rate	$m^3/m^2/min$	*
	- Duration	min	
	- Water source		
14.22	Total time for regeneration cycle	min	*

Item NO.	Description	Units	Bidder to fill in
14.23	Total quantity of water used per regeneration cycle		
	a) Source/quantity	/m^3	*
	b) Source/quantity	/m^3	
14.24	Total wastewater per regeneration cycle	m^3	
14.25	Inlet distribution		
	a) Type		
	b) Materials of construction		
14.26	Under drain system		
	a) Type		
	b) Materials of construction		
14.27	Alkali injection system		
	a) Type		*
	b) Materials of construction		*
14.28	Alkali draw off system		
	a) Type		
	b) Materials of construction		
14.29	Air distributor system		
	a) Type		
	b) Materials of construction		
14.30	Resin compaction system		
	a) Type		
	b) Materials of construction		
14.31	Resin traps		
	a) Number		
	b) Location		
	c) Shell material		
	d) Diameter	mm	*
	e) Design pressure	bar(g)	

Item NO.	Description	Units	Bidder to fill in
	f) Design code		
	g) Strainer mesh size	mm	
15.0	**Anion Exchanger – Resin Performance Particulars**		
15.1	Manufacturer of resin		
15.2	Design Capacity	g. $CaCO_3$ per litre	*
15.3	Useful life	years	*
15.4	Attrition loss per annum:-		
	a) Up to 6 years	% vol.	
	b) After 6 years	% vol.	
15.5	Capacity loss per annum at design regeneration levels		
	a) Up to 6 years	g. $CaCO_3$ per litre	
	b) After 6 years	g. $CaCO_3$ per litre	
15.6	Guaranteed life of resin	years	*
16.0	**Mixed Bed Exchanger**		
16.1	Manufacturer		*
16.2	Country of origin		
16.3	Number of Units		*
16.4	Water throughput rate per unit		
	a) Maximum	m^3/h	*
	b) Design	m^3/h	*
	c) Minimum	m^3/h	
16.5	Materials of vessel construction		
16.6	Materials of vessel lining		
16.7	Thickness of vessel lining	mm	
16.8	Dimensions		
	a) straight side length	mm	

Item NO.	Description	Units	Bidder to fill in
	b) straight side thickness	mm	
	c) dished end thickness	mm	
	d) diameter	mm	*
	e) overall height above floor	mm	*
16.9	Design pressure	bar(g)	
16.10	Design code		
16.11	Ion exchange bed surface area per unit	m^2	*
16.12	Ion exchange bed depths		
	a) anion resin	mm	*
	b) cation resin	mm	*
	c) inert resin	mm	*
16.13	Total resin volume	m^3	*
16.14	Active resin volume	m^3	*
16.15	Ion exchange resin resignation		
	a) Anion		*
	b) Cation		*
	c) Inert		*
16.16	Service rate		
	a) Combined		
	- Maximum	$m^3/m^3/h$	*
	- Design	$m^3/m^3/h$	*
	- Minimum	$m^3/m^3/h$	
	b) Anion		
	- Maximum	$m^3/m^3/h$	*
	- Design	$m^3/m^3/h$	*
	- Minimum	$m^3/m^3/h$	
	c) Cation		
	- Maximum	$m^3/m^3/h$	

Item NO.	Description	Units	Bidder to fill in
	- Design	$m^3/m^3/h$	
	- Minimum	$m^3/m^3/h$	
16.17	Pressure drop in service at design rate including top/bottom distributors	mbar	
16.18	Design net output between regeneration	m^3	
16.19	Service period between regeneration cycles		
	a) Maximum flow	h	
	b) Design flow	h	
	c) Minimum flow	h	
16.20	Type of regeneration procedure		*
16.21	Regeneration Cycle:		*
	a) Drain down duration	min	*
	b) Air Scour		
	- Pressure	kPa(g)	
	- Quantity	m^3	
	- Rate	$m^3/m^3/min$	
	- Duration	min	
	- Water source		
	c) Backwash		
	- Quantity	m^3	
	- Rate	$m^3/m^3/min$	
	- Duration	min	
	- Water source		
	d) Alkali Injection		
	- Alkali		
	- Alkali strength	% wt/vol.	*
	- Quantity of alkali	kg.	*

Item NO.	Description	Units	Bidder to fill in
	- Quantity of alkali/resin	g/l	*
	- Quantity of solution	m^3	
	- Rate	$m^3/m^3/min$	*
	- Water source		*
	e) 1st Alkali rinse		*
	- Quantity	m^3	
	- Rate	$m^3/m^3/min$	
	- Duration	mın	
	- Water source		
	f) 2nd Alkali rinse		
	- Quantity	m^3	
	- Rate	$m^3/m^3/min$	
	- Duration	min	
	g) Acid Injection		
	- Acid		*
	- Acıd strength	% wt/vol.	*
	- Quantity of acid	kg.	*
	- Quantity of acid/resin	g/l	*
	- Quantity of solution	m^3	*
	- Rate	$m^3/m^3/min$	
	- Duration	min	
	- Water source		
	h) 1st Acıd Rinse		
	- Quantity	m^3	
	- Rate	$m^3/m^3/min$	
	- Duration	min	
	- Water source		
	ı) 2nd Acid Rinse		
	- Quantity	m^3	

Item NO.	Description	Units	Bidder to fill in
	- Rate	$m^3/m^3/min$	
	- Duration	min	
	- Water source		
	j) Drain down duration		
	k) Air Mix		
	- Pressure	m^3	*
	- Quantity	$m^3/m^3/min$	*
	- Rate	min	
	- Duration		
	l) Unit refill		
	- Quantity	m^3	
	- Rate	$m^3/m^3/min$	
	- Duration	min	
	- Water source		
	m) Final Rinse		
	- Quantity	m^3	
	- Rate	$m^3/m^3/min$	
	- Duration	min	
	- Water source		
16.22	Total time for regeneration cycle	min	
16.23	Total quantity of water used per regeneration cycle		
	a) Source/quantity	$/m^3$	
	b) Source/quantity	$/m^3$	
16.24	Total wastewater per regeneration cycle	m^3	
16.25	Inlet distribution		
	a) Type		
	b) Materials of construction		
16.26	Under drain system		

Item NO.	Description	Units	Bidder to fill in
	a) Type		
	b) Materials of construction		
16.27	Alkali injection system		
	a) Type		*
	b) Materials of construction		*
16.28	Alkali draw off/acid injection system		
	a) Type		
	b) Materials of construction		
16.29	Air distributor system		
	a) Type		
	b) Materials of construction		
16.30	Resin compaction system		
	a) Type		
	b) Materials of construction		
16.31	Resin traps		
	a) Number off		
	b) Location		
	c) Shell material		
	d) Diameter	mm	*
	e) Design pressure	bar(g)	
	f) Design code		
	g) Strainer mesh size	mm	
17.0	**Mixed Bed Exchanger – Resin Performance Particulars**		
17.1	Manufacturer of resin		
17.2	Design Capacity	g. $CaCO_3$ per litre	*
17.3	Useful life	years	*
17.4	Attrition loss per annum:-		

Item NO.	Description	Units	Bidder to fill in
	a) Up to 4 years	% vol.	
	b) After 4 years	% vol.	
17.5	Capacity loss per annum at design regeneration levels		
	a) Up to 4 years	g. $CaCO_3$ per litre total base	
	b) Up to 4 years	g. $CaCO_3$ per litre strong	
	c) After 4 years	g. $CaCO_3$ per litre total	
	d) After 4 years	g. $CaCO_3$ per litre strong base	
17.6	Guaranteed life of resin	Years	
18.0	**Demineralized water tank**		
18.1	Tank Capacity	m^3	*
18.2	Tank dimensions		
	a) Length	mm	*
	b) Width	mm	*
	c) Height	mm	*
18.3	Number		*
18.4	Material		
19.0	**Make-up water pump**		
19.1	Type		
19.2	Manufacturer		
19.3	Number		*
19.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
19.5	Weight complete (approx)	kg	
19.6	Material		

Item NO.	Description	Units	Bidder to fill in
20.0	**Regeneration pump**		
20.1	Type		
20.2	Manufacturer		
20.3	Number		*
20.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
20.5	Weight complete (approx)	kg	
20.6	Material		
21.0	**Sulphuric acid storage tank**		
21.1	Tank Capacity	m^3	*
21.2	Tank dimensions		
	a) Length	mm	*
	b) Width	mm	*
	c) Height	mm	*
21.3	Number		*
21.4	Material		*
22.0	**Sulphuric acid dosing tank**		
22.1	Tank Capacity	m^3	*
22.2	Tank dimensions		
	a) Length	mm	*
	b) Width	mm	*
	c) Height	mm	*
22.3	Number		*
22.4	Material		*
22.5	Adjustable measuring device		
	a) Number		
	b) Capacity	m^3	

Item NO.	Description	Units	Bidder to fill in
23.0	**Sulphuric acid dosing pump for regeneration and neutralization**		
23.1	Type		
23.2	Manufacturer		
23.3	Number		*
23.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
23.5	Weight complete (approx)	kg	
23.6	Material		
24.0	**Caustic soda storage tank**		
24.1	Tank Capacity	m^3	*
24.2	Tank dimensions		
	a) Length	mm	*
	b) Width	mm	*
	c) Height	mm	*
24.3	Number		*
24.4	Material		*
25.0	**Caustic soda dosing tank**		
25.1	Tank Capacity	m^3	*
25.2	Tank dimensions		
	a) Length	mm	*
	b) Width	mm	*
	c) Height	mm	*
25.3	Number		*
25.4	Material		*
25.5	Adjustable measuring device		
	a) Number		
	b) Capacity	m^3	

Item NO.	Description	Units	Bidder to fill in
26.0	**Caustic soda dosing pump for regeneration and neutralization**		
26.1	Type		
26.2	Manufacturer		
26.3	Number		*
26.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
26.5	Weight complete (approx)	kg	
26.6	Material		
27.0	**Regeneration And Waste Effluent Particulars**		
27.1	Weight of 100% acid used/m^3 net to service	kg	
27.2	Weight of 100% alkali used/m^3 net to service	kg	
27.3	Amount of waste effluent developed	m^3	
27.4	Typical chemical analysis of waste effluent development to waste	% wt/vol.	
	a) Na_2SO_4	ppm	*
	b) Na Cl		*
	c) Ca SO_4		*
	d) Ca Cl_2		*
	e) Mg SO_4		*
	f) Mg Cl_2		*
28.0	**Ejector**		
28.1	Number		
28.2	Manufacturer		
28.3	Material		

Item NO.	Description	Units	Bidder to fill in
28.4	Type		
28.5	Design Code		
28.6	Design Pressure	bar(g))	
28.7	Size	mm	
28.8	Internal Corrosion Treatment		
29.0	**Neutralization tank**		
29.1	Type/V/H/R		
29.2	Number		
29.3	Dimensions		
	a) Diameter	mm	*
	b) Straight side length	mm	
	c) Straight side thickness	mm	
	d) Dished end thickness	mm	
	e) Base thickness	mm	
	f) Roof thickness	mm	
	g) Height of top above floor level	mm	*
29.4	Type of vessel/tank construction		*
29.5	Materials of vessel lining	mm	
29.6	Chemical handled		
29.7	Effective working capacity		
29.8	Mixer		
	a) Type		
	b) Material of construction		
	c) Speed	rpm	
	d) Reduction gear box type	kW	
30.0	**Neutralized water pump**		
30.1	Type		
30.2	Manufacturer		

Item NO.	Description	Units	Bidder to fill in
30.3	Number		*
30.4	Capacity	m^3/h	*
	- Head	m	*
	- Motor		
30.5	Weight complete (approx)	kg	
30.6	Material		
31.0	**Compressed Air Plant**		
31.1	Air Compressor		
	a) Manufacturer		*
	b) Number	sets	*
	c) Type		
	d) Capacity of free air pet minute	m^3/min	*
	e) Rated discharge pressure	bar(g)	*
	f) Speed	rpm	
	g) Number of stages		*
	h) Compressor power required at design rating	kW	*
	i) Type of cylinder cooling		*
	j) Time required to charge one air receiver to maximum working pressure	mins	
	k) Type of drive-direct or 'V' belt		
	l) Motor rating	kW	*
31.2	Air Receiver		
	a) Make		*
	b) Design code		
	c) Number of receiver		*
	d) Working pressure	bar(g)	
	e) Design pressure	bar(g)	

Item NO.	Description	Units	Bidder to fill in
	f) Capacity	m^3	*
31.3	After Coolers		
	a) Type		
	b) Number		
	c) Capacity	m^3/min	*
	d) Number of tube		
	e) Tube Diameter	mm	
	f) Length of tube	mm	
	g) Material		*
	h) Tube wall thickness	mm	
32.0	**Blower**		
32.1	Type		*
32.2	Manufacturer		
32.3	No. of sets		
32.4	Capacity	Nm^3/h	*
32.5	Discharge pressure	kPa(g)	
32.6	Material		
	a) Casing		*
	b) Impeller		
32.7	Rate power of driver	kW	*
32.8	Suction valve		
	a) Type		
	b) Nominal diameter		
	c) Material of body		
	d) Material of disc		
32 9	Delivery Valve		
	a) Type		
	b) Nominal diameter		
	c) Material of body		

Item NO.	Description	Units	Bidder to fill in
	d) Material of disc		
32.10	Type of suction filter		
33.0	**Pipework**		
33.1	Raw Water piping, concentrated caustic, dilution water		
	a) Nominal Bore		
	b) Design Pressure bar		
	c) Material		*
	d) Thickness		
	Pipe	mm	
	Lining		
	e) Type of Joint		
	f) Flange Rating (where applicable)		
33.2	Demineraliser front piping, dilute acid and caustic		
	a) Nominal Bore		
	b) Design Pressure bar		
	c) Material		
	d) Thickness		
	Pipe	mm	
	Lining		
	e) Type of Joint		
	f) Flange Rating (where applicable)		
33.3	Concentrated Acid		
	a) Nominal Bore		
	b) Design Pressure bar		
	c) Material		*
	d) Thickness		

Item NO.	Description	Units	Bidder to fill in
	Pipe	mm	
	Lining		
	e) Type of Joint		
	f) Flange Rating (where applicable)		
33.4	Vent, sample, and instrument piping		
	a) Nominal Bore		
	b) Design Pressure bar		
	c) Material		*
	d) Thickness		
	Pipe	mm	
	Lining		
	e) Type of Joint		
	f) Flange Rating (where applicable)		
33.5	PAC piping and solution tank drain and overflow		
	a) Nominal Bore		
	b) Design Pressure bar		
	c) Material		*
	d) Thickness		
	Pipe	mm	
	Lining		
	e) Type of Joint		
	f) Flange Rating (where applicable)		
33.6	Wastewater Piping		
	a) Nominal Bore		
	b) Design Pressure bar		
	c) Material		*

Item NO.	Description	Units	Bidder to fill in
	d) Thickness		
	Pipe	mm	
	Lining		
	e) Type of Joint		
	f) Flange Rating (where applicable)		

Bidder's Data Sheet

_____
Bidder's Name

2.8.11 Closed Cooling Water System

(1) Cooling Water Coolers

Manufacturer		* _____
Number		* _____
Type		* _____
Total cooling surface area	(m^2)	* _____
Design pressure	(bar (g))	* _____
Cooling water flow	(m^3/h)	* _____
River water flow (from CWP)	(m^3/h)	* _____
Cooling water temperature:		
Inlet	(°C)	* _____
Outlet	(°C)	* _____
River water temperature:		
Inlet	(°C)	* _____
Outlet	(°C)	* _____
Fouling factor	(%)	* _____
Material		
Plate (or tube)		* _____
Frame (or shell)		* _____

(2) Cooling Water Circulating Pumps

Manufacturer *_____

Number *_____

Type *_____

Performance:

Capacity (m^3/h) *_____

Total head (m) *_____

Shaft horse power (kW) *_____

Speed (rpm) _____

Connection size:

Suction (mm) _____

Discharge (mm) _____

(3) Expansion Head Tank

Type *_____

Volume (m^3) *_____

Material *_____

(4) Chemical Dosing Device

Type *_____

Injected chemical (s) *_____

Bidder's Data Sheet

Bidder's Name

2.8.12 Chemical Dosing System / Sampling System

Item NO.	Description	Units	Bidder to fill in
1.0	**Ammonia Dosing System**		
1.1	Ammonia Dosing Pumps		
	a) Manufacturer		*
	b) No. of sets		*
	c) Type		*
	d) Capacity	l/min	*
	e) Discharge Pressure	bar(g)	*
	f) Materials		
	- Casing		
	- Plunger		
	- Shaft		
1.2	Motors		
	a) Type		
	b) Rating	kW	
1.3	Ammonia Storage Tanks		
	a) Manufacturer		
	b) No. of sets		*
	c) Type		
	d) Capacity	m^3	*
	e) Diameter x Height	mm	*
	f) Description of Lining		
	g) Material		

Item NO.	Description	Units	Bidder to fill in
1.4	Ammonia dosing Tanks		
	a) Manufacturer		
	b) No. of sets		*
	c) Type		
	d) Capacity	m^3	*
	e) Diameter x Height	mm	*
	f) Description of Lining		
	g) Material		
1.5	Pipe		
	a) Nominal Bore		
	b) Thickness	mm	
	c) Material	mm	
1.6	Unloading System		
	a) Type		
1.7	Dosing Point		*
2.0	**Hydrazine Dosing System**		
2.1	Hydrazine Dosing Pumps		
	a) Manufacturer		*
	b) No. of sets		*
	c) Type		
	d) Capacity	l/min	*
	e) Discharge Pressure	bar(g)	*
	f) Materials		
	Casing		
	Plunger		
	Shaft		
2.2	Motors		
	a) Type		
	b) Rating	kW	

Item NO.	Description	Units	Bidder to fill in
2.3	Hydrazine Storage Tanks		
	a) Manufacturer		
	b) No. of sets		*
	c) Type		
	d) Capacity	m^3	*
	e) Diameter x Height	mm	*
	f) Description of Lining		
	g) Material		
2.4	Hydrazine Dosing Tanks		
	a) Manufacturer		
	b) No. of sets		*
	c) Type		
	d) Capacity	m^3	*
	e) Diameter x Height	mm	*
	f) Description of Lining		
	g) Material		
2.5	Pipe		
	a) Nominal Bore		
	b) Thickness	mm	
	c) Material	mm	
2.6	Unloadind System		
	a) Type		
2.7	Dosing Point		*
3.0	**Sodium Phosphate Dosing System**		
3.1	Sodium Phosphate Dosing Pumps		
	a) Manufacturer		*
	b) No. of sets		*
	c) Type		
	d) Capacity	l/min	*

Item NO.	Description	Units	Bidder to fill in
	e) Discharge Pressure	bar(g)	*
	f) Materials		
	- Casing		*
	- Plunger		
	- Shaft		
3.2	Motors		
	a) Type		
	b) Rating	kW	
3.3	Sodium Phosphate Storage Tanks		
	a) Manufacturer		
	b) No. of sets		*
	c) Type		
	d) Capacity	m^3	*
	e) Diameter x Height	mm	*
	f) Description of Lining		
	g) Material		
3.4	Sodium Phosphate Dosing Tanks		
	a) Manufacturer		
	b) No. of sets		*
	c) Type		
	d) Capacity	m^3	*
	e) Diameter x Height	mm	*
	f) Description of Lining		
	g) Material		
3.5	Pipe		
	a) Nominal Bore		
	b) Thickness	mm	
	c) Material	mm	
3.6	Unloading System		

Item NO.	Description	Units	Bidder to fill in
	a) Type		
3.7	Dosing Point		*

No.	Sampling Point	Cond.	Cation Pass Cond.	pH	DO_2	SiO_2	Grab
1.	HP Steam (superheated)						
2.	HP Steam (saturated)						
3.	HP Drum Water						
4.	IP Steam (superheated)						
5.	IP Steam (saturated)						
6.	IP Drum Water						
7.	LP Steam (superheated)						
8.	LP Steam (saturated)						
9	LP Drum Water						
10	LP Economizer Inlet						
11	Deaerator Outlet						
12	Condensate Extraction Pump Outlet						
13	Make-up Water Line						
14	Auxiliary Steam						
15	Closed Cooling Water						

Bidder's Data Sheet

_____
Bidder's Name

2.8.13 Compressed Air System

(1) Instrument Air Compressors

Manufacturer		*_____
Number		*_____
Type		*_____
Capacity	(Nm^3/min.)	*_____
Discharge pressure	(bar(g))	*_____
Design ambient conditions:		*_____
Ambient temperature	(°C)	*_____
Barometric pressure	(kPa)	*_____
Rotation speed	(rpm)	*_____
Rated driving power	(kW)	
Material:		*_____
Rotor		*_____
Casing		*_____
Shaft		*_____
Type of inlet filter		*_____
Type of after cooler		*_____
Material of cooler tubes		*_____
Required cooling water flow	(m^3/h)	_____
Cooling water temperature: Inlet	(°C)	_____

Outlet (°C) _____

(2) Air Dryers

Manufacturer *_____

Number *_____

Type *_____

Capacity (Nm^3/min.) *_____

Design dew point of air (°C) *_____

Material of desiccant *_____

Operation cycle of duty/regeneration (h) *_____

Required air flow for regeneration (%) *_____

Pressure drop (bar) *_____

(3) Instrument Air Receiver

Type *_____

Number *_____

Volume (m^3) *_____

Design pressure (bar(g)) *_____

Material *_____

(4) Service Air Compressors

Manufacturer *_____

Number *_____

Type *_____

Capacity	(Nm^3/min.)	*_____
Discharge pressure	(bar(g))	*_____
Design ambient conditions:		
Ambient temperature	(°C)	*_____
Barometric pressure	(kPa)	*_____
Rotation speed	(rpm)	*_____
Rated driving power	(kW)	*_____
Material:		
Rotor		*_____
Casing		*_____
Shaft		*_____
Type of inlet filter		_____
Type of after cooler		_____
Material of cooler tubes		_____
Required cooling water flow	(m^3/h)	_____
Cooling water temperature:		
Inlet	(°C)	_____
Outlet	(°C)	_____

(5) Service Air Receiver

Type		*_____
Number		*_____
Volume	(m^3)	*_____
Design pressure	(bar(g))	*_____

Material *_____

Bidder's Data Sheet

Bidder's Name

2.8.14 Wastewater Treatment System

Item NO.	Description	Units	Bidder to fill in
1.0	**Quality of treated water**		
1.1	Total suspended solid	mg/l	*
1.2	BOD_5	mg/l	*
1.3	Total content of mineral salts	mg/l	*
1.4	Calcium	mg/l	*
1.5	Chlorides	mg/l	*
1.6	Sulphates	mg/l	*
1.7	Nitrate nitrogen	mg/l	*
1.8	Nitrite nitrogen	mg/l	*
1.9	Ammonia nitrogen	mg/l	*
1.10	Mineral oil	mg/l	*
1.11	Iron	mg/l	*
1.12	Copper	mg/l	*
1.13	Zinc	mg/l	*
1.14	Chromium (Total)	mg/l	*
1.15	Total residual chlorine	mg/l	*
1.16	Floating substances		*
1.17	Smells, odors	degree	*
1.18	Coloring		*
1.19	Temperature increase	°C	*
1.20	pH		*
1.21	Coliform count	count / 1	*
1.22	Dissolved oxygen	mg/l	*

Item NO.	Description	Units	Bidder to fill in	
1.23	Treatment capacity	m^3/h	*	
1.24	Chemical type			
	Coagulant		*	
	Coagulant aid		*	
2.0	**HRSG area drainage system**			
2.1	HRSG blowdown tank			
	a) Type			
	b) Capacity	kg	*	
	c) Manufacturer			
	d) Number			
2.2	Painting/coating		Material	Thickness
	a) For piping			
	b) For blowdown tank			
3.0	**Wastewater storage pitequipment**			
3.1	Pit			
	a) Type		*	
	b) Number		*	
	c) Capacity	m^3	*	
	d) Width	m	*	
	e) Length	m	*	
	f) Depth	m	*	
3.2	Pump			
	a) Type			
	b) Manufacturer			
	c) Number		*	
	d) Capacity	m^3/h	*	
	- Head	m	*	
	- Motor			
	e) Weight complete (approx)	kg		

Item NO.	Description	Units	Bidder to fill in	
3.3	Agitating blower			
	a) Type			
	b) Manufacturer			
	c) Number		*	
	d) Capacity	Nm^3/min	*	
	e) Material			
	- Rotor			
	- Casing			
	- Agitating air pipe			
	f) Motor specification			
	g) Weight complete (approx)	kg		
3.4	Level indicator			
	a) Type			
	b) Manufacturer			
	c) Number			
3.5	Painting/coating		Material	Thickness
	a) For piping			
	b) For equipment			
	c) For pit			
4.0	**pH control oxidation pit and mixing pit equipment**			
4.1	pH control oxidation pit			
	a) Type		*	
	b) Number		*	
	c) Capacity	m^3	*	
	d) Width	m	*	
	e) Length	m	*	
	f) Depth	m	*	
4.2	Mixing pit			
	a) Type		*	

Item NO.	Description	Units	Bidder to fill in	
	b) Number		*	
	c) Capacity	m^3	*	
	d) Width	m	*	
	e) Length	m	*	
	f) Depth	m	*	
4.3	pH control system			
	a) Type			
	b) Manufacturer		*	
	c) Number			
4.4	Level control			
	a) Type			
	b) Manufacturer			
	c) Number			
4.5	Pit agitator			
	a) Type			
	b) Manufacturer			
	c) Number		*	
	d) Material			
	- Rotor			
	- Casing			
	- Agitating propeller			
	e) Motor specification			
	f) Weight complete (approx)	kg		
4.6	*Painting/coating*		Material	Thickness
	a) For piping			
	b) For equipment			
	c) For pit			
	d) Other (for _____)			
5.0	**Coagulation-sedimentation pit equipment**			

Item NO.	Description	Units	Bidder to fill in	
5.1	Pit			
	a) Type		*	
	b) Number		*	
	c) Capacity	m^3	*	
	d) Width	m	*	
	e) Length	m	*	
	f) Depth	m	*	
5.2	Driving unit			
	a) Type			
	b) Manufacturer		*	
	c) Number		*	
	d) Capacity		*	
	e) Material			
	- Rotor			
	- Casing			
	- Rake			
	f) Motor specification			
	g) Weight complete (approx)	kg		
5.3	Sludge pump			
	a) Type			
	b) Manufacturer		*	
	c) Number		*	
	d) Capacity	Nm^3/min	*	
	e) Motor specification			
	f) Weight complete (approx)	kg		
5.4	Sludge pump foundation			
	a) Type			
	b) Number			
5.5	Painting/coating		Material	Thickness

Item NO.	Description	Units	Bidder to fill in	
	a) For piping			
	b) For equipment			
	c) For pit			
	d) Other (for _____)			
6.0	**Supernatant water pit equipment**			
6.1	Pit			
	a) Type		*	
	b) Number		*	
	c) Capacity	m^3	*	
	d) Width	m	*	
	e) Length	m	*	
	f) Depth	m	*	
6.2	Pump			
	a) Type			
	b) Manufacturer			
	c) Number		*	
	d) Capacity	m^3/h	*	
	- Head	m	*	
	- Motor			
	e) Weight complete (approx)	kg		
6.3	Level indicator			
	a) Type			
	b) Manufacturer			
	c) Number			
6.4	Painting / Coating		Material	Thickness
	a) For piping			
	b) For equipment			
	c) For pit			
7.0	**Filter equipment**			

Item NO.	Description	Units	Bidder to fill in
7.1	Filter		
	a) Type		
	b) Manufacturer		*
	c) Number		
	d) Capacity	m^3/h	*
	e) Filter medium		
	f) Filtration rate	m/h	*
	g) Washing rate by back-washing	m/h	
	h) Cleaning rate by air scrubbing	$m^3/m^2/h$	
	i) Net washing and cleaning time per once		
	j) Material and lining		
	k) Diameter	mm	
	l) Height	mm	
	m) Weight(approx)	kg	
7.2	Air scrubbing blower		
	a) Type		
	b) Manufacturer		
	c) Capacity	m^3/h	*
	d) Material		
	- Rotor		
	- Casing		
	- Scrubbing air pipe		
7.3	Painting		
8.0	**Neutralising pit equipment**		
8.1	Pit		
	a) Type		*
	b) Number		*
	c) Capacity	m^3	*
	d) Width	m	*

Item NO.	Description	Units	Bidder to fill in
	e) Length	m	*
	f) Depth	m	*
8.2	Pump		
	a) Type		
	b) Manufacturer		
	c) Number		*
	d) Capacity	m^3/h	*
	- Head	m	*
	- Motor		
	e) Weight complete (approx)	kg	
8.3	pH control system		
	a) Type		*
	b) Manufacturer		*
	c) Number		
8.4	Level control		
	a) Type		
	b) Manufacturer		
	c) Number		
8.5	Sludge pump foundation		
	a) Type		
	b) Number		
	c) Motor specification		
	d) Weight complete (approx)	kg	
8.6	Neutralising pit agitator		
	a) Type		
	b) Number		
	c) Material		
	- Rotor		
	- Casing		

Item NO.	Description	Units	Bidder to fill in	
	- Agitating propeller			
	d) Motor specification			
	e) Weight complete (approx)	kg		
8.7	Painting/coating		Material	Thickness
	a) For piping			
	b) For equipment			
	c) For pit/tank			
	d) Other (for _____)			
9.0	***Treated water pit equipment***			
9.1	Pit			
	a) Type		*	
	b) Number		*	
	c) Capacity	m^3	*	
	d) Width	m	*	
	e) Length	m	*	
	f) Depth	m	*	
9.2	Pit pump		*	
	a) Type			
	b) Manufacturer			
	c) Number			
	d) Capacity	m^3/h		
	e) Head			
	f) Motor			
	g) Weight complete (approx)	kg		
9.3	Level control			
	a) Type			
	b) Manufacturer			
	c) Number			
9.4	Painting/coating		Material	Thickness

Item NO.	Description	Units	Bidder to fill in	
	a) For piping			
	b) For equipment			
	c) For pit/tank			
	d) Other (for _____)			
10.0	**Sludge enrichment tank equipment**			
10.1	Tank			
	a) Type		*	
	b) Number		*	
	c) Capacity	m^3	*	
	d) Width	m	*	
	e) Length	m	*	
	f) Depth	m	*	
10.2	Driving unit			
	a) Type			
	b) Manufacturer		*	
	c) Number			
	d) Flow rate	m^3/h or less	*	
	e) Material			
	- Rotor			
	- Casing			
	- Rake			
	f) Motor specification			
	g) Weight complete (approx)	kg		
10.3	Sludge pump			
	a) Type			
	b) Manufacturer		*	
	c) Number			
	d) Capacity	m^3/h	*	
	e) Motor specification			

Item NO.	Description	Units	Bidder to fill in	
	f) Weight complete (approx)	kg		
10.4	Sludge pump foundation			
	a) Type			
	b) Number			
10.5	Level control			
	a) Type			
	b) Manufacturer			
	c) Number			
10.6	Painting/coating		Material	Thickness
	a) For piping			
	b) For equipment			
	c) For tank			
	d) Other (for _____)			
11.0	**Chemical injection equipment**			
11.1	Diluted H_2SO tank			
	a) Type			
	b) Manufacturer			
	c) Number		*	
	d) Capacity	m^3	*	
	e) Diameter	mm	*	
	f) Height	mm	*	
	g) Material and lining			
	h) Weight complete (approx.)	kg		
11.2	Diluted H_2SO_4 dosing pump			
	a) Type			
	b) Number			
	c) Manufacturer		*	
	d) Capacity			
	e) Head	m		

Item NO.	Description	Units	Bidder to fill in
	f) Motor specification		
	g) Material and lining		
	h) Weight (approx.)	kg	
11.3	Diluted NaOH tank		
	a) Type		
	b) Manufacturer		
	c) Number		
	d) Capacity	m^3	*
	e) Diameter	mm	*
	f) Height	mm	*
	g) Material and lining		
	h) Weight (approx.)	kg	
11.4	Diluted NaOH dosing pump		
	a) Type		
	b) Manufacturer		
	c) Number		
	d) Capacity		*
	e) Head	m	*
	f) Motor specification		
	g) Material and lining		
	h) Weight (approx.)	kg	
11.5	Coagulant dosing pump		
	a) Type		
	b) Number		*
	c) Manufacturer		
	d) Capacity		
	e) Head	m	*
	f) Motor specification		*
	g) Material and lining		

Item NO.	Description	Units	Bidder to fill in
	h) Weight (approx.)	kg	
11.6	Coagulant preparation tank		
	a) Type		
	b) Number		
	c) Manufacturer		
	d) Capacity	m^3	
	e) Diameter	mm	
	f) Height	mm	
	g) Material and lining	mm	
	h) Weight complete (approx.)	kg	
11.7	Coagulant storage and dosing tank		
	a) Type		
	b) Number		
	c) Manufacturer		
	d) Capacity	m^3	
	e) Diameter	mm	
	f) Height	mm	
	g) Material and lining	mm	
	h) Weight complete (approx.)	kg	
11.8	Coagulant aid dosing pump		
	a) Type		
	b) Number		
	c) Manufacturer		
	d) Capacity	l/h	*
	e) Head	mm	*
	f) Motor specification		
	g) Material and lining	mm	
	h) Weight (approx.)	kg	
11.9	Coagulant aid preparation tank		

Item NO.	Description	Units	Bidder to fill in
	a) Type		
	b) Number		
	c) Manufacturer		
	d) Capacity	m^3/h	
	e) Height	m	
	f) Motor specification		
	g) Material and lining	mm	
	h) Weight (approx.)	kg	
11.10	Coagulant aid storage and dosing tank		
	a) Type		
	b) Number		
	c) Manufacturer		
	d) Capacity	m^3/h	
	e) Height	m	
	f) Motor specification		
	g) Material and lining	mm	
	h) Weight (approx.)	kg	
11.11	Concentrated H_2SO_4 tank		
	a) Type		
	b) Manufacturer		
	c) Number		*
	d) Capacity	m^3	*
	e) Diameter	mm	*
	f) Height	mm	*
	g) Material and lining		
	h) Weight complete (approx.)	kg.	
11.12	Concentrated NaOH tank		
	a) Type		
	b) Manufacturer		

Item NO.	Description	Units	Bidder to fill in
	c) Number		*
	d) Capacity	m^3	*
	e) Diameter	mm	*
	f) Height	mm	*
	g) Material and lining		
	h) Weight complete (approx.)	kg	
11.13	Concentrated H_2SO_4 transfer pump		
	a) Type		
	b) Number		*
	c) Manufacturer		
	d) Capacity	m^3/h	*
	e) Height	m	*
	f) Motor specification		
	g) Material and lining		
	h) Weight (approx.)	kg	
11.14	Concentrated NaOH transfer pump		
	a) Type		
	b) Number		*
	c) Manufacturer		
	d) Capacity	m^3/h	*
	e) Height	m	*
	f) Motor specification		
	g) Material and lining	mm	
	h) Weight (approx.)	kg	
11.15	Chemical storage yard pit pump		
	a) Type		
	b) Number		*
	c) Manufacturer		
	d) Capacity	m^3/h	*

Item NO.	Description	Units	Bidder to fill in	
	e) Head	m	*	
	f) Motor specification			
	g) Material and lining	mm		
	h) Weight (approx.)	kg		
11.16	Painting/coating		Material	Thickness
	a) For piping			
	b) For equipment			
	c) For pit/tank			
	d) Other (for _____)			
12.0	**Control Unit System**			
12.1	pH meter			
	a) Type			
	b) Manufacturer			
	c) Number			
	d) pH detector			
	e) pH indicator			
	f) pH recorder			
	g) pH metering range and sensitivity	PH =		
	h) pH detection spots			
12.2	Oil detector			
	a) Type			
	b) Manufacturer			
	c) Number			
	d) Oil detector			
	e) Oil content indicator			
	f) Oil content metering range and sensitivity			
	g) Oil detection spots			
12.3	Flow integrating meter			

Item NO.	Description	Units	Bidder to fill in
	a) Type		
	b) Manufacturer		
	c) Flow detector		
	d) Flow indicator		
	e) Flow integrating meter		
	f) Flow metering range and sensitivity	m^3/h	
	g) Flow detection spots		
12.4	Control panel for waste water		
	a) Treatment equipment		
	b) Type		
	c) Manufacturer		
	d) Number		
	e) Height x width x depth	mm	
	f) Weight (approx)	kg	
12.5	Painting (for)		
13.0	**Piping for**		
13.1	Underground pipe		
	a) Pipe material		
	b) Protection material for external surface		
	c) Protection material for internal surface		
	d) Size		
13.2	On ground pipe		
	a) Pipe material		
	b) Protection material for external surface		
	c) Protection material for internal surface		
	d) Size		

Item NO.	Description	Units	Bidder to fill in
	e) Painting		
14.0	**Dehydrator**		
14.1	Dehydrator		
	a) Type		*
	b) Manufacturer		
	c) Number		
	d) Treating capacity	t/h	*
	e) Dewatering percentage	%	*
	f) Filtrating area	m^2	
	g) Size (dimension)	mm	
	h) Weight (approx)	kg	
	i) Motor specification		
	j) Material – filter		
	k) Dehydrator (main parts)		
	- Piping		
	- Sludge pump – dehydrator		
	- Drain pipe to wastewater storage ponds		
	- Total weight of piping (approx)	t	
	- Painting material		
	- Total weight of paint	kg	
14.2	Hopper		
	a) Type		
	b) Manufacturer		
	c) Number		
	d) Capacity		
	e) For operation (approx.)	h	
	f) Capacity (approx.)	m^3	
	g) Dimension		

Item NO.	Description	Units	Bidder to fill in
	h) Material		
14.3	Control panel		
	a) Type		
	b) Number		
	c) Height x width x depth	mm	
	d) Weight (approx)	kg	
	e) Painting (for)		

Bidder's Data Sheet

Bidder's Name

2.8.15 Fire Protection System

Item NO.	Description	Units	Bidder to fill in		
1.0	**Fire Water Pumps**		Electric driven pump	Diesel driven pump	Jockey pump
	a) Manufacturer		*	*	*
	b) Type		*	*	*
	c) Model				
	d) Number		*	*	*
	e) Capacity	kg/s	*	*	*
	f) Discharge pressure	bar(g)	*	*	*
	g) Suction pressure	bar(g)	*	*	*
	h) Rated power	kW	*	*	*
	i) Speed	rpm			
	j) Efficiency	%			
	k) *NPSH*	m			
	l) Suction nozzle	ND mm			
	m) Discharge nozzle	ND mm			
	n) Bearing type				
	o) Impeller diameter	mm			
	p) Impeller material		*	*	*
	q) Casing material		*	*	*
	r) Shaft material		*	*	*
	s) Shaft sleeve material		*	*	*
1.1	**Diesel Engine for Fire Water Pump**				
	a) Manufacturer		*		

Item NO.	Description	Units	Bidder to fill in
	b) Model No.		
	c) No. and arrangement of cylinders		
	d) Capacity (swept volume)	liter	
	e) Compression ratio		
	f) Type of fuel		*
	g) Fuel Consumption	kg/h	
	• at standard rating		
	• at ½ standard rating		
	h) Type and grade of lubricating oil		
	i) Method of cooling		
	j) Method of starting		*
	k) Capacity of fuel tank	m^3	*
2.0	**Fire Water Main**		
	a) Size	ND mm	*
	b) Pressure rating	bar(g)	*
	c) Length	m	
	d) Supply pressure	bar(g)	*
	e) Material		*
3.0	**Fire Fighting Equipment**		
3.1	**Outdoor Hydrants**		
	a) Manufacturer		*
	b) Number		*
	c) Working pressure	bar(g)	*
	d) Design pressure	bar(g)	*
	e) Diameter connected to main	ND mm	*
	f) Hose cabinet		
	• Manufacturer		*
	• Type/Model		
	• Hose connection type		

Item NO.	Description	Units	Bidder to fill in
	• Length of hose	m	*
	• Size of discharge nozzle	ND mm	*
	• Discharge capacity	kg/s	*
3.2	**Indoor Hydrants**		
	a) Manufacturer		*
	b) Number		*
	c) Hose reel		
	• Manufacturer		*
	• Type/Model		
	• Hose connection type		
	• Length of hose	m	*
	• Size of discharge nozzle	ND mm	*
	• Discharge capacity	kg/s	*
3.3	**Form/Water Indoor Hydrants**		
	a) Manufacturer		*
	b) Number		*
	c) Number and capacity of form concentrate containers	kg	
	f) Hose reel		
	• Manufacturer		*
	• Type/Model		
	• Hose connection type		
	• Length of hose	m	*
	• Size of discharge nozzle	ND mm	*
	• Discharge capacity	kg/s	*
3.3	**Sprinkler System**		
	a) Manufacturer		
	b) Number		
	c) Size of discharge nozzle	ND mm	

Item NO.	Description	Units	Bidder to fill in
	d) Connection type		
	e) Flow rate	l/s	
	f) Flow density	$l/s/m^2$	
	g) Minimum coverage area per sprinkler	m^2	*
3.4	**Water Spray Fixed System**		
	a) Manufacturer		*
	b) Number		*
	c) Working pressure	bar(g)	*
	d) Flow density	$l/s/m^2$	*
3.5	**Portable Fire Extinguishers**		
	a) Water type		
	• Extinguishing agent		*
	• Method of operation		
	• Capacity		
	b) Dry chemical type		
	• Extinguishing agent		*
	• Method of operation		
	• Capacity		
	c) Carbon dioxide type		
	• Extinguishing agent		*
	• Method of operation		
	• Capacity		
	d) Other (_____) type		
	• Method of operation		*
	• Capacity		*
4.0	**Fire Detection and Alarm System**		
	a) **Smoke Detector**		
	• *Manufacturer*		*

Item NO.	Description	Units	Bidder to fill in
	• Type/Model		*
	b) **Heat Detector**		
	• Manufacturer		*
	• Type/Model		*
	c) **Flame Detector**		
	• Manufacturer		*
	• Type/Model		*
	d) **Indicating Lamp**		
	• Manufacturer		*
	• Type/Model		*
	• Frequency of flash	/min	
	e) **Alarm Bell**		
	• Manufacturer		*
	• Type/Model		
	• Range and dB level		*
4.1	**Main Fire Alarm Panel**		
	a) Manufacturer		*
	b) Type/Model		
	c) Maximum No. of loop		*
	d) Maximum No. of sensors and devices in a loop		*
	e) Printer provided (Yes/No)		

5.0	Zone Classification, Fire Fighting Installations and Detection Systems			
	Zone No.	Description of the zone-area/building	Fire fighting installations	Detection and alarm system

Bidder's Data Sheet

Bidder's Name

2.8.16 Cranes and Hoists

Item NO.	Description	Units	Bidder to fill in
1.0	**GT Turbine Building Crane**		
	a) Manufacture		*
	b) Type		*
	c) Model No.		*
	d) Crane Class		*
1.1	Main Hoist		
	a) Diameter	mm	
	b) Size of wire rope	mm	
	c) Safety Factor		
	d) Capacity (SWL)	t	*
1.2	Auxiliary Hoist		
	a) Diameter	mm	
	b) Size of wire rope	mm	
	c) Safety Factor		
	d) Capacity (SWL)	t	*

Item NO.	Description	Units	Bidder to fill in		
1.3	Bridge				
	a) Size & Length	m x m			
	b) Length	mm			
	c) Material				
	d) Travel Speeds	m/s	*		
1.4	End Carriage/Truck				
	a) Material	m x m			
	b) Size & Length	mm			
	c) Length	mm			
	d) Wheels				
1.5	Lighting and Power Outlets				
	a) Type of Lighting and Quantity				
	b) Lux Level				
	c) No. of socket outlets and voltage				
1.6	Trolley				
	a) Material				
	b) Wheels				
1.7	Dimensions				
	a) Span between rails	mm			
	b) Operating floor to crane rails	mm			
	c) Highest hook position (Main & Aux.)	mm			
1.8	Electric Motors		Bridge	Trolley	Hoists

Item NO.	Description	Units	Bidder to fill in
	a) Rated Capacity	KW	
	b) Voltage	V	
	c) Overload		
	d) Travel Speed	m/s	
2.0	**ST Turbine Building Crane**		
	a) Manufacture		*
	b) Type		*
	c) Model No.		*
	d) Crane Class		*
2.1	Main Hoist		
	a) Diameter	mm	
	b) Size of wire rope	mm	
	c) Safety Factor		
	d) Capacity (SWL)	t	*
2.2	Auxiliary Hoist		
	a) Diameter	mm	
	b) Size of wire rope	mm	
	c) Safety Factor		
	d) Capacity (SWL)	t	*
2.3	Bridge		
	a) Size & Length	m x m	
	b) Length	mm	
	c) Material		
	d) Travel Speeds	m/s	*

Item NO.	Description	Units	Bidder to fill in		
2.4	End Carriage/Truck				
	a) Material				
	b) Size & Length	m x m			
	c) Length	mm			
	d) Wheels	mm			
2.5	Lighting and Power Outlets				
	a) Type of Lighting and Quantity				
	b) Lux Level				
	c) No. of socket outlets and voltage				
2.6	Trolley				
	a) Material				
	b) Wheels				
2.7	Dimensions				
	a) Span between rails	mm			
	b) Operating floor to crane rails	mm			
	c) Highest hook position (Main & Aux.)	mm			
2.8	Electric Motors		Bridge	Trolley	Hoists
	a) Rated Capacity	KW			
	b) Voltage	V			
	c) Overload				
	d) Travel Speed	m/s			

Item NO.	Description	Units	Bidder to fill in
3.0	**Warehouse Crane (if required)**		
	a) Manufacture		*
	b) Type		*
	c) Model No.		*
	d) Crane Class		*
3.1	Main Hoist		
	a) Diameter	mm	
	b) Size of wire rope	mm	
	c) Safety Factor		
	d) Capacity (SWL)	Ton	*
3.2	Auxiliary Hoist		
	a) Diameter	mm	
	b) Size of wire rope	mm	
	c) Safety Factor		
	d) Capacity (SWL)	Ton	*
3.3	Bridge		
	a) Size & Length	mm	
	b) Length	mm	
	c) Material		
	d) Travel Speeds	m/s	*
3.4	End Carriage/Truck		
	a) Material		
	b) Size & Length	m x m	
	c) Length	mm	
	d) Wheels	mm	

Item NO.	Description	Units	Bidder to fill in		
3.5	Lighting and Power Outlets a) Type of Lighting and Quantity b) Lux Level c) No. of socket outlets and voltage				
3.6	Trolley a) Material b) Wheels				
3.7	Dimensions a) Span between rails b) Operating floor to crane rails c) Highest hook position	 mm mm mm			
3.8	Electric Motors a) Rated Capacity b) Voltage c) Overload d) Travel Speed	 KW V m/s	Bridge	Trolley	Hoists

Item NO.	Description	Units	Bidder to fill in
3.9	*Monorails and Hoists* a) Manufacturer b) Type c) Model no. d) Quantity e) Crane class f) Safety Factor g) Hook Capacity (SWL) Note: The Bidder shall list all hoists to be supplied. Any other hoists found to be necessary during the execution of the Contract shall be supplied by the Contractor at no additional cost to SJSC "Uzbekenergo".		* * * *

Item NO.	Description	Units	Bidder to fill in
3.10	Fork Lift Truck		
	a) Type		*
	b) Manufacturer		*
	c) Number		*
	d) Capacity(maximum)	kg	
	e) Lifting height	mm	
	f) Fork Length	mm	
	g) Turning radius	mm	
	h) Driver		
	- Type		
	- Manufacturer		
	- Number		
	- Displacement	litre	
	- Speed	rpm	
	- Rated Output	PS/rpm	

Bidder's Data Sheet

Bidder's Name

2.8.17 Workshop and Laboratory Equipment

Item NO.	Description	Q'ty	Specification
1.1	**Workshop Equipment (Base Bid)**		

Item NO.	Description	Q'ty	Specification
1.2	**Workshop Equipment (Option)**		

Item NO.	Description	Q'ty	Specification
2.1	**Laboratory Equipment (Base Bid)**		

Item NO.	Description	Q'ty	Specification
2.2	**Laboratory Equipment (Option)**		

Bidder's Data Sheet

Bidder's Name

2.8.18 Piping List

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
1) Fuel Gas Supply System								
a.								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
2) Gas Turbine								
a.								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
3) HRSG								
a.								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
4) Steam Turbine								
a.								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
5) Condensate and Feedwater System								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
6) Hot Water Supply System								
a.								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
7) Water Treatment System								
a.								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
8) Circulating Water System								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
9) Closed Cooling Water System								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
10) Compressed Air System								
a.								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
11) Waste Water Treatment System								
a.								

Name of Piping	Kind of Fluid	Temperature (℃)	Pressure (bar)	Flow Rate (t/h or m^3/h)	Materials	Inside Diameter (mm)	Thickness (mm)	Remarks
12) Fire Fighting System								
a.								