Corrigendum - 6 dated 29/04/2024 to CPC Tender No. BHEL/CPC/SNG/BOP/24/004

Corrigendum - 6 dated 29/04/2024 to CPC Tender No. BHEL/CPC/SNG/BOP/24/004 for the work of "PRE-BID TIE-UP/ MOU FOR EXECUTION OF BOP PACKAGES ON EPC BASIS AT SINGARENI THERMAL POWER PROJECT, STAGE-II (1x800 MW), TELANGANA".

A) TECHNICAL CONDITIONS OF CONTRACT (TCC): Clause No. 4.3 of TCC is revised as below**:**

Sl. No.	**Clause No.**	**Existing clause in Tender**	**Revised clause**
1	Clause No. 4.3 of TCC	Successful bidder shall construct BHEL temporary office (Approx. size 400 Sqm) along with all necessary amenities. The maintenance of the subject office shall be done by BHEL, after handing over.	Successful bidder shall construct BHEL temporary office (Approx. size **500 Sqm**) along with all necessary amenities. The maintenance of the subject office shall be done by BHEL, after handing over.

B) Some of the Bidders had asked queries in the published tender specification. The clarifications issued by BHEL for balance queries of bidders are enclosed including Annexure -1 (related to site enabling work), Annexure – 2 (FGD Preliminary Design Input), Process flow Diagram (PFD) for FGD System, Revised BATTERY LIMIT R01 and Revised Scope Matrix R01.

Note:

1) **All other terms and conditions against this NIT shall remain unchanged.**
2) **This corrigendum is to be submitted duly signed and stamped along with the Techno-commercial bid (Part- I).**

for BHARAT HEAVY ELECTRICALS LTD

AGM / SCT- CPC

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004

Sl No	Reference clause of Tender document	Existing Provision	Bidder's query	BHEL Clarification
1	Technical conditions of the contract (TCC), clause 2.1 and 2.2	2.1.15 OWNER (SCCL) OFFICE, SAFETY PARK ETC 2.2.17 SITE ENABLING WORK SUCH AS BHEL SITE OFFICE, CLOSED STORAGE SHEDS, OPEN YARD DEVELOPMNET FOR MATERIAL STORAGE ETC.	kindly provide the brief details/sizes of these facilities	2.1.15: Refer Technical Specifications of Owner (SCCL) Tender document. 2.2.17: Preliminary inputs are attached as Annexure-1. However, Final input shall be provided during detail engineering after award of contract.
2	scope matrix, s.no 3	FLUE GAS DESULPHURISATION SYSTEM, BHEL includes majorly Absorber, RC Pump etc	Pls clarify the scope of RC pump, Oxygen blowers and other auxiliaries of absorber. And also provide the separate scope matrix for FGD for better understanding of the scope of BOP contractor	Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping are in BTG Scope. Except above, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. Terminal Point (TP) shall be 5 meter in and out away from Absorber. Typical PFD enclosed.
3	scope matrix, s.no 13	CW system	Understand ACW pumps are in BOP scope, kindly provide the capacity of ACW pump along with approx flow/diamater of CW and ACW pipies.	It is to clarify that ACW Pumps are in BTG scope . Preliminary input for tendering may be considered as: The CCW Flow shall be -- 81000 CubM/HR ACW Flow shall be- 6500 CubM/hr considering DMCW flow required for cooling of Auxliareis of BOP area-shall be limited to 1000 CubM/Hr and tempertaure rise shall be 10 DeG C. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
4	Additional points,scope matrix, s.no3	Rain Water Harvesting System	kindly provide the specifications and also inform whether the storm water drainage can be connected to existing rainwater harvesting tank	For Rain Water Harvesting System specification refer Owner(SCCL) documents and it should be acceptable to Customer (SCCL). Bidder may consider accordingly. Storm water drainage can not be connected to existing rain water harvesting tank. Please refer drain layout in Vol VI, Part E tender drawings for outfall locations of storm water drains.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004

Sl No	Reference clause of Tender document	Existing Provision	Bidder's query	BHEL Clarification
5	Additional points,scope matrix, s.no3	FGD. Tanks & Agitator	kindly provide the details of tanks and agitators to be considered	Refer Technical Specifications of Owner (SCCL) Tender document. Only preiliminary input will be provided by BHEL (Refer attached Annexure-2),
6	scope matrix,Electrical system/equipments, s.no 11	3.3 KV & 11 KV Segregated Phase Bus Ducts , Complete system in BHEL Scope	Pls confirm the scope of segregrated phase bus ducts in BOP area	**Refer Scope Matrix attached:** **Civil:** 1) Complete civil in BTG Island (Except CHP-BHP, AHP) by BHEL. 2) Complete civil in BOP Island (including CHP-BHP, AHP in BTG Island) by BOP vendor. **Supply:** Supply by BHEL for BTG & BOP Area. **Erection & Commissioning:** 1) E&C by BHEL in BTG area. 2) E&C by BOP vendor in BOP areas.
7	scope matrix,Electrical system/equipments, s.no 12	HV (11 kV & 3.3 kV) Switchgear, Complete system in BHEL Scope	Pls confirm the scope of switchgear in BOP area	**Refer Scope Matrix attached:** **Civil:** 1) Complete civil in BTG Island (Except CHP-BHP, AHP) by BHEL. 2) Complete civil in BOP Island (including CHP-BHP, AHP in BTG Island) by BOP vendor. **Supply:** Supply by BHEL for BTG & BOP Area. **Erection & Commissioning:** 1) E&C by BHEL in BTG area. 2) E&C by BOP vendor in BOP areas. However, For BOP package, list of feeders/ electrical loads to be informed at tender stage by BOP vendor for sizing of HT Switchgear falling in BOP area.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004

Sl No	Reference clause of Tender document	Existing Provision	Bidder's query	BHEL Clarification
8	scope matrix,Electrical system/equipments, s.no 30	DG set	Pls provide the capacity and no.of DG sets	Preliminary input for tendering may be considered as: For Main plant DG (Capacity of 2000KVA to be considered. 02 Nos. (01 Working & 01 Stand by). However, for Sizing and Numbers of DG sets required in BOP area, BOP Vendor to consider DG sets complying to Owner (SCCL) tender specifications. Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
9	Technical specification, section-VI, Part-A, Sub section IIA-04,	FLUE GAS DESULPHURISATION SYSTEM	kindly provide the layout and PFDs for FGD system showing the existing facilities in Owner scope and proposed facilities demarking BHEL and BOP contractor scope	Typical PFD enclosed. Refer Technical Specifications of Owner (SCCL) Tender document. However, Final input shall be provided during detail engineering.
10	Technical specification, section-VI, Part-A, Sub section IIA-04, 5.00.00	GYPSUM DEWATERING SYSTEM	Provide the capacity of gypsum dewatering system and also clarify scope of gypsum dewatering pumps and piping upto gypsum dewatering system	Scope of Gypsum dewatering system as per Owner (SCCL) Specifications including pumps and piping are in BOP scope. Only preiliminary input will be provided by BHEL (Refer attached Annexure-2).
11	Technical specification, section-VI, Part-A, Sub section IIA-04, 10.00.00, 11.00.00	THERMAL INSULATION, LAGGING, CLADDING & REFRACTORIES BUILDINGS	Understand the thermal insulation is excluded from BOP scope. Pls provide the list of the Buildings under FGD to be considered in BOP scope.	Thermal insulation requirement for any BOP system/package will be in BOP scope. For list of FGD building, please refer Volume VI, Part-A, sub section-A-04, FGD of SCCL tender specification.
12	Technical specification, section-VI, Part-A, Sub section IIA-04, 14.00.0	BOOSTER FAN & ISOLATION GATES (If Required)	understand Booster fan in excluded from BOP scope, pls confirm	Bidder's understanding is correct

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004

Sl No	Reference clause of Tender document	Existing Provision	Bidder's query	BHEL Clarification
13	Technical specification, section-VI, Part-A, Sub section IIA-07,	LOW PRESSURE PIPING	Kindly provide the layout drawing showing the physical location of the terminal points for all LP piping systems	Bidder may refer Battery Limit layout enclosed with NIT. However, physical location of the terminal points for all LP piping systems shall be provided during detail engineering
14	General	dismantling and construction	kindly confirm the scope of dismantling and re construction of any facilities to be considered which are fouling with the proposed planty facilities.	Bidder may plan visit to site for actual assessment. Further, interference free re-routing, re-connection of all existing pipes & cables, re-construction of any facilities, completion of the systems along with additional pipes and cables shall be in scope of BOP vendor. For details refer Owner (SCCL) drawings.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004					
Sl. No.	**Section**	**Description**	**Scope**	**Bidder's Remarks**	**BHEL Clarification**
15	A - 3	Flue Gas Desulphurization System	BHEL	1. According to the 'Scope Matrix Remarks', BHEL scope mainly includes Absorber. 2. According to 'Additional points 2, 3 & 4' of the Scope matrix, FGD tanks, Agitator, Gypsum Dewatering system & Lime dosing system along with waste water transfer pumps to ash pond are part of BOP scope. 3. Please confirm whether these Balance Works other than absorber is inclusive of Civil, Mechanical, piping and Electrical, C&I/field instruments. We understand that the DDCMIS for the complete FGD is provided by BHEL. 4. Please clarify if booster fan for FGD is provided by BHEL. 5. Clarity is need for the scope of BOP vendor for the FGD system, flue gas ducting from ID Fan outlet and wet stack. 6. There is no information in the BHEL documents on the process requirement that are required for estimation of the sizes and capacity of the equipment. This data is required for arriving at the BOQ and estimate for the works. 7. FGD process is specific to the technology provider and estimation requires information like PID (gas, lime etc., material balance/mass balance, absorber dimensions, etc. Equipment configuration and sizing is also required. 8. BHEL to clarify the scope of basic and detailed engineering for the FGD balance items. For example sizing of the tanks, agitators, pumps, fans, piping, lime dosing system, gas cooling pumps, etc. 9. BHEL to provide the relevant PID, terminal points for piping and cabling on the absorber. Please clarify if all gas analyzers for the FGD are provided by BHEL. 10. BHEL to clarify if the FGD DDCMIS system will have control and monitoring of the complete limestone system.	1, 2 &3. Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping are in BTG Scope. Except above, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. Terminal Point (TP) shall be 5 meter in and out away from Absorber. Typical PFD enclosed. 4. Booster Fan is not applicable for this Project. 5. Flue gas ducting from ID Fan outlet to absorber and absorber to wet stack is in BHEL Scope. 6,7 & 8. Regarding Scope refer Owner (SCCL) technical specifications & Scope Matrix attached with NIT. Preliminary inputs are enclosed as Annexure-2, However, final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly. 9.Terminal Point (TP) shall be 5 meter in and out away from Absorber. Typical PFD enclosed. Gas analyzers for the FGD is in BOP Vendor scope. 10. limestone handling system is not in the Tender Scope. However, FGD DDCMIS system shall be in BHEL scope.
16	A – 6	Low Pressure Piping	BHEL/ BOP	According to Scope Matrix Remarks, Complete CW pipeline from condenser outlet to IDCT and from CWPH to condenser inlet shall be in the scope of BOP EPC Vendor. However the RE joint is in BHEL Scope. Please clarify scope of the inlet and outlet isolation valves in the condenser. Please also confirm that the interconnection between the two condensers will be done by BHEL. The design flow rate for CW Pump Sizing and Pressure drop across TP for CW and ACW to be provide by BHEL. Temperature rise across condenser to be considered for design range for IDCT shall also be provided by BHEL.	FOR CW system- Bidder understanding is correct , However isolation valve of condenser is in BTG scope. Preliminary input for tendering may be considered as: The CCW Flow shall be -- 81000 CubM/HR ACW Flow shall be- 6500 CubM/hr considering DMCW flow required for cooling of Auxliareis of BOP area- shall be limited to 1000 CubM/Hr and tempertaure rise shall be 10 DeG C. Temperature Rise shall be 9.34 DegC across Condenser. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
17	A – 16 Section VI Part A Sub Section IIA01 Cl 2.18.00	Fuel Oil Unloading System	BOP	1. From the specifications, it's clear that only 2 LDO storage tanks (1000 m3) with all necessary accessories and connections are to be provided to link with the existing fuel oil system. We need clarification regarding the scope of supply for the Fuel Oil forwarding Pump House and fuel oil piping up to BTG terminal points. The TP Location at BTG Area to be provided. We understand that the civil and architectural works for the building is done by BHEL and material handling equipment is also provided by BHEL for the building. Items like forwarding pumps, strainers, valves, instruments, control system etc. are all in BHEL scope. Confirm. 2. Please confirm that the drain oil from SG area will be terminated at the LDO tank nozzle by BHEL as specified in Section VI Part A Sub Section IIA01 Cl 2.18.00 (9)	1. Refer Technical Specifications of Owner (SCCL) Tender document. Further, Terminal Point is as per Battery limit layout enclosed with NIT. 2. Drain oil from SG area shall be terminated as per Battery limit layout enclosed with NIT.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004

Sl. No.	Section	Description	Scope	Bidder's Remarks	BHEL Clarification
18	B - 6	Site Enabling work	BOP	In the remarks, it was noted that a list of necessary buildings/equipment for site preparation was required. However, the list is not provided. In the NIT (Notice Inviting Tender), it is stated that site-enabling work would include setting up a BHEL site office (approximately 400 square meters), the owner's (SCCL) office, closed storage sheds, and developing an open yard for material storage, among other things. Area for Labour Camp and Site Office to be Specify. We need the list of necessary buildings/equipment along with area for site preparation.	Preliminary inputs are attached as Annexure-1. However, Final input shall be provided during detail engineering after award of contract.
19	Additio nal Points A - 9	Centralised Nitrogen System	BOP	According to Scope Matrix Remarks, Nitrogen System placed inside TG Building. The Civil Works is to be excluded from BOP scope, as it is located inside TG Building. Please provide inputs for sizing the equipment in the system. (HPH LPH Deaerator Drain cooler volume)	Refer revised Scope Matrix, complete Centralized Nitrogen System has been moved outside BTG Island, same shall be in BOP Vendor Scope. Input for sizing the equipment shall be provided during detail engineering.
20	NIT- TCC-2.1.15	SCCL Office, Safety Park etc.	BOP	The Comprehensive List, Size and Areas for Office, Safety Park not specified. Please provide the same.	Refer Technical Specifications of Owner (SCCL) Tender document.
21	A - 17	Ash Handling System	BOP	1. As per Section VI Part B Subsection A21 (4.01.01 a), BHEL needs to clarify the system proposed in the Boiler whether it is impounded Hopper or Scrapper chain conveyor. 2. For Sizing of Ash Handling system, the details of Bottom Ash, BA Hopper Head room, No of Eco Hoppers, Duct Hoppers, APH hopper, SCR hoppers required. Ash Collection rate in each set of Hoppers. 3. No of Hoppers, ESP Hopper arrangement, ash collection rate in ESP Hoppers. 4. Particle size distribution of fly ash. 5. Civil Works for Ash handling system in BTG is in scope of BHEL. The Design inputs shall be provide by the BOP contractor. Please clarify. 6. Terminal Points for Ash Hoppers and Hopper heaters are provide by BHEL. 7. We understand only fly ash is conveyed through HCSD System as per Section VI Part B clause 6.00 data sheet 1.6 and 1.8. 8. The main ash silo will be RCC construction. In Sub Sec A21, Sec VI, Part CL 2.12.00 only Int FA Silo MOC is mention.	1. Bidder to follow tender specification. 2. Refer equipment sizing criteria clause 4.01.02 regarding ash districbution at various collection hoppers. For head room for BA hopper bidder may consider 11 meters. 3. Please consider No of hoppers of ESP as 120 Nos, Eco hoppers-04 Nos, Eco-outlet hoppers-6 nos, AHP hoppers-06 nos and Duct hoppers-06 nos for tender purpose. 4. Bidder to consider approximate ash data as follows. Less than 10 microns 5-25 10 - 30 microns 10-25 30 - 50 microns 5-15 50 - 70 microns 5-15 70 - 90 microns 5-10 90 - 100 microns 4-10 Greater than 110 microns 25-40 However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly. 5. Civil works of AHP in BTG area also shall be in the scope of bidder. 6. For ESP hoppers AHP terminal point are provided in the NIT specifications.
22	A - 20	Elevators, TG hall crane	BOP	1. Clarification required for the following list of elevators regarding the scope of supply and associated civil, structural & architecture works. Elevators of the TG Building, SG, and ESP control room, FGD absorber, FGD MCC cum control room building. We understand that the structure enclosing the elevator will be provide by BHEL and only the electro is include in the scope of BOP. 2. For the FGD absorber elevator please provide the height of travel and number of landings. 3. Please clarify scope of hoist and monorail for the bunker building. 4. The Weight to be handle or Main hook capacity to be provide for TG EOT Hall.	1&2. All Elevators except FGD absorber elevator are in BOP Vendor Scope on EPC Basis. However, Civil shaft for Elevators in BTG Island Buildings shall be provided by BHEL. 3. Refering to Scope Matrix attached with NIT, Hoist is in BOP Vendor Scope and monorail for the bunker building is in BTG Scope. 4. Weight to be handle or Main hook capacity for TG EOT Hall shall be provided during detail engineering.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004					
Sl. No.	**Section**	**Description**	**Scope**	**Bidder's Remarks**	**BHEL Clarification**
23	C - 18	AC & DC Motors	BOP	According to scope matrix remarks, BHEL will be provide HT motors (free of cost) in BOP area to BOP vendor. Please confirm. We understand that this includes motors in CHP/biomass handling, AHP, water system, FGD BOP etc. also.	**Refer Scope Matrix attached:** **Civil:** 1) Complete civil in BTG Island (Except CHP-BHP, AHP) by BHEL. 2) Complete civil in BOP Island (including CHP-BHP, AHP in BTG Island) by BOP vendor. **Supply:** Supply HT motors by BHEL for BTG Area. Supply of HT motors (excl. Temp transmitter alongwith JB) required for BOP scope of work (except HT motors for compressors in CHP-BHP, AHP area) will be provided by BHEL to BoP vendor. LT motors outside BTG area (incl. CHP-BHP, AHP in BTG area) supply by BOP Vendor. **Erection & Commissioning:** 1) E&C by BHEL in BTG area. 2) E&C by BOP vendor in BOP area (incl. CHP-BHP, AHP in BTG area). However, For BOP package, list of feeders/ electrical loads to be informed at tender stage by BOP vendor for sizing of HT Switchgear falling in BOP area. Relevant input for designing the same to be provided by BoP vendor.
24	APH	APH Water Wash Pumps	BOP	The pressure of the water at the BHEL Terminal Point for APH Wash Water may please be provided.	Shall be provided during detail engineering
25	C - 28	Construction Power Supply and construction water supply	BOP	Please provide number of construction power supply points required by BHEL for the BTG. Please also confirm that the charges payable to Owner/distribution company for BTG portion will be made by BHEL. For construction water please provide the number of access points required in BTG area. The charges towards the construction water for BTG portion shall be made by BHEL.	Construction Power Supply Points of 415V AC for BTG area-08 Nos. Further, Construction Power Charges for BTG area shall be borne by BTG vendor. Construction Water Supply Points for BTG area- 04 Nos. Further, Construction Water Charges for BTG area shall be borne by BTG vendor.
26	CW-MK-21244-999-POC-F-001R15	Rerouting of existing cable racks	BOP	Request to furnish the details of additional scope for 'Rerouting of existing cable racks' discussed in the VC meeting.	Bidder may plan visit to site for actual assessment. Further, interference free re-routing, re-connection of all existing pipes & cables, re-construction of any facilities, completion of the systems along with additional pipes and cables shall be in scope of BOP vendor. For details refer Owner (SCCL) drawings.
27	Section VI Part-A Sub Section IIA-11	Coal & Biomass Handling Plant	BOP	Please provide the elevation of tripper floor to be considered for the design of coal handling plant.	Preliminary input for tendering may be considered as: Elevation of tripper floor at 58.2 Meter may be considered. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
28	Section VI Part-A Sub Section I - CL 1.01.00f	Boundary Wall & Patrol Road	BOP	Please clarify the extent of plant boundary wall required for the Unit -3. From the drg F-001 R15 we understand that for Unit-3 there is no separate boundary wall. Please clarify. We understand the separate patrol road is not applicable for Unit 3. Please clarify.	Bidder's understanding is correct.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004					
Sl. No.	**Section**	**Description**	**Scope**	**Bidder's Remarks**	**BHEL Clarification**
29	Section VI Part-E (CW-MK-21244-999-POC-F-001R15)	Rerouting of existing piping and cables	BOP	In the note it is mentioned that the 1000 NB and 500 NB pipes can be routed within the trestle leg space, but it is shown to be routed on the trestle. Please clarify if these pipes are intended to be routed on the trestle or can it be routed on the ground with pedestal supports or buried underground between the leg of the trestle. Pipe specification may be informed (existing pipe) Similarly please provide the list of cables and their sizes for rerouting	Bidder may plan visit to site for actual assessment. Further, interference free re-routing, re-connection of all existing pipes & cables, re-construction of any facilities, completion of the systems along with additional pipes and cables shall be in scope of BOP vendor. For details refer Owner (SCCL) drawings.
30	Section VI Part-A Sub Section IIA-CL 2.14.01	APH fire fighting	BOP	BOP Vendor will provide a connection for APH fire fighting from the header, near APH. Beyond the terminal point APH vendor shall provide the fire fighting system in the APH. Please confirm.	Complete fire protection and detection ssystem is in BOP Vendor scope. Please refer Owner(SCCL) tender specifications and scope matrix attached with NIT
31	Section VI Part-A Sub Section IIA-20	Surface Preparation and Painting	BOP	The Specification of Surface Preparation and Painting is not available in Section VI Part A IIA-20	Please refer Vol-VI, Pat-B, Sub-Section A-12

	PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004			
Sl. No.	**Description**	**As per RFQ**	**Bidder's Remarks**	**BHEL Clarification**
32	**Performance Security**	(10%) of Contract Price for all the contract Price valid till completion of Defect Liability period	Requesting for 3% Performance Security-As per Ministry of Finance OM No. 914I2O2A-PPD dated 12.11.2020, directs reduction of Performance Security from existing from 10% to 3% of the value of the contract. It will help us in accelerating procurement process and vendor disbursement to complete the project timely. Kindly oblige the same.	Owner (SCCL) tender term & conditions shall prevail. However, if Owner (SCCL) gives any relief, same shall be passed on to bidder accordingly.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004							
Sl. No.	**SPECIFICATION REFERENCE**				**SPECIFICATION REQUIREMENT**	**BIDDER'S QUERY**	**BHEL Clarification**
	SEC/PART	**SUB SEC.**	**PAGE NO.**	**CLAUSE NO.**			
33	-	-	-	-	-	Request client to kindly clarify the scope of dismantling of existing facilities in the BOP area.	Bidder may plan visit to site for actual assessment. Further, interference free re-routing, re-connection of all existing pipes & cables, re-construction of any facilities, completion of the systems along with additional pipes and cables shall be in scope of BOP vendor. For details refer Owner (SCCL) drawings.
34	-	-	-	-	-	Bidder understands that the terminal point for the coal and bio-mass handling will be at the inlet of the bunkers. Bunker building structure, platform inside bunker building and equipment at downstream of conveyors are not in bidder scope. Kindly confirm.	Bidder's understanding is correct.
35	-	-	-	-	-	Request client to provide bunker building GA indicating the elevation of the tripper conveyor floor level.	Preliminary input for tendering may be considered as: Elevation of tripper floor at 58.2 Meter may be considered. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
36						Please provide the Ash generation rate for the proposed plant	Preliminary input for tendering may be considered as: Ash generation rate for worst coal at BMCR is 267 TPH. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
37						Bidder understands that it is the choice of bidder to select the type of bottom ash and fly ash handling systems (out of the options furnished in the tender document). please confirm	**BOP Vendor to follow Owner (SCCL) tender specification.** **(This supersedes the reply in Corrigendum-4 dated 23.04.24)**

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004							
S. NO.	**SPECIFICATION REFERENCE**				**SPECIFICATION REQUIREMENT**	**BIDDER'S QUERY**	**BHEL Clarification**
	SEC/PART	**SUB SEC.**	**PAGE NO.**	**CLAUSE NO.**			
38	SECTION-VI, PART-A	SUB SECTION IIA-09 CW SYSTEM	3 OF 3	1.05.00	17) Provision of interconnection with interconnecting Butterfly valve to be kept in raw water pumps (PT) header of stage-II with stage-I.	Please share the schematic diagram of Raw water system with stage-I & stage -II details for bidder estimation.	Refer Owner (SCCL) tender specifications attached with NIT.
39	SECTION-VI, PART-A	SUB SECTION IIA-09 CW SYSTEM	3 of 3	1.05.00 5)	2x100% FGD Gypsum wash system	Request to BHEL provide the flow rate and pressure at the terminal point for design of FGD Gypsum wash system.	Same shall be provided during detail engineering.
40	SECTION-VI, PART-A	SUB SECTION IIA-09 CW SYSTEM	3 of 3	1.05.00 8)	DM Cycle Make-up water system- Pumps	Request to BHEL provide the flow rate and pressure at the terminal point for design of DM Cycle Make-up water system. Please confirm the pump configuration also.	Same shall be provided during detail engineering.
41	SECTION-VI, PART-A	SUB SECTION IIA-09 CW SYSTEM	3 of 3	1.05.00 9)	Boiler Fill System- 1 x 100% Boiler Fill Pumps	Request to BHEL provide the Boiler fill flow rate and pressure required at terminal point.	Same shall be provided during detail engineering.
42	SECTION-VI, PART-A	SUB SECTION IIA-09 CW SYSTEM	3 of 3	1.05.00 10)	2 x 100% Air preheater wash water pumps.	Request to BHEL provide the APH wash water flow rate and pressure required at terminal point.	Same shall be provided during detail engineering.
43	SECTION-VI, PART-A	SUB SECTION IIA-09 CW SYSTEM	3 of 3	1.05.00 11)	Two (02x100%) Condensate Transfer Pumps.	Request to BHEL provide the Condensate Transfer system flow rate and pressure required at terminal point.	Same shall be provided during detail engineering.
44	SECTION-VI, PART-B	SUB SECTION-A-01 EQUIPMENT SIZING CRITERIA	43 of 81	3.01.00 d)	Rated CW pump flow per unit (Design Point) Condenser Flow + ACW flow per unit + CW blowdown flow per unit + CW Chemical treatment +any other requirement as envisaged by the bidder	Request BHEL to provide the CCW & ACW flow rate for design of circulating water system.	It is to clarify that ACW Pumps are inside BTG Island . Preliminary input for tendering may be considered as: The CCW Flow shall be -- 81000 CubM/HR ACW Flow shall be- 6500 CubM/hr considering DMCW flow required for cooling of Auxliareis of BOP area- shall be limited to 1000 CubM/Hr and tempertaure rise shall be 10 DeG C. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004							
S. NO.	**SPECIFICATION REFERENCE**				**SPECIFICATION REQUIREMENT**	**BIDDER'S QUERY**	**BHEL Clarification**
	SEC/PART	**SUB SEC.**	**PAGE NO.**	**CLAUSE NO.**			
45	SECTION-VI, PART-B	SUB SECTION-A-01 EQUIPMENT SIZING CRITERIA	49 of 81	3.06.00 A 3) 4)	3.06.00 A 3) h) ClO2 plant area 3.06.00 A 3) i) gravity filters 3.06.00 A 4) Chemical house and **Filter house** shall be RCC buildings	As per the tender scheme, the mentioned facilities are not part of the present treatment plant. Hence these facilities are excluded from bidder scope of supply.	**3.06.00 A 3) h) ClO2 plant area-** Query has been raised to customer. On receipt of reply from the customer, the same shall be forwarded. **Gravity filters-** Refer Owner (SCCL) Tender specification SECTION-VI, PART-B SUB-SECTIONA - 14 WATERTREATMENT PLANT Clause No- 1.01.00 (Pg 1 of 33) **3.06.00 A 4) Chemical house and Filter house shall be RCC buildings-** Owner (SCCL) Specification is clear regarding the scope.
46	SECTION-VI, PART-A	SUB SECTION- IIA-08 WATER TREATMENT PLANT	3 of 6	1.03.03 g)	Waste Service water Treatment System to be designed considering all waste water of stage-II and stage-I. Necessary connection of waste water from stage-I to Stage-II AHP & ETP including pumping, piping and valves etc. as required are in the scope of bidder. Bidder to design suitable treatment system for Stage-I waste water as per the waste water quality and re-use in stage-II facilities.	Request employer to share the details of Stage-I waste water quantity and quality which is to be reused in Stage-II plant for design of ZLD.	Same shall be provided during detail engineering.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004							
S. NO.	**SPECIFICATION REFERENCE**				**SPECIFICATION REQUIREMENT**	**BIDDER'S QUERY**	**BHEL CLARIFICATION**
	SEC/PART	**SUB SEC.**	**PAGE NO.**	**CLAUSE NO.**			
47	TECHNICAL SPECIFICATION SECTION– VI, PART-B	SUB-SECTION-A-05 (FGD)	14 OF 25	7.00.00	GYPSUM DEWATERING SYSTEM	Based on the scope matrix & scheme of Gypsum dewatering system (GDS) bidder understand the following scope is in BOP vendor scope of supply for Stage II FGD system: 1. **Terminal point:** GDS BOP vendor terminal point starts at downstream of control station of Gypsum bleed pump common discharge line to PHC feed tank, any recirculation line back to absorber not considered in BOP vendor scope. 2. **Primary hydrocyclone feed system: consisting of the following:** a. 1x100% Primary hydrocyclone feed tank along with agitator, 2x100 % primary HC feed pumps b. Pipings with necessary valves & fittings from downstream of control station of Gypsum bleed pump common discharge line upto primary hydrocyclone feed tank. c. Pipings with necessary valves & fittings from PHC feed tank to Primary hydrocyclone d. Two streams of (2X100%) of primary hydrocyclones (PHC). e. Piping along with necessary valves & fittings from i) primary hydrocyclone overflow to secondary hydrocyclone feed tank, ii) primary hydrocyclone underflow to vacuum belt filter, which will be terminated at the inlet nozzle of VBF. 3. **Secondary hydrocyclone feed system: consisting of the following:** a. 1x100% Secondary hydrocyclone feed tank along with agitator, 2x100 % secondary HC feed pumps & associated pipings upto secondary hydrocyclone. b. Two streams of (2X100%) of secondary hydrocyclones (SHC). c. Piping with valve & necessary fittings from Secondary HC overflow to waste water tank. 4. **Filtrate System: consisting of the following:** a. 2x100% horizontal centrifugal pumps for recirculation of filtrate water to absorber which will be terminated 5 m away from Absorber of Stage II. b. 1x100% common filtrate tank along with agitator c. Piping along with necessary valves & fittings for the following: i) primary hydrocyclone overflow to filtrate tank. ii) secondary hydrocyclone underflow to filtrate tank.	1. Scope of Gypsum dewatering system as per Owner (SCCL) Tender Specifications. Except Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. Terminal Point (TP) shall be 5 meter in and out away from Absorber. Typical PFD enclosed. 2,3,4 & 5. Bidder to follow Owner (SCCL) Technical specification.

S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
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						iii) from filtrate tank to filtrate pump & from filtrate pump to stage II Absorber. 5. **Waste water treatment system: consisting of the following:** a. 1x100% waste water tank along with agitator b. 2x100% waste water pumps. c. Complete waste water lime neutralization system d. Piping along with necessary valves & fittings from waste water pump to BHEL terminal point for waste water. Requesting BHEL to confirm the above. Additionally, requesting BHEL to inform in case any addition / deletion is required in the above list.	
48	NOTICE INVITING TENDER: TENDER NO.: BHEL/CPC/SNG/BOP/24/004	TECHNICAL CONDITIONS OF CONTRACT (TCC)	8	SCOPE MATRIX (PRE - BID TIE UP)	NA	**Following inputs are required from BHEL for estimation purpose at pre-bid stage:** 1. Complete mass flow balance data. 2. Media specification for all slurry lines including the details like slurry volumetric & mass flow rate, slurry density, slurry solid concentration, temperature, solid flow rate, liquid flow rate, slurry chemical composition, pH, chloride content for gypsum slurry part (i.e. from Gypsum bleed pump common discharge to waste water terminal point) for FGD design & guarantee point. 3. P&ID 4. Pump datasheet along with MOC for receiving vendor offers 5. Tanks input data including dimensions. 6. Both primary & secondary Hydrocyclone input datasheet. 7. Maximum limit of waste water purge flow rate from FGD. 8. Waster water pH required to be maintained at waste water terminal point and location of waste water terminal point along with elevation. 9. Tentative GA & elevation drawing of Gypsum dewatering system.	1. Complete mass flow balance data- Same shall be provided during detail engineering. 2. Bidder to follow Owner (SCCL) Technical specification. 3. Same shall be provided during detail engineering. 4. For MOC, Bidder to follow Owner (SCCL) Technical specification. Flow & head of applicable pumps are enclosed. 5. Tanks input data enclosed as Annexure-2 6. Both primary & secondary Hydrocyclone input datasheet enclosed as Annexure-2 7. Bidder to refer tender specification. 8. Data enclosed as Annexure-2 9. Bidder to refer tender specification.
49	TECHNICAL SPECIFICATION SECTION– VI, PART-B	SUB-SECTION-A-05 (FGD)	15 OF 25	7.07.05	Waste Water System: In case Bidder opts to provide additionally Lamella separator before the waste water tank and after the secondary hydro cyclone for removing impurities from the system,	Requesting BHEL to confirm the requirement of Lamella separator in waste water system as per QFGDM technology. Presently Lamella separator is not included in BOP vendor's scope.	Tender specification shall prevail.
50						Please clarify the scope of below systems / equipments: 1. Flue gas duct from common ID fan outlet to Absorber including expansion joints. 2. Flue gas duct from Absorber outlet to Chimney & bypass duct including expansion joints 3. Bi plane dampers, guillotine dampers.	1. BTG Scope 2. BTG Scope, TP will be 1 meter from Chimney Shell. 3. BTG Scope

S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
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51	NOTICE INVITING TENDER: TENDER NO.: BHEL/CPC/SNG/BOP/24/004	TECHNICAL CONDITIONS OF CONTRACT (TCC)	8	SCOPE MATRIX (PRE - BID TIE UP)	Additional points: Sl. No. 4: Gypsum Dewatering system: Piping and other equipment 5 mtr away from absorber outlet shall be in BoP vendor scope.	**Following items / equipments are excluded from the scope of supply of the bidder:** 1. 2x100% Gypsum bleed pump along with control valves at common discharge line. 2. Vacuum belt filters along with vacuum pump, receiver tank & associated cake, cloth wash pumps & tanks pipings with fittings. 3. Gypsum dewatering area sump with agitator, sump Pumps & pipings with fittings upto Filtrate water tank. 4. All slurry drains (BOP package scope) to be connected to respective pits by BHEL. 5. Gypsum dewatering building. 6. Complete Process water systems including piping from cooling tower blow down to process water tank, process water pumps and tanks & distribution network. 7. Complete clarified water systems including clarified water water tank, clarified water pumps & distribution network. 8. Process water Flushing line for slurry lines for FGD. 9. Piping from process water discharge common header to filtrate tank. 10. Limestone slurry preparation system along with ball mill, mill re-circulation pump, Mill hydrocyclone, sump, Limestone storage tanks & Limestone feed pump & systems to Absorber. 11. FGD control room building. 12. Auxiliary absorbent tank along with agitator & pumps and piping from gypsum bleed pump line to auxiliary absorbent tank. 13.Limestone grinding (mill) building. 14. Absorber for stage II including Slurry recirculation pump with shed, oxidation blower, absorber agitators, stair tower along with elevator. 15. Absorber area sump and pit pumps with agitator. 16. Booster fans. 17. Mist eliminator wash water pumps & pipings. 18. Emergency water system along with tanks & pipings.	1. Agreed 2. Excluded from the Tender scope. 3. Excluded from the Tender scope. 4. Bidder to follow Owner (SCCL) Technical specification. 5. Excluded from the Tendor scope. 6. Bidder to follow Owner (SCCL) Technical specification. 7. Bidder to follow Owner (SCCL) Technical specification. 8. Agreed 9. Agreed 10. Bidder to follow Owner (SCCL) Technical specification. 11. Refer Battery limit attached with NIT 12. Except Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. 13. Bidder to follow Owner (SCCL) Technical specification. 14. Agreed 15. Except Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. 16. Excluded from the Tender scope. 17. Agreed 18. Agreed

S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
52	NOTICE INVITING TENDER: TENDER NO.: BHEL/CPC/SNG/BOP/24/004	TECHNICAL CONDITIONS OF CONTRACT (TCC)	NA	NA	NA	**1. Scope of engineering not considered for the following:** a. Sizing calculation and approval from end Customer for all slurry pumps i.e. Primary HC feed pump, Secondary HC feed pump, Filtrate pump, waste water pump are not in BOP vendor scope. BHEL to provide input document for procurement purpose of slurry pumps along with MOC. b. Sizing calculation and approval of GA drawing from end Customer for all slurry tanks i.e. Primary HC feed tank, Secondary HC feed tank, Filtrate tank, waste water tank are not in BOP vendor scope. BHEL to provide input document, along with end Customer approved GA drawings for further detailing of slurry tanks. c. Gypsum dewatering system sizing calculation including PHC, SHC are not in BOP vendor scope. BHEL to provide approved sizing & input document for further detailing / procurement. d. Preparation of P&ID for GDS (primary, secondary, filtrate & waste water systems) not considered in BOP vendor scope. During detail engineering BHEL to provide approved P&ID for further detailing of BOP package. e. Gypsum dewatering building mechanical & civil GA drawings.	a & b). Only preiliminary sizing calculation will be provided by BHEL (Refer attached Annexure-2), approval from vendor and preparation of input document for procurement purpose shall be in BOP vendor scope. c). Except Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. Only preiliminary sizing calculation will be provided by BHEL (Refer attached Annexure-2), approval from vendor and preparation of input document for procurement purpose shall be in BOP vendor scope. d). Except Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. e) Bidder to follow Owner (SCCL) Technical specification.
53	NOTICE INVITING TENDER: TENDER NO.: BHEL/CPC/SNG/BOP/24/004	TECHNICAL CONDITIONS OF CONTRACT (TCC)	NA	NA	NA	Compressed air systems for pneumatic valves is not included in BOP vendor scope.	Compressed air systems for pneumatic valves is in BOP vendor scope.
54	NOTICE INVITING TENDER: TENDER NO.: BHEL/CPC/SNG/BOP/24/004	TECHNICAL CONDITIONS OF CONTRACT (TCC)	NA	NA	NA	BOP bidder considered the locations provided by BHEL in NIT are final & any change in locations during detail engineering implications shall be mutually discussed & agreed.	Inputs provided in Pre-bid queries are preliminary in nature. Final input shall be provided during detail engineering after award of contract.It shall be acceptable toBOP Vendor without any commercial implication.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004							
S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
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55	SECTION - VI, PART – B	A-19	1 of 8	1.00.00	Fuel Oil Unloading System	Tender specification for fuel oil system & Fuel Oil Scheme (P&ID) is not matching. As per Tender document, Specification issued for LDO Storage tanks and & fuel Oil Pump house, where as in Fuel oil scheme LDO storage tanks & Fuel Oil pump house are not shown. Request M/s BHEL to Clarify the scope of BOP Vendor.	LDO storage tanks and fuel oil pump house including piping upto battery limit as per Owner (SCCL) specifications is in BOP vendor scope.
56	SECTION - VI, PART – E	Fuel Oil Scheme CW-21244-370-POM-A-017	11 of 48		Fuel Oil Scheme		
57	SECTION - VI, PART – E	Fuel Oil Scheme CW-21244-370-POM-A-017	11 of 48		Fuel Oil Scheme LDO forwarding Pumps: Suction & Return Lines to LDO Tanks.	We understand that, LDO tanks are already existing and suction header of LDO forwarding pumps of Stage -I plant will be further extended and connected to New LDO forwarding pumps of Stage -II in existing FOPH. Please confirm.	Tender specification shall prevail.
58	SECTION - VI, PART – E	Fuel Oil Scheme CW-21244-370-POM-A-017	11 of 48		Fuel Oil Scheme Drain Oil Tank in (Pump House Area)	We understand that, Drain Oil tank is already existing in FOPH and drains & vents as per Fuel Oil scheme to be connected to this Drain Oil Tank. Please confirm	Tender specification shall prevail.
59	SECTION - VI, PART – E	Fuel Oil Scheme CW-21244-370-POM-A-017	11 of 48		Fuel Oil Scheme Sump in Pump House	We understand that, sump is already existing in FOPH with sump pumps. Hence additional sump with sump pumps are not required. Please confirm	Tender specification shall prevail.
60	SECTION - VI, PART – E	Fuel Oil Scheme CW-21244-370-POM-A-017	11 of 48		Fuel Oil Scheme	Please provide the following drawings of existing fuel oil facilities 1. Fuel Oil Unloading area layout 2. Fuel Oil Tank farm area layout 3. Fuel Oil Unloading and forwarding pump house 4. Tank G.A Drawings (LDO Tanks & Drain Oil Tanks) 5. Piping G.A & Layouts drawings	Tender specification shall prevail.
61	SECTION - VI, PART – B	A-19	7 of 8	7.02.00	Strainers The strainers at the suction of various pumps shall be simplex type basket strainers.	Both the clauses are contraducting, Please inform the requirement of stainers.	Tender specification shall prevail.
62	SECTION - VI, PART – E	Fuel Oil Scheme CW-21244-370-POM-A-017	11 of 48		Fuel Oil Scheme Manual Duplex Filter at LDO Pump suction Lines	We understand that manual duplex filter means, Two simplex stainers with 3 way valve. Please confirm.	Tender specification shall prevail.
63	SECTION - VI, PART – E	Fuel Oil Scheme CW-21244-370-POM-A-017	11 of 48		Fuel Oil Scheme Drain Oil tank at Steam Generator Area	We propose to use Vertical single screw pump instead of horizontal pump to transfer the drain oil to LDO storage tank. These pumps will be directly installed on the drain oil tank and transfer the oil to LDO tank. This will enable us to reduce the drain oil tank pit size. Please confirm	Tender specification shall prevail.

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S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
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64	SECTION - VI, PART – B	A-19	8 of 8	10.00.00 10.01.00 10.02.00	BUILDINGS AND LAYOUT REQUIREMENT The fuel oil unloading pump house shall be RCC building	We understand that, specified cluses are not applicable for fuel oil requirements for stage - II (1x800 Mw) Unit as the fuel unloading and storage is not a part of BOP package vendor. Hence the same are not considered. Please confirm	LDO storage tanks and fuel oil pump house including piping upto battery limit as per Owner (SCCL) specifications and Scope Matrix is in BOP vendor scope. Moreover, Tender specification shall prevail.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004							
Sl. No.	**SPECIFICATION REFERENCE**				**SPECIFICATION REQUIREMENT**	**BIDDER'S QUERY**	**BHEL CLARIFICATION**
	SEC/PART	**SUB SEC.**	**PAGE NO.**	**CLAUSE NO.**			
65	BHEL/CPC/SNG/BOP/24/004	NOTICE INVITING E-TENDER (NIT)	44 of 68	Sl. No. 2	SELECTIVE CATALYTIC REDUCTION SYSTEM	BHEL to provide the details of Piping related to Selective Catalytic reduction system	As per Sec VI, Part B, Clause no:1.03.00, S.NO:56, Page 12 of 14 In boiler area layout, the bidder shall consider space provisions for future installation of SCR System. As per the Employer's assessment the min. requirement of area on both sides of boiler centerline for such future purpose is 25mX25m each. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
66	BHEL/CPC/SNG/BOP/24/004	NOTICE INVITING E-TENDER (NIT)	44 of 68	Sl. No. 6	Within BTG Island - BHEL Outside BTG island - BOP vendor	Detailed scope demarcation is needed and shown in the P&IDs along with tabulated coordinates.	Refer Battery limit defined in Plot plan enclosed with NIT.
67	BHEL/CPC/SNG/BOP/24/004	NOTICE INVITING E-TENDER (NIT)	44, 45 of 68	Sl. No. 7 to 12	SCOPE MATRIX (PRE - BID TIE UP)	BHEL to provide the interface scope demarcation between BTG and BOP packages.	Refer Battery limit R01 defined in Plot plan enclosed with NIT.
68	BHEL/CPC/SNG/BOP/24/004	NOTICE INVITING E-TENDER (NIT)	46 of 68	Sl. No. 13	CW SYSTEM	BOP Vendor will terminate the Condenser water supply and return at Row - A. REJ, Butterfly valves and COLTCS shall be considered in the scope of BHEL.	Refer Scope Matrix enclosed with NIT.
69	BHEL/CPC/SNG/BOP/24/004	NOTICE INVITING E-TENDER (NIT)	49 of 68	Sl. No. 2	Hotwell Make Up System	Sl. No. 2 under Terminal point description column is not been captured fully in this tender document. Request BHEL to provide the same for clarity.	Refer Scope Matrix enclosed with NIT.
70	BHEL/CPC/SNG/BOP/24/004	NOTICE INVITING E-TENDER (NIT)	49 of 68	Sl. No. 1	Service and potable water systems	BHEL to share the flow schemes for Service and Potable water systems along with Terminal points and interfaces between BTG and BOP Vendors.	Schemes for Service and Potable water systems for BTG area will be done by BHEL-BTG. TP shall be as per battery limit. Detail Scheme shall be shared during detail engg. Schemes for Service and Potable water systems for BOP area will be done by BOP bidder.

Sl. No.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
71	BHEL/CPC/SNG/BOP/24/004	NOTICE INVITING E-TENDER (NIT) & CW-21244-001-POM-A-021, Rev A	50 of 68	Sl. No. 4	Gypsum dewatering system	Scope demarcation is not clear for the following when referring to the CW-21244-001-POM-A-021, Rev A (Scheme of dewatering). a) Employer scope to be mentioned with clarity b) Scope of Secondary hydro cyclone feed tank and its associated waste water hydrocyclone is not clear. c) scope overlapping is observed in case of Vacuum belt filter and Primary hydrocyclone Employer / BHEL to kindly clarify the above along with revised P&ID.	Except Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. Scope of Gypsum dewatering system as per Owner (SCCL) Specifications including pumps and piping are in BOP scope.
72	BHEL/CPC/SNG/BOP/24/004	NOTICE INVITING E-TENDER (NIT)	50 of 68	Sl. No. 7	PIPE RACKS - OUTSIDE BTG ISLAND (Outside Battery Limit)	BHEL to provide the details of piping (size and number) which are coming on pipe cum cable rack within BOP area.	BOP Vendor to develop piperack layout of complete system as per P&ID of BOP packages. Terminal point to be provided by the bidder near Battery Limit as per scope Matrix enclosed with NIT.
73	GENERAL	-	-	-	ABSORBER P&ID	Employer / BHEL is requested to share the Absorber P&ID (0240-109-POM-A-001)	Please note that Absorber is in BTG scope.
74	GENERAL	-	-	-	EXISTING PIPE CUM CABLE RACK DRAWINGS	Employer requested to share the the existing pipe cum cable rack drawings alonhgwith croiss sectionso that BOP vendor can plan the interfaces and space availbilioty in case of existing racks.	Bidder may plan visit to site for actual assessment. Further, interference free re-routing, re-connection of all existing pipes & cables, re-construction of any facilities, completion of the systems along with additional pipes and cables shall be in scope of BOP vendor. For details refer Owner (SCCL) drawings.
75	SECTION - VI, PART - A, CW-CM-11159-C-O-M-001	IIA-07, LOW PRESSURE PIPING	540 of 1135 (3 of 4 of sub section)	cl. no. (k)	Whenever, straight run of the yard pipes are more than 300 meters, flexibility analysis shall be conducted by the contractor to identify the requirement of loops, type of supports etc.	Flexibility analysis is only applicbale for fluid carrying temperature more than 60 deg.C. Hence BOP Vendor is not considering the same.	Tender specification shall prevail.

Sl. No.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
76	SECTION - VI, PART - A, CW-CM-11159-C-O-M-001	IIA-09, CW SYSTEM	552 of 1135 (3 of 3 of sub section)	Cl. No. 1.5.00	5) 2x100% FGD Gypsum wash system. 8) DM Cycle Make-up water system- Pumps (01 for each unit + common stand-by) and associated piping. (provision for interconnection with existing stage-I header to be kept) 9) Boiler Fill System- 1 x 100% Boiler Fill Pumps and associated piping and interconnection with existing header of boiler fill pumps of stage-I. 10) 2 x 100% Air preheater wash water pumps. 11) Two (02x100%) Condensate Transfer Pumps.	Employer / BHEL to kindly provide the Terminal point details alongwith coordinates for these system piping.	BOP Vendor to develop piperack layout of complete system as per P&ID of BOP packages. Terminal point to be provided by the bidder near Battery Limit as per scope Matrix enclosed with NIT.

Sl. No.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
77	SECTION - VI, PART - A, CW-CM-11159-C-O-M-001	III, TERMINAL POINTS & EXCLUSIONS AND OWNER'S INPUT	864 of 1135 (1 of 4 of sub section)	1.01.05	Raw water system at Reservior a) Raw water reservoir R2 outlet dummy pipe of 1000 NB for drawing make-up water for the plant from Reservoir 2 at 400N, 750 E in GLP (approximate location) to ST II RWPH. b) One 1000 NB line dummy shall be provided outside stage-I make-up water pump house near reservoir R1 for drawing make-up water for the plant from Reservior1 to St II RWPH. c) Contractor shall provide a provision for interconnecting New Raw water Discharge Piping to PT Plant with existing Raw Water Discharge Piping for Stage I PT Plant with a provision of Valve and Dummy Flange.	Request Employer to provide the detailed scheme for bidder's understanding and estimating the quantities.	Refer Owner (SCCL) tender specifications attached with NIT.
78	SECTION - VI, PART - A, CW-CM-11159-C-O-M-001	III, TERMINAL POINTS & EXCLUSIONS AND OWNER'S INPUT	865 of 1135 (2 of 4 of sub section)	1.01.05	Instrument Air System	Employer / BHEL shall kindly share the Terminal points for existing facility (i.e. NB 150 / NB 50 Pipes)	BOP Vendor to refer Scope Matrix and Owner (SCCL) technical Specifications.
79	SECTION - VI, PART - A, CW-CM-11159-C-O-M-001	III, TERMINAL POINTS & EXCLUSIONS AND OWNER'S INPUT	865 of 1135 (2 of 4 of sub section)	1.01.07	Service Air System	Employer / BHEL shall kindly share the Terminal points for existing facility (i.e. NB 200 / NB 50 Pipes)	BOP Vendor to refer Scope Matrix and Owner (SCCL) technical Specifications.
80	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	616 of 993 (3 of 20 of sub section)	2.02.02	Piping and fittings coming under the purview of IBR shall be designed satisfying the requirements of IBR as a minimum.	This clause is not applicable for BOP vendor scope of piping.	Tender specification shall prevail.

Sl. No.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
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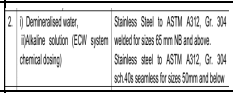
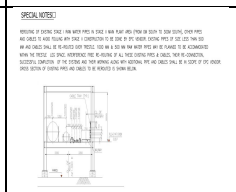
81	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	616 of 993 (3 of 20 of sub section)	2.02.04 & 2.02.06	Bends, loops, off sets, expansion or flexible joints shall be used as required in order to prevent overstressing the piping system and to provide adequate flexibility. Flexibility analysis (using software packages such as Caesar-II etc.) shall be carried out for sufficiently long piping (straight run more than 300M).	Flexibility analysis is only applicbale for fluid carrying temperature more than 60 deg.C. Hence BOP Vendor is not considering the same.	Tender specification shall prevail.
82	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	617 of 993 (4 of 20 of sub section)	2.03.03	All materials shall be new and procured directly from the manufacturers. Materials procured from traders or stockists are not acceptable.	This needs to be discussed further. Based on Quantity, we may buy from stockists.	Tender specification shall prevail.
83	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	617 of 993 (4 of 20 of sub section)	2.03.05		Bidder proposes Sch 10S or equivalent thickness for Pipes 65 mm and above.	Tender specification shall prevail.
84	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	617 of 993 (4 of 20 of sub section)	2.03.05		Bidder proposes Rubber lining of 6 mm for Piping.	Tender specification shall prevail.
85	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	618 of 993 (5 of 20 of sub section)	2.03.07	Pipes of above 150mm NB shall be to AWWA-C200/ANSI B 36.10/ ASTM A-53/IS 3589 Gr.410. Pipe to be fabricated by the bidder shall be rolled and butt welded from plates conforming to ASTM A-53 type 'E' Gr. B/IS 2062 Gr. E-250B/ASTM-A-36. However, larger pipes, i.e. 1000mm Nb and above shall be made from plates conforming to ASTM A 36/IS 2062 Gr. E-250B	It is proposed to use Spiral weld / Plate fabricated for DN 600 and above piping.	Tender specification shall prevail.

Sl. No.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
86	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	618 of 993 (5 of 20 of sub section)	2.03.08	In demineralised water service, the pipes up to 50 NB shall be of stainless-steel ASTM A 312, Gr. 304 sch. 40 Seamless. These shall be socket welded. The material for pipe from 65mm NB up to and including 400 NB shall be to ASTM A 312, Gr. 304 (welded).	Bidder reads thickness mentioned in thgis clause for 50 NB and below as Sch 40S. And, proposes Sch 10S or equivalent thickness for Pipes 65 mm and above.	Tender specification shall prevail.
87	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	619 of 993 (6 of 20 of sub section)	2.06.01 (d)	For pipe sizes from 350 mm NB to 550 mm NB (including 350 NB & 550 NB) the GI pipes shall be of flanged connection. However, the pipes after welding of flanges shall be completely galvanized.	Bidder proposes the flanged connection from 150 mm to 550 mm NB (including 150 NB & 550 NB) for GI Pipes, considering the erection issues asscoiated with screwed connection.	Tender specification shall prevail.
88	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	623 of 993 (10 of 20 of sub section)	2.12.01 (e)	Valves coming under the purview of IBR shall meet IBR requirements.	This clause is not applicable for BOP vendor scope of piping.	Tender specification shall prevail.
89	SECTION - VI, PART - B, CW-CM-11159-C-O-M-001	A-9, LOW PRESSURE PIPING	625 of 993 (12 of 20 of sub section)	2.13.00 (g)	However, dual plate check valves shall not be used for sizes more than 600mm NB.	Bidder requests employer to allow the usage of dual plate check valves higher than 600 size in order to have compact layout, and considering less weight.	Tender specification shall prevail.
90	SECTION - VI, TENDER DRAWINGS	GENERAL LAYOUT PLAN (CW-MK-21244-999-POC-F-001, Rev 15)	10 of 25			Scope is not clear referreing to this special notes. Hence, bidder requests Employer to provide us the detailed scope demarcation details along with necessary terminal points and flow scheme.	Bidder may plan visit to site for actual assessment. Further, interference free re-routing, re-connection of all existing pipes & cables, re-construction of any facilities, completion of the systems along with additional pipes and cables shall be in scope of BOP vendor. For details refer Owner (SCCL) drawings.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004							
Sl. No.	**SPECIFICATION REFERENCE**				**SPECIFICATION REQUIREMENT**	**BIDDER'S QUERY**	**BHEL'S CLARIFICATION**
	SEC/PART	**SUB SEC.**	**PAGE NO.**	**CLAUSE NO.**			
91	PART A	II A01	10 of 28	2.14.01,6)	Regenerative Air Pre-heater (RAPH) : Permanent fire fighting equipment on both gas as well as airsides and also on both cold as well as hot end sides including, spray nozzles, valves and pipe work connected to fire water system.	Please provide type of FPS system to be considered and provide inputs required to size fire protection system	Refer Owner (SCCL) Tender Specifications
92	PART B	A18	1 of 15	2.00.00	Hydrant system:	Please provide List & dimensions of Tal structure in BTG Scope (where it may not be possible to provide access staircases with landing valve) which is more than 15 M in height and to be protected using external water monitors at ground level.	BOP Vendor may consider Preliminary input for tendering as follows: The facilities in BTG area have height more than 15 meters. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
93	PART B	A18	1 of 15	3.00.00	HVW AND MVW SPRAY SYSTEM:	Please provide list of Transformers with rating & size (with approximate surface area) in BTG scope to be considered for HVWS system (Oil capacity having more than 2000 litres or Transformers of 10 MVA and above)	Same shall be provided during detail engineering.
94	PART B	A18	1 of 15	3.00.00	HVW AND MVW SPRAY SYSTEM:	Please provide Cable vault Room Dimensions (MxMxM) & approximate cable tray details like size, length and no of tire in the rooms in BTG scope where MVWS system to be considered. (e.g for main Control building, ESP control Building, FGD control buildings, Switchyard control building etc which are in BTG scope)	Same shall be provided during detail engineering.
95	PART B	A18	1 of 15	3.00.00	HVW AND MVW SPRAY SYSTEM:	Please provide DG set oil tank if any (Oil capacity having more than 1000 litres) in BTG scope for which MVWS System to be considered.	Same shall be provided during detail engineering.
96	PART B	A18	1 of 15	3.00.00	HVW AND MVW SPRAY SYSTEM:	Provide layout drawing for Boiler burner front and other areas in boiler house where HVWS system to be considered	Same shall be provided during detail engineering.
97	PART B	A18	1 of 15	3.00.00	HVW AND MVW SPRAY SYSTEM:	Provide layout drawing for steam turbine oil storage tank & its purifier units, Oil canals , Clean & Dirty Oil Tank, Generator seal oil units & Generator seal oil pumps etc in BTG scope where HVWS system to be considered.	Same shall be provided during detail engineering.
98	PART B	A18	11 of 15	6.00.00	AUTOMATIC TOTAL FLOODING INERT GAS EXTINGUISHING SYSTEM	Please provide Room Dimensions (MxMxM) of control rooms and associated arear in BTG scope where Inert gas flooding system be considered. (e.g for main Control building, ESP control Building, FGD control buildings, Switchyard control building etc which are in BTG scope)	Same shall be provided during detail engineering.

Sl. No.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL'S CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
99	PART B	A18			General	Please provide list and size/layout for non plant buildings like Training centre, canteen, Workshop etc if any to be considered.	Same shall be provided during detail engineering.
100	PART B	A18			General	Civil and structural pertaining to Fire protraction system for areas/buildings which are in BTG scope will be BTG scope. Please note.	Refer Sl. No. 14C of Scope matrix attached with NIT.
101	PART B				General	Bidder is not considering Mobile fire tender. BHEL to note	Refer Owner (SCCL) Tender Specifications

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Sl. No.	**SPECIFICATION REFERENCE**				**SPECIFICATION REQUIREMENT**	**BIDDER'S QUERY**	**BHEL'S CLARIFICATION**
	SEC/PART	**SUB SEC.**	**PAGE NO.**	**CLAUSE NO.**			
102	PART A	II A 01	10 of 28	2.14.01,(3)	Regenerative Air Pre-heater (RAPH): 'Air receiver with storage capacity which can facilitate not less than 10 minutes continuous operation of air motors.	Please provide the air consumption (NM^3/Min) to be considered for Regenerative Air Pre-heater	Refer Owner (SCCL) Tender Specifications
103	PART B	A 01			General	Please provide terminal point for instrument air and Service air marked on the layout for various equipment/system in BTG scope.	Refer scope matrix sl no 14A of Mechanical system.

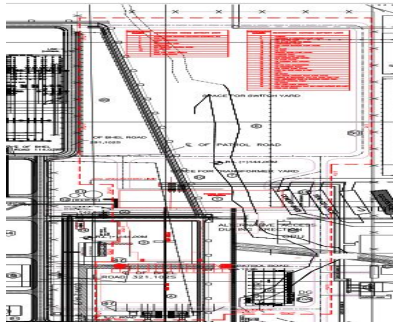
PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004							
Sl. No.	**SPECIFICATION REFERENCE**				**SPECIFICATION REQUIREMENT**	**BIDDER'S QUERY**	**BHEL CLARIFICATION**
	SEC/PART	**SUB SEC.**	**PAGE NO.**	**CLAUSE NO.**			
104	PART-A	A10	1 of 12	1.00.00	AIR CONDITIONING SYSTEM	Please provide area/Room wise layout/Size and equipment heat dissipation for the following areas in BTG scope: 1) Central Control Building 2) ESP Control Building 3) FGD Control Building 4) AIS Control building 5) Simulator building 6) Training center 7) Any other area/building in BTG scope to be considered under Air condition package	Preliminary input for tendering may be considered as: 1. Power Huse - 240 TR 2. ESP & FGD Control Room - 150 TR AHU Capacity shall be calculated by the bidder based on the heat dissipation data furnished during detail engineering. However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
105	PART-A	A10	1 of 12	2.00.00	VENTILATION SYSTEM	Please provide area/Room wise layout/Size and equipment heat dissipation for the following areas in BTG scope: 1) Turbine hall building and associated areas 2) ESP Control Building 3) FGD Control Building 4) AIS Control building 4) Miscellaneous areas like Pump House (If any), Local MCC/switchgear rooms, workshop (if any), Stores, 7) Any other area/building in BTG scope to be considered under Ventilation package	Preliminary input for tendering may be considered as: 1. Power House - As per Owner (SCCL)tender specification 2. ESP & FGD Control Room - UAF cAPACITY - 4 Nos. x 75000 CMH OR 2 Nos. x 150000 CMH However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.
106	PART-B	D-1-5	77 of 89	5.29.00 5.30.00 5.31.00 5.33.00 5.35.00		We understand that HVAC need not to be considered for below areas. BHEL to check & confirm. 1) O&M STORE BUILDING 2) Rest Rooms for O & M Workers 3) FIRST AID CENTRE with CRECHE Facilities 4) Safety Control Room 5) WORKER'S ACCOMODATION BUILDINGS	Layout development as well as the HVAC Facility in these buildings are in BOP Vendorr scope.BOP Vendor to consider the HVAC System accordingly.
107	NIT		39of 68	2.1.15	TECHNICAL CONDITIONS OF CONTRACT (TCC) OWNER (SCCL) OFFICE, SAFETY PARK ETC	Bidder presumed that HVAC for Owners office and safety park is not in bidder scope. BHEL to check & confirm.	Layout development as well as the HVAC Facility in these buildings are in BOP Vendor scope.BOP Vendor to consider the HVAC System accordingly.
108	NIT		40 of 68	2.2.18	TECHNICAL CONDITIONS OF CONTRACT (TCC) Saftey Control room	Bidder presumed that Safety control room is in BHEL scope. please confirm . BHEL to provide area/Room wise layout/Size and equipment heat dissipation for Safety control room in case HVAC to be considered by bidder.	Layout development as well as the HVAC Facility in these buildings are in BOP Vendor scope.BOP Vendor to consider the HVAC System accordingly.

Sl. No.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
109	PART-B	G-04	189 of 223	STANDARD PG TEST PROCEDURE ANNEXURE – I TECHNICAL PARAMETERS OF AC SYSTEM	Note : Bidder to indicate equipment rating for Service Building, Administrative Building, Auditorium building, Canteen building, IT building, ASH handling plant VFD/control room, FGD control room, VFD control of Air cooled condenser(if applicable), Simulator Building (if applicable) and other buildings as per scope of work.	Bidder understand that Service building, Administrative Building, Auditorium building, Canteen building, IT building is not in bidder scope of supply and is a pert of Stage -1. Please check & confirm.	Service building, Administrative Building, Auditorium building, Canteen building, IT building is not in BOP Vendor scope.
110	PART-A	A-10	3 of 12	2.00.00	e. Misc areas .....AIS control room building, water system control building, workshops, stores, etc. covered under.....	Bidder informed that HVAC for areas Workshop, stores is not in bidder scope. Please confirm.	Workshop Building is not in BOP Vendor scope. HVAC for Store is in BOP Vendor scope as per specification.
111	PART-B	D-1-5	33 of 89	5.16.00	Saftey Park Builidng	Please clarify the scope of safety park building and HVAC requirement. Please provide the safety park building drawing.	Layout development as well as the HVAC Facility in these buildings are in BOP Vendor scope.BOP Vendor to consider the HVAC System accordingly.
112	PART-B	D-1-9			O&M stoe , Simulator Building , Safety control room , First Aid Centre with Creche Facilities. Occupational Health Centre with Crèche Facilities. Waiting Lobby cum Reception/ Doctor's Chamber / First Aid Room/ Driver's Room/Crèche Facilities & Toilet and Workers accomodation building	Bidder understand that these buildings are not in bidder scope of work please confirm. If it is in bidder scope please provide the layout drawing.	Layout development as well as the HVAC Facility in these buildings are in BOP Vendor scope. BOP Vendor to consider the HVAC System accordingly.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004

S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
113	Part-A	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS	11 of 28	1.15.00 / Point No. ii	The bidder's scope includes supply, erection, testing and commissioning of **overhead lines**, ring mains (if required), single pole/double pole/four pole structures with switches, fuse, lightening arrestors, LT transformers, 415Vswitchboards, power and control cables, DC systems etc. as required for further distribution for meeting the construction power requirements.	We will consider either Overhead Line or cable for Construction power distribution. Request client to provide.	Owner (SCCL) specification shall prevail.
114	Part-A	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS	11 of 28	1.15.00 / Point No. iii	The Bidder's scope also includes the reroute/reinstall/relocate the existing overhead line/substations and at new required location with mutual agreement with Owner for extending the construction power supply from 3.3KV switchgear (If required). All the cost of rerouting/reinstallation line/substations shall be in the Bidder's scope.	Request client to provide the details (Quantity, rating, GA, weight etc as applicable) of existing equipments/ cables which needs to be rerouted/reinstalled/relocated. Also specify the location for reinstallation. Request client to provide.	Bidder may plan visit to site for actual assessment. Further, interference free re-routing, re-connection of all existing pipes & cables, re-construction of any facilities, completion of the systems along with additional pipes and cables shall be in scope of BOP vendor. For details refer Owner (SCCL) drawings.
115	Part-A	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS	11 of 28	1.15.00 / Point No. v	All necessary statutory requirements for charging construction power bidder's network shall be in the bidder's scope. **The bidder shall also provide power for meeting the Employer's office/miscellaneous power requirements as indicated in Employer's requirements under Clause 1.19.00.**	Request client to clarify whether said feeders in CL. 1.19.00 (Employer requirement) is to be considered in construction Power LT switchboard or Main LT switchboard.	Refer Owner (SCCL) Tender specifications Clause No. 1.00.00 of Section VI, Part-B, SUB-SECTION-B-18 Construction Power.
116	Part-A	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS	20 of 28	1.19.00	1. 415V switchgear feeders as indicated below (at suitable location to be decided during detailed engineering). (a) 4 Nos. MCCB–125A (b) 4 Nos. MCCB–250A (c) 4 Nos. MCCB-400 A (d) 6 Nos. ACB outgoing – 1000 A (in unit emergency switchgear and station service switchgear for feeding owner's loads).	Request client to provide the following details as this will have impact of transformer rating, quantity and Switchboard rating : a) Location of 415V switchgear feeders b) Loading of each feeders for upstream system sizing	a) BOP Vendor to provide feeders as per Owner (SCCL) Tender specification. b) Loading of these feeders shall not be considered in transformer sizing.
117	Part-A	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS	26 of 28	1.23.00	VFD	Please note that **Pulse design** is not applicable for Active front end VFD (which is modern proven design).	Owner (SCCL) specification shall prevail.
118	Part-A	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS	1 of 28	1.00.00, S.No. viii	viii) Design for solar PV and interconnection with switchgears.	As per scope matrix, Solar system is not in BOP scope. Hence not considered.	Scope is excluded from Scope.
119	NIT	1x800MW SCCL SCOPE MATRIX (PRE - BID TIE UP)	41 of 68	4.2	Successful bidder shall construct and maintain Construction water & Construction Power for the entire project (BOP + BTG Area). They shall provide necessary tapping in/around BTG island to BHEL for their use.	BHEL to provide the following details pertaining to construction power requirement in/around BTG island : a) No of Construction Power tapping points and Location b) Maximum demand, continuous demand and Feeder rating required at each location	Preliminary input for tendering may be considered as follows: a) No of Construction Power tapping points- 10-12 Nos. b) Maximum demand- 2 MVA- 2.5MVA, Feeder rating required at each location- 500 KVA However, Final input shall be provided during detail engineering after award of contract. It would be in line with Customer (SCCL) specifications and should be acceptable to Customer (SCCL). Bidder may consider accordingly.

S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC / PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
120	NIT	1x800MW SCCL SCOPE MATRIX (PRE - BID TIE UP)	41 of 68	4.3	Successful bidder shall construct BHEL temporary office (Approx. size 400 Sqm) along with all necessary amenities. The maintenance of the subject office shall be done by BHEL, after handing over.	Request BHEL to provide the scope matrix pertaining to BHEL temporary office and amenities required.	Refer Annexure-1 attached
121	NIT	1x800MW SCCL SCOPE MATRIX (PRE - BID TIE UP)	41 of 68	6.0	Reconciliation of BHEL issued materials	As per scope matrix, HT motors are free issued materials to BOP vendor. Hence reconciliation is not applicable.	Bidder's understanding is correct.
122	Part-A	SUB-SECTION-IID CIVIL WORKS	3 of 10	1.00.00, S.No. 7, r)	Diesel generator set foundations & stack foundations along with steel support structure and foundations for stack support.	Even though DG set for Main Plant is supplied by BOP bidder, we understand that civil works pertaining to DG set and associated equipment foundations are not in BOP bidder's scope as per Scope matrix as these are located at BTG Island. The same is applicable for other buildings/equipment such as CPU regeneration Plant, High mast, Lighting Pole etc which are located in BTG Island. Please confirm.	For mentioned buildings/equipment Bidder's understanding is correct. However, for other buildings/equipment please refer Scope Matrix Rev01 attached.
	NIT	1x800MW SCCL SCOPE MATRIX (PRE - BID TIE UP)	51 of 68	S.No 1 of Buildings, Structures	MISC. CIVIL/STR / ARCH Works: S.No 1 of Buildings, Structures - Within BTG Island (Except CHP-BHP, AHP) - BHEL - Outside BTG island (including CHP-BHP, AHP in BTG area) - BOP vendor		
123	NIT	1x800MW SCCL SCOPE MATRIX (PRE - BID TIE UP)	53 of 68	Scope Matrix / Electrical / S.No.11 and 12 (HT Switchgear and SPBD)	HT Switchgear and SPBD	We understand that HT Switchgear and SPBD for complete plant is in BHEL Scope. Please confirm.	**Refer Scope Matrix attached:** **Civil:** 1) Complete civil in BTG Island (Except CHP-BHP, AHP) by BHEL. 2) Complete civil in BOP Island (including CHP-BHP, AHP in BTG Island) by BOP vendor. **Supply:** Supply by BHEL for BTG & BOP Area. **Erection & Commissioning:** 1) E&C by BHEL in BTG area. 2) E&C by BOP vendor in BOP areas. However, For BOP package, list of feeders/ electrical loads to be informed at tender stage by BOP vendor for sizing of HT Switchgear falling in BOP area.
124	NIT	1x800MW SCCL SCOPE MATRIX (PRE - BID TIE UP)	54 of 68	Scope Matrix / Electrical / S.No.16	Non Segregated Phase Bus Ducts & Sandwich Busduct for DG Connection.	We understand that Sandwich busduct from Main Plant DG (2 Nos) to Emergency switchboard is in BHEL scope and Sandwich busduct from FGD DG to FGD Emergency switchboard is in BOP vendor scope. Please confirm.	Sandwich busducts of DG's in BTG and BOP area are in BOP vendor scope.

S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC / PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
125	NIT	1x800MW SCCL SCOPE MATRIX (PRE - BID TIE UP)	56 of 68	Scope Matrix / Electrical / S.No. 27 / Remarks , point No. 3	3. Above ground for Equipments supplied by respective equipment supplier i.e BHEL/BOP vendor.	We have considered above ground earthing of 2 mtr length for the equipment located in BTG Island. 	1A. Within BTG Island (For Equipment under BTG Scope)- Complete Earthing & Lightning Protection System (both underground & above ground) for BTG Area by BHEL. 1B. Within BTG Island (For Equipment under BOP Scope)- Above Ground Earthing by BOP vendor & underground earthing by BHEL. 2. Outside BTG Island- Complete Earthing & Lightning Protection System (both underground & above ground) for BOP areas by BOP vendor. It includes interconnection of BOP Package earth mat to earth mat of BTG Package. Further, Above Ground Earthing for equipement's supplied by BHEL in BOP area shall also be done by BOP Vendor.
126	NIT	1x800MW SCCL SCOPE MATRIX (PRE - BID TIE UP)	57 of 68	Scope Matrix		Request BHEL to provide the power distribution requirement for AWRS and Ash dyke Area.	BOP Vendor to decide the power distribution suitably in line with Owner (SCCL) document.
127	Part-A	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS	1 of 28	1.00.00, S.No. viii	viii) Design for solar PV and interconnection with switchgears.	As per scope matrix, Solar system is not in BOP scope. Hence not considered.	Scope is excluded from Scope.

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Sl. No.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
128	TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC NO.:CW-CM-11159-C-O-M-001	SUB-SECTION-IIB ELECTRICAL SYSTEM / EQUIPMENTS	Page 10 of 28	1.14.00	Control Philosophy for plant Electrical System Control of Electrical System of Main Plant, EHV Breakers of Generator Bay and Balance of Plant (BOP) shall be provided from DCS with suitable ECD (Electrical Control Desk) and/or Soft HMI. The details of the same are specified in relevant sections of Control and Instrumentation.	Please clarify the final scope of the Electrical System Control.	Refer Pt No. 3 of Electrical Systems of Scope Matrix and in line with Owners (SCCL) specifications attached with NIT
129	TECHNICAL SPECIFICATION SECTION-VI, PART-A BID DOC NO.:CW-CM-11159-C-O-M-001	SUB-SECTION-IIC CONTROL & INSTRUMENTATION SYSTEM	Page 14 of 19	Notes 4	ELECTRICAL POWER SUPPLY SYSTEM	Please clarify the scope for the EQMS.	CEMS & EQMS are BOP Vendor Scope

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S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
130	MECHANICAL SYSTEM	FLUE GAS DESULPHURISATION SYSTEM	44 of 68	3	BHEL includes majorly Absorber, RC Pump etc.	We understand Civil and Structural for the below listed structures are not in BOP Vendor Scope, Kindly Confirm. 1.Recirculation Pump House and Pumps, 2.AAT Tank, Booster Fan, 3.Flue Gas Duct and its Supports, 4.Gysum Storage Shed, 5.Mill Building, 6.Limestone Silos, 7.Crusher House, 8.Limestone Truck Tippler.	**Point No-4,7,8-** Facilites pertaining to LHP & GHP (Lime crusher house, Limestone truck tippler, Gypsum storage shed etc.) are not in bidders scope. All the structures / facilites of CHP, Biomass Handling, AHP required to complete the system are in the scope of bidder. **Point No- 1,2,3,5-** Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping are in BTG Scope. Except above, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. Terminal Point (TP) shall be 5 meter in and out away from Absorber. Typical PFD enclosed. **Point No-6:** Not Applicable
131	PLANT UTILITIES	COAL & BIOMASS HANDLING PLANT	47 of 68	15	Bunker gratings and bunker monorails shall be supplied by BHEL	The Bunker gratings and monorails are listed in Exclusions column. we understand that the above listed are not part of BOP Vendor Scope, Kindly Confirm	Bidder's understanding is correct. However, BOP Vendor to provide Bunker slot opening in their proposal along with details of grating.
132	PLANT UTILITIES	MILL REJECT HANDLING SYSTEM	48 of 68	18	BOP Vendor Scope	As per Scope Matrix Mill reject system is in BOP Scope for Civil, Structural and Architectural works. We understand that Mill reject system is part of BTG Island so complete Civil, Structural and Architectural works to be in BTG Vendor Scope, Kindly Confirm.	Complete MILL REJECT HANDLING SYSTEM is in BOP Vendor Scope
133	PLANT UTILITIES	EOT CRANES	40 of 68	22	BOP Vendor Scope	The Civil, Str & Arch. Works for EOT cranes in BTG Islan are listed in Exclusions column. we understand that the Civil, Str & Arch. Works for EOT Cranes is not part of BOP Vendor Scope, Kindly Confirm.	Bidder's understanding is correct.
134	ADDITIONAL POINTS	Gypsum Dewatering system	50 of 68	4	BOP Vendor Scope	we understand that Gypsum Dewatering Building is not in BOP Vendor Scope, Kindly Confirm.	Bidder's understanding is correct.

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004

S. NO.	SPECIFICATION REFERENCE				SPECIFICATION REQUIREMENT	BIDDER'S QUERY	BHEL CLARIFICATION
	SEC/PART	SUB SEC.	PAGE NO.	CLAUSE NO.			
135	ADDITIONAL POINTS	Centralized Nitrogen System	50 of 68	9	BOP Vendor Scope	As per Scope Matrix Centralized Nitrogen System is in BOP Scope for Civil, Structural and Architectural works. We understand that Centralized Nitrogen System is part of BTG Island so complete Civil, Structural and Architectural works to be in BTG Vendor Scope, Kindly Confirm.	Refer revise Scope Matrix R01, complete Centralized Nitrogen System has been moved outside BTG Island, same shall be in BOP Vendor Scope.
136	MISC. CIVIL/STR / ARCH Works	Buildings, Structures	51 of 68	1	Within BTG Island	The Foundations for CHP-BHP/AHP within BTG Island to be considered as part of BTG Vendor Scope to avoid foulings/interface issues.	All the structures / facilites for CHP-BHP/AHP irrespective of location and required to complete the system are in the scope of BOP Vendor
137	TECHNICAL SPECIFICATION SECTION-VI, PART-B	SUB-SECTION-D-1-5 CIVIL WORKS	14 of 89	5.02.11.01.04	Durability of concrete shall conform to severe exposure conditions as per Table-3 of IS 456 except noted specifically otherwise.	As per these clauses there is contradiction on environmental exposure condition, we propose moderate exposure condition as per IS 456	There is no contradiction. This clause is applicable for CPU Civil works.
138	TECHNICAL SPECIFICATION SECTION-VI, PART-B	SUB-SECTION-D-1-5 CIVIL WORKS	49 of 89	5.19.01.04	Durability of concrete shall conform to moderate exposure conditions as per Table-3 of IS 456 except noted specifically otherwise		There is no contradiction. This clause is applicable for WATER TREATMENT PLANT-DM Plant, PT Plant, ETP and CW Chemical Treatment Civil Works, CSSP etc

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004				
Sl. No.	**Clause/Description**	**Existing as per RFQ**	**Request for modification**	**BHEL Clarification**
139	**GCC Clause 12 Terms of Payment of SCCL Tender**	Terms of Payment		
	Appendix-1 Clause B1	Ex-works Price Component of Plant and Equipments (excluding Mandatory Spares and Type Tests) quoted on Ex-works (India) basis		
	Appendix-1 Clause B1.1b	Plant and Equipments (excluding Mandatory Spares and Type Tests)		
		Submission of Purchase order copy placed for Turbine casting and forgings (2.5%)	Not applicable for BOP Package.	Noted
		Submission of work order copy placed for Main Plant Civil agency (1.5%)	Not applicable for BOP Package.	Noted
		Submission of work order copy placed for IDCT (2%)	Submission of work order copy placed for IDCT (4.5 %)	Same shall be in line with Owner (SCCL) tender terms & conditions.
		Submission of work order copy placed for Stacker reclaimer (1%)	Submission of work order copy placed for Stacker reclaimer (2.5%)	Same shall be in line with Owner (SCCL) tender terms & conditions.
140	**Clause 11 of MOU-NIT of BHELTender**	Pre Bid Guarantee		
		11.3.The Contractor shall keep the Bank Guarantee furnished as bid bond valid till the period of validity of MOU including extended period if any	11.3.The Contractor shall keep the Bank Guarantee furnished as bid bond valid till the period of validity of MOU including extended period if any or upon signing of the Contract agreement whichever is earlier.	Agreed, same shall be subject to submission of security deposite
141	**Liquidated Damages for delay in successful Completion of Facilities shall be as under:**			
	for each day of delay in successfully achieving the "Completion of Facilities" for unit under the package as per the scope of work of the Contractor under the Contract	A sum of INR 3,73,14,137 (Indian Rupees Three Crore Seventy Three Lakh Fourteen Thousand and One Hundred Thirty Seven only)	The Value indicated SCCL tender is for whole EPC Contract. The LD for BOP Package has to be applicable with respective their awarded price only. Kindly confirm	Agreed

PRE BID CLARIFICATIONS AGAINST NIT NO. BHEL/CPC/SNG/BOP/24/004				
Sl. No.	**Clause/Description**	**Existing as per RFQ**	**Request for modification**	**BHEL Clarification**
142	**GCC Clause 12 Terms of Payment of SCCL Tender**	**Terms of Payment**		
	Appendix-1 E	**Schedule No. 4 : Installation Services excluding Civil and Site Fabricated Structural Works Portion**		
	Appendix-1 E.1A	**Five Percent (5%)** of the total Installation Services component of the Contract Price (excluding Civil and Site Fabricated Structural Works Portion) will be paid to the Contractor as interest bearing initial advance payment	**Five Percent (5%)** of the total Installation Services component of the Contract Price (excluding Civil and Site Fabricated Structural Works Portion) will be paid to the Contractor as interest **free** initial advance payment.	Owner (SCCL) tender term & conditions shall prevail. However, if Owner (SCCL) gives that interest free advance, same shall be passed on to bidder accordingly.
143	**Appendix-1 Section F**	**Schedule No. 4 : Civil Works**		
	Appendix-1 Section F.1 (a)	Civil Works Price Component of the Contract Price shall be paid as under:		
		Five Percent (5%) of the total Civil Works price component of the Contract Price will be paid to the Contractor a interest bearing initial advance payment.	**Five Percent (5%)** of the total Civil Works price component of the Contract Price will be paid to the Contractor a interest **free** initial advance payment.	Owner (SCCL) tender term & conditions shall prevail. However, if Owner (SCCL) gives that interest free advance, same shall be passed on to bidder accordingly.
144	**General Conditions of Contract Clause 13.3.1**	**Performance Security:**		
		The Contractor shall, within twenty-eight (28) days of the Notification of Award, provide securities for the due performance of the Contract for ten percent **(10%)** of the Contract Price of all the Contracts, with an initial validity up to ninety (90) days beyond the end of scheduled Defect Liability Period of the last equipment covered under the Contract.	The Contractor shall, within twenty-eight (28) days of the Notification of Award, provide securities for the due performance of the Contract for **Three percent (3%)** of the Contract Price of all the Contracts, with an initial validity up to ninety (90) days beyond the end of scheduled Defect Liability Period of the last equipment covered under the Contract.	Owner (SCCL) tender term & conditions shall prevail. However, if Owner (SCCL) gives any relief, same shall be passed on to bidder accordingly.

ANNEXURE-1

Sl. No.	Area	UOM	Total Qty	Remarks
A. Civil Enabling				
1.1	OfficePEB Office Complex (01 No.)	Sqm	500	
1.2	OfficePorta Cabin	No.	4	
2	Civil Qly Lab- PEB Office Complex diversion	Sqm	150	
3.1	Closed Shed-PEB Closed Shed Without Office (03 Nos.)	Sqm	2700	
3.2	Closed Shed-PEB Closed Shed With Office (01 No.)	Sqm	900	
3.3	Semi Covered Shed-PEB (01 No.)	Sqm	900	
3.5	Cement storage	Sqm	600	
4	Mess Building-PEB Type (1 No.)	Sqm	100	
5	Storage Yard with Road & Chain link fencing	Sqm	125000	
B. Other Enabling Works as per Site Requirement				
1	Roads for Access to Office, Covered Sheds etc of size approx 6m Wide x 1500m Length	Sqm	As per requirement	
2	Hard Crusting in Open storage yard	SQM	26000	
4	Weigh Bridge: 100T capacity, platform size approx 18x3m	Nos	1	
5	Construction Power Arrangement for BTG as wells as BOP area	LS	1	

	EDC-FGD	Issue Date	Revision No.	Revision Date
		19.01.2023	00	

SELECTION PARAMETERS FOR GYPSUM DEWATERING SYSTEM

Project:	SCCL - Singareni Stage II (1x800MW)	Format No:R-05-540A

1.0 GYPSUM DEWATERING SYSTEM SELECTION DATA

1.1 PROCESS PARAMETERS FOR PRIMARY HYDROCYCLONE

S.no	Parameters	Primary Hydro Cyclone Feed Slurry	Primary Hydro Cyclone Over Flow	Primary Hydro Cyclone Under Flow
1	Total Flow (m^3/hr.)	94.54	54.70	39.84
2	Total Flow (t/hr.)	113.41	59.90	53.51
3	Operating Temp (°C)	60.3	60.3	60.3
4	Design Temp (°C)	70	70	70
5	Solid (wt. %)	30.0	16.6	45.0
6	Density (Kg/m^3)	1200	1095	1343
7	pH	4-7	4-7	4-7
8	Cl^-(mg/l)	<22000	<22000	<22000
9	Number of hydrocyclone sets : As per tender spec.			
10	Back pressure of Primary hydro cyclones inlet shall be maintained <20 m L.C			

1.2 PROCESS PARAMETERS FOR SECONDARY HYDROCYCLONE

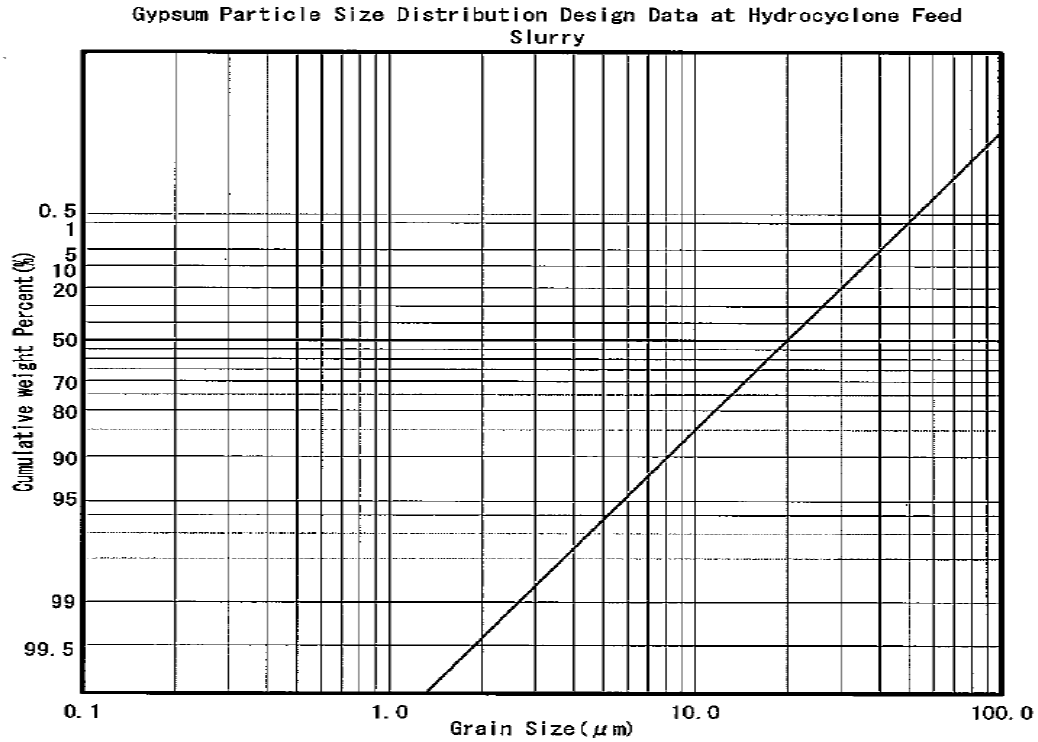
S.no	Parameters	Secondary Hydro cyclone Feed Slurry	Secondary Hydro cyclone Over flow	Secondary Hydro cyclone Under flow
1	Total flow (m^3/hr)	54.70	29.55	25.15
2	Total flow (t/hr)	59.90	29.73	30.17
3	Operating Temp (° C)	60.3	60.3	60.3
4	Design Temp (°C)	70	70	70
5	Solid (wt %)	16.6	3.0	30.0
6	Density (kg/m^3)	1095	1006	1200
7	pH	4-7	4-7	4-7
8	Cl^- (mg/l)	<22000	<22000	<22000
9	Number of hydrocyclone sets : As per tender spec.			
10	Back pressure of Secondary hydro cyclones inlet shall be maintained <20 m L.C			

~~1.3 PROCESS PARAMETERS FOR VACUUM BELT FILTER~~

~~S.no~~	~~Parameters~~	~~Belt Filter Feed Slurry~~	~~Product Gypsum~~	
~~1~~	~~Total Flow (m^3/hr)~~	~~39.84~~		
~~2~~	~~Total Flow (t/hr) Wet~~	~~53.51~~	~~0.00~~	
~~3~~	~~Design Temp(deg C)~~	~~60.3~~		
~~4~~	~~Solid(% wt)~~	~~45.0~~	~~>90*~~	~~*Vendor to gurantee~~
~~5~~	~~Density kg/m^3~~	~~1343~~		
~~6~~	~~pH~~	~~4-7~~	~~5~8~~	
~~7~~	~~Cl~~	~~<22000~~	~~<100 ppm*~~	~~*Vendor to gurantee~~
~~9~~	~~Number of vacuum belt filters : As per tender spec.~~			

Notes:
1) Process flows mentioned above are without any margins.
2) Refer tender/amendments for details of Equipment Margins, MOC, Guarantees, Cake wash water properties etc.
3) Quantity of Cake/cloth/belt wash water shall be finalized by the vendor.
4) Flow rates and Solid(%wt) of Primary and ~~secondary~~ Hydrocyclone overflows ~~and under flows~~ shall be finalized by vendor
5) Primary Hydrocylcone Under flow Solid(%wt) shall be 45 and shall be guaranteed by vendor.
6) Scope of supply for Gypsum Dewatering System includes all equipments associated with Gypsum Dewatering System except primary & secondary hydrocyclone feed pumps, waste water & filtrate water pumps which are in BAP's scope of supply.

2.0 PARTICLE SIZE DISTRIBUTION



Note: Vendor to submit the PSD for PHC & SHC underflow and overflow.

	Rev-00		**Rev-01**	
	Sign	Date	Sign	Date
Engineer :	Yuvaraj R	19.01.2023		
Reviewer:	Sashi	19.01.2023		
Approver:	ACR	19.01.2023		

	EDC-FGD	Issue Date	Revision No.	Revision Date
		25.01.2023	00	

FGD WASTE WATER DETAILS INPUT FOR NEUTRALISATION/TREATMENT SYSTEM

Project:	SCCL - Singareni Stage II (1x800MW)	Format No:R-05-540B

WASTE WATER CALCULATION RESULT:

1. LIMESTONE CONDITION

Mg REACTED RATIO	%	44.28

2. WASTE WATER CONDITION

FLOW RATE	t/h	**29.73**
TEMP.	Deg.C	60.3
pH		5.51
DENSITY	kg/m3	1006
TSS	mg/l	30000

3. S_2O_6 FORMATION

S_2O_6 FORMATION	%	0.02

4.1 N-S COMP. FORMATION

HA SYSTEM	%	0.16
TOTAL N-S	%	0.26

4.2 N-S COMP.

NS (AS N)	mg/l	33.80
HANS	mmol/l	1.49
ASNS	mmol/l	0.92

5.1 COD (Mn)

S_2O_6 COD	mg/l	3.04
ORG. COD	mg/l	404.22
N-S COD	mg/l	50.03
TOTAL COD	mg/l	457.29

5.2 COD (Cr)

S_2O_6 COD	mg/l	10.14
ORG. COD	mg/l	404.22
N-S COD	mg/l	27.79
TOTAL COD	mg/l	442.15

6.1 ION CONC. (mg/l)

H^+	mg/l	0.00
Na^+	mg/l	8002.14
K^+	mg/l	857.37
Ca^{++}	mg/l	440.42
TO-Mg	mg/l	10173.96
Mg^{++}	mg/l	9298.02
Mn^{++}	mg/l	34.56
Al^{+++}	mg/l	0.89
NH_4^+ (AS N)	mg/l	0.00

Cl^-	mg/l	20000.00
Br^-	mg/l	0.00
NO_3^- (AS N)	mg/l	129.40
NO_2^- (AS N)	mg/l	3.30
$S_2O_6^{--}$	mg/l	101.52
SO_4^{--}	mg/l	30269.19
HSO_4^-	mg/l	7.34
TOTAL SO_4	mg/l	30276.45
F^-	mg/l	60.04
TOTAL F	mg/l	745.52
B	mg/l	0.00
TDS	mg/l	68806.28
TOTAL N	mg/l	166.50

6.2 ION CONC. (mmol/l)

Na^+	mmol/l	348.07
K^+	mmol/l	21.93
Ca^{++}	mmol/l	10.99
TO-Mg	mmol/l	418.60
Mg^{++}	mmol/l	382.56
Mn^{++}	mmol/l	0.63
Al^{+++}	mmol/l	0.03
NH_4^+ (AS N)	mmol/l	0.00
Cl^-	mmol/l	478.23
Br^-	mmol/l	0.00
NO_3^- (AS N)	mmol/l	9.24
NO_2^- (AS N)	mmol/l	0.24
$S_2O_6^{--}$	mmol/l	0.63
SO_4^{--}	mmol/l	315.11
HSO_4^-	mmol/l	0.08
MgF^+	mmol/l	36.04
F^-	mmol/l	3.16

6.3 ION BALANCE

CATION	epm	1122.42
ANION	epm	1122.42
ION STRENGTH	-	1.85

Note: Refer tender/amendments for further details of Waste water Neutralisation or Treatment system.

	Rev-00		**Rev-01**	
	Sign	Date	Sign	Date
Engineer :	Yuvaraj R	25.01.2023		
Reviewer:	Sashi	25.01.2023		
Approver:	ACR	25.01.2023		

	EDC-FGD	Issue Date	19.01.2023		
		Revision Date	20.01.2023	Revision No.	01
INPUT DATA FORMAT - TANKS, SUMPS & AGITATORS					
Project:	**SCCL - Singareni Stage II (1x800MW)**			**Format No:**R-05-541	

SLNO	Description	PRIMARY HYDROCYCLONE FEED TANK	SECONDARY HYDROCYCLONE FEED TANK	WASTE WATER TANK	FILTRATE WATER TANK	LIMESTONE SLURRY STORAGE TANK	AUXILIARY ABSORBENT TANK	ABSORBER AREA DRAIN SUMP	WBM AREA DRAIN SUMP	GDW AREA DRAIN SUMP	PROCESS WATER TANK
1	**Tank & Sump Details**										
1.1	Tank shape	Circular	Circular	Circular	Circular	Circular	Circular	Rectangular	Rectangular	Rectangular	Circular
1.2	Tank Dia (m)/Sump Size (m)	5.5	4.5	6.5	3.5	~~9.0~~	13.0	4 W X4 L X4 H	~~4 W X4 L X4 H~~	~~4 W X4 L X4 H~~	4.5
1.3	Tank Height (m)	6.2	5.4	6.8	4.1	~~10.7~~	13.8				5.1
1.4	Hold Capacity of tank (m3)	135	78	209	35	~~649~~	1725	56	~~56~~	~~56~~	73
1.5	Total No. of tanks	1	1	1	1	0	1	1	0	0	2
1.6	MOC of tanks including Lining	Refer tender specs/amendments									
2	**Agitator selection data**										
2.1	Type	Refer tender specs/amendments									NOT APPLICABLE
2.2	Medium to be handled	Gypsum slurry	Gypsum slurry	Gypsum slurry	Gypsum slurry	~~Limestone slurry~~	Gypsum slurry	Gypsum slurry	~~Limestone slurry~~	~~Gypsum slurry~~	
2.3	Agitator location	Outdoor	Outdoor	Outdoor	Outdoor	~~Outdoor~~	Outdoor	Outdoor	~~Outdoor~~	~~Outdoor~~	
2.4	Operation	Continuous.	Continuous.	Continuous.	Continuous.	~~Continuous.~~	Intermittent	Intermittent	~~Intermittent~~	~~Intermittent~~	
2.5	Type of Agitation required	Uniform Suspension	Uniform Suspension	Uniform Suspension	Uniform Suspension	~~Uniform Suspension~~	Off Bottom Suspension	Off Bottom Suspension	~~Off Bottom Suspension~~	~~Off Bottom Suspension~~	
2.6	MOC of Agitator	Refer tender specs/amendments									
2.7	Min. liquid level in the tank(m)	1.0	1.0	1.0	1.0	~~1.0~~	1.0	1.4	~~1.4~~	~~1.4~~	
2.8	Normal liquid level in the tank(m)	5.4	4.7	6.0	3.3	~~9.9~~	12.8	3.3	~~3.3~~	~~3.3~~	
2.9	Max. liquid level in the tank (m)	5.6	4.9	6.2	3.5	~~10.1~~	13.0	3.5	~~3.5~~	~~3.5~~	
2.10	Agitator blade level	Preferably above sedimentation level				As per vendor design		600 mm from the bottom of the sump			
2.11	Quantity of Agitators per Tank	No. of agitators to be suitably decided based on type of agitator									
3	**Slurry Analysis**										
3.1	Maximum solid particle size	200 mesh (74 µ)	200 mesh (74 µ)	200 mesh (74 µ)	6-7 mm	~~200 mesh (74 µ)~~	200 mesh (74 µ)	6-7 mm	~~6-7 mm~~	~~6-7 mm~~	
3.2	Normal solid particle size, d50	325 mesh (44 µ)	325 mesh (44 µ)	325 mesh (44 µ)	325 mesh (44 µ)	~~325 mesh (44 µ)~~	325 mesh (44 µ)	325 mesh (44 µ)	~~325 mesh (44 µ)~~	~~325 mesh (44 µ)~~	
3.3	Solid to be handled	gypsum+ Limestone+ other impurities	gypsum+ Limestone+ other impurities	gypsum+ Limestone+ other impurities	gypsum+ Limestone+ other impurities	~~Limestone & other impurities~~	gypsum+ Limestone+ other impurities	gypsum+ Limestone+ other impurities	~~Limestone & other impurities~~	~~gypsum+ Limestone+ other impurities~~	
3.4	Chloride concentration	max 25000 ppm	max 25000 ppm	max 25000 ppm	max 25000 ppm	~~max 1000 ppm~~	max 25000 ppm	max 25000 ppm	~~max 1000 ppm~~	~~max 25000 ppm~~	
3.5	Hardness of particle	5-7 mohs scale	5-7 mohs scale	5-7 mohs scale	5-7 mohs scale	~~5-7 mohs scale~~	5-7 mohs scale	5-7 mohs scale	~~5-7 mohs scale~~	~~5-7 mohs scale~~	
3.6	Slurry concentration, wt%	30 wt%	16.60%	3%	30%	~~30 wt%~~	30%	30 wt%	~~47%~~	~~30 wt%~~	
3.7	Sp. Gravity of slurry	1.200	1.095	1.006	1.203	~~1.216~~	1.200	1.200	~~1.432~~	~~1.200~~	
3.8	Sp. Gravity of Lime Stone & Gypsum	2.32(avg)	2.32(avg)	2.32(avg)	2.32(avg)	~~2.32(avg)~~	2.32(avg)	2.32(avg)	~~2.32(avg)~~	~~2.32(avg)~~	
3.9	Viscosity of Slurry	10 cP	4 cP	3 cP	10 cP	~~30 cP~~	10 cP	10 cP	~~100 cp~~	~~10 cP~~	
3.10	pH	4 to 8	4 to 8	4 to 8	4 to 8	~~5 to 8~~	4 to 8	4 to 8	~~5 to 8~~	~~4 to 8~~	

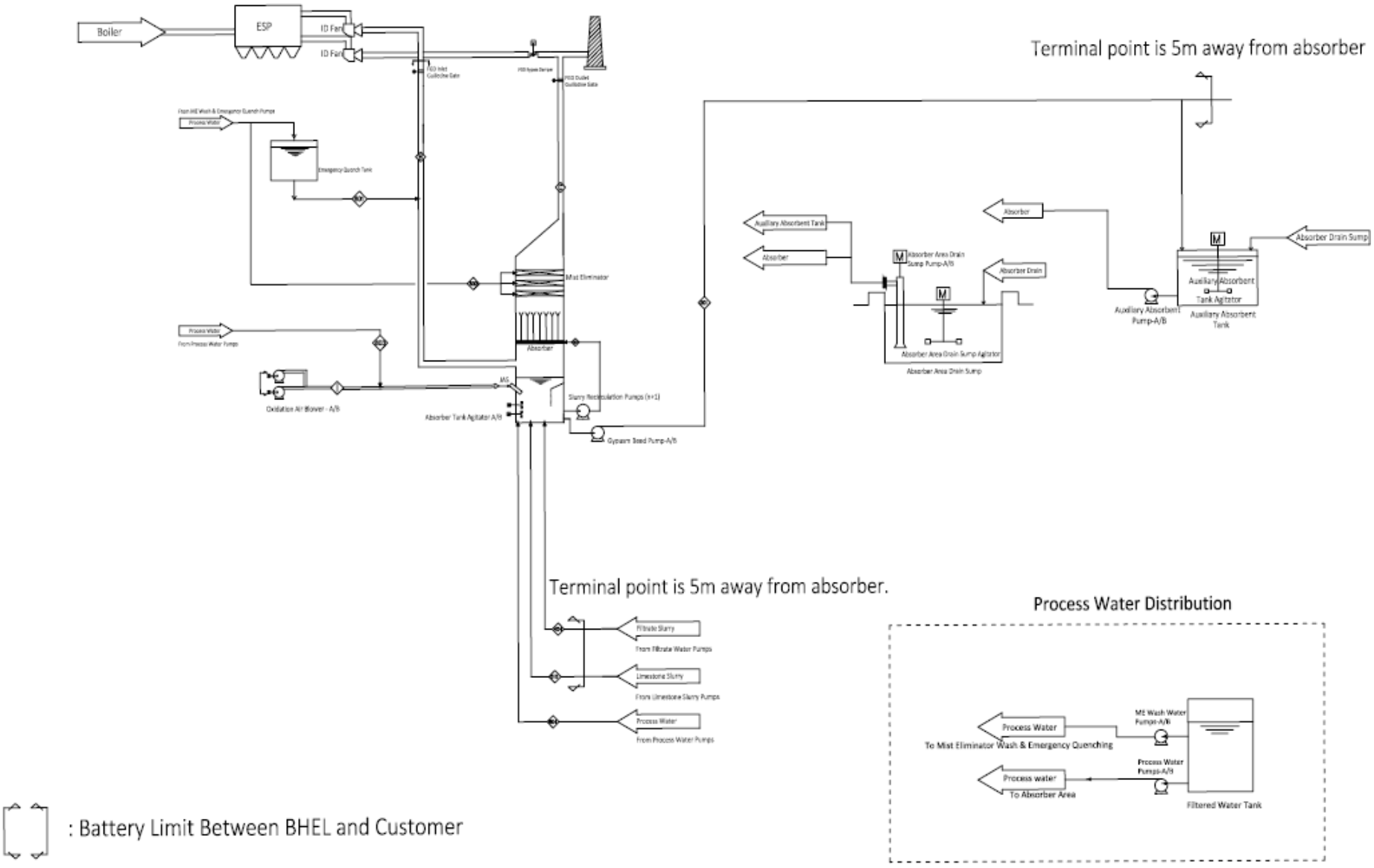
3.11	SiO_2 Content	4 to 6 g/l	4 to 6 g/l	4 to 6 g/l	4 to 6 g/l	~~4 to 6 g/l~~	4 to 6 g/l	4 to 6 g/l	~~4 to 6 g/l~~	~~4 to 6 g/l~~
3.12	Normal Temperature (°C)	60.3	60.3	60.3	60.3	~~45.0~~	60.3	60.3	~~45.0~~	~~60.3~~
3.13	Design Temperature (°C)	70	70	70	70	~~55~~	70	70	~~55~~	~~70~~

Notes:

1) Refer tender/amendments for other design & scope of supply requirements
2) Mandatory Spares & ware house spares are to be considered as per tender spec./amendments
3) Belt filter wash water tank and Cake wash water tank as applicable are in PEM scope.
4) Auxiliary Absorbent tank will be used whenever FGD is under maintenance.

	Rev 00		Rev 01		Rev 02	
	Sign	Date	Sign	Date	Sign	Date
Engineer	Yuvaraj R	19.01.2023	Yuvaraj R	20.01.2023		
Reviewer	Sashi	19.01.2023	Sashi	20.01.2023		
Approver	ACR	19.01.2023	ACR	20.01.2023		

PROCESS FLOW DIAGRAM



IDENTIFICATION NUMBER	DESCRIPTION INSIDE BATTERY LIMIT
1	POWER HOUSE BUILDING INCLUDING ELECTRICAL BAY
2	COAL MILL
3	STEAM GENERATOR
4	ESP
7	TRANSFORMER YARD
8	SWITCHYARD
9	ESP CUM FGD CONTROL ROOM
10	DG BUILDING
15	CPU
	PIPE CUM CABLE TRESTLE
	ROAD AND DRAINS

IDENTIFICATION NUMBER	DESCRIPTION OUTSIDE BATTERY LIMIT
5	CHIMNEY
6	ABSORBER & OXIDATION PUMP HOUSE
11	CST AND DM TANK
12	CST & DM PUMP (IN OPEN)
13	COMPRESSOR HOUSE
14	FIRE WATER BOOSTER PUMP HOUSE
16	ETP
17	PT PLANT
18	SW TANK
19	SERVICE WATER PUMP HOUSE
20	CLARIFIED TANK
21	CLARIFIED PUMP HOUSE
22	ACW STATION PUMP HOUSE
23	CW PUMP HOUSE
24	CW FOREBAY AND CHANNEL
25	IDCT
26	CW-RW GAS CHLORINATION
27	CW TREATMENT PLANT
28	RAW WATER PUMP HOUSE
29	FUEL OIL DYKE AREA & OWS
30	FOPH
31	DM PLANT
32	RAIN WATER HARVEST POND PUMP HOUSE
33	PRIMARY & SECONDARY HYD CYC TANK, WWT, FWT
34	AUX. ABSORBENT TANK & PROCESS WATER TANK
35	AMONNIA STORAGE SHED
36	CW PIPING
37	PIPE CUM CABLE TRESTLE
38	ANY OTHER BUILDING THAT MAY COME OUTSIDE BTG LIMIT
	ROAD AND DRAINS
39	CENTRAL NITROGEN SYSTEM

4774469

STEEL STORAGE YARD

SPACE PROVISION FOR HYDROGEN PLANT

SPACE PROVISION METHANOL PLANT

LAYDOWN & PRE-ASSEMBLY AREA

SPACE FOR SWITCH YARD

SPACE FOR TRANSFORMER YARD

BTG AREA BATTERY LIMIT

R.L (+)144.00M

OF BHEL ROAD 291.102S

OF BHEL ROAD 114.028W

OF PATROL ROAD

OF BHEL ROAD 321.102S

OF PATROL ROAD 134.151S

OF S/L ROAD 321.102S

OF PATROL ROAD 96.827S

POWER HOUSE BUILDING

CEMENT SHED

SEMI-COVERED

COVERED SHED

STORAGE SHED

Plant Sub Stn

SUBSTATION AREA

INTERCONNECTION PASSAGE CUM PIPE RACK

DM & CST P/H

ALTERNATIVE ACCESS DURING ERECTION

CPU

IDCT

ESP CTRF

DG

ETP-ZLD

PT-PLANT

SPACE CO2 CAPTURE

R.L (+)144.50M

RL(+)144.0M

R.L (+)144.00M

PROPOSED RE-ROUTED PATH

SAMPLE POINT

1/1m Slab Culvert

RWPH

166.741?

LIME GRINDING & SLURRY AREA

AHP MCC-2

LINE-4 (NIRMAL S/S)

3750MM WIDE ROAD

AIN BUS-II

AIN BUS-I

BURIED MAKE-UP PIPES 1600 NB FOR PT 500 NB ASH

FOR FGD

GE-I

1x800MW SCCL
SCOPE MATRIX R01 (PRE - BID TIE UP)

BROAD SCOPE: All supplies/work (Civil, structural, architectural, mechanical, electrical, and C&I) outside BTG island will be in the scope of BOP vendor on EPC basis and inside BTG island shall be in BHEL scope.
(Refer Table below for exception points)

BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.

MAJOR INCLUSIONS (BOP PKG): CHP, AHP, Raw Water System, WATER TREATMENT, COOLING TOWERS, CHIMNEY, ASH DYKE, FUEL OIL HANDLING SYSTEMS, MISC. TANKS, HVAC , FIRE FIGHTING SYSTEM, STATION LIGHTING, MISC. EOT CRANES, AUXILLIARY BUILDINGS,ELEVATORS etc.

Sl. No.	Description	SCOPE IN AGENCY (BHEL / BOP)	Broad Scope	DETAIL SCOPE				Terminal Points Description	Terminal Point No.	Exclusions	Remarks
				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
A	**MECHANICAL SYSTEM**										
1	STEAM GENERATOR AND AUXILIARIES INCLUDING ESP	BHEL	Complete SG and Auxiliary package in BHEL scope.	BHEL	BHEL	BHEL	BHEL				
2	SELECTIVE CATALYTIC REDUCTION SYSTEM	BHEL	Complete Pkg by BHEL	BHEL	BHEL	BHEL	BHEL				BOP Vendor to furnish provisions in their respective systems like Pipe Rack,Utility,Space etc.for future installation of SCR.
3	FLUE GAS DESULPHURISATION SYSTEM	BHEL	Part Pkg by BHEL/BOP	BHEL/BOP	BHEL/BOP	BHEL/BOP	BHEL/BOP				Except Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. Terminal Point (TP) shall be 5 meter in and out away from Absorber. Typical PFD enclosed. Typical PFD enclosed.
4	STEAM TURBINE AND AUXILIARIES	BHEL	Complete TG and Auxiliary package in BHEL scope.	BHEL	BHEL	BHEL	BHEL				
5	POWER CYCLE PIPING	BHEL	Complete Pkg by BHEL	BHEL	BHEL	BHEL	BHEL			For Areas mentioned specifically under BOP Vendor scope.	
6	LOW PRESSURE PIPING	BHEL/ BOP Vendor	Within BTG Island - BHEL Outside BTG island - BOP vendor	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	RE Joint at Condenser.			Complete CW pipeline from condenser outlet to IDCT and from CWPH to condenser inlet shall be in the scope of BOP EPC Vendor.
7	Sewage Treatment Plant	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP	Sewage for BTG area shall be terminated at Battery Limit by BHEL.			Associated Civil, Str, & Arch Works inside BTG island in BHEL scope.
8	DM plant and CW chemical treatment.	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP				Associated Civil, Str, & Arch Works inside BTG island in BHEL scope.
9	Pre treatment Plant	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP				
10	Liquid effluent treatment plant	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP	Effluent collected from BTG area shall be terminated at BTG Battery Limit by BHEL.			BOP vendor to furnish the Pressure required by BHEL at Terminal Point. Associated Civil, Str, & Arch Works inside BTG island in BHEL scope.
11	Gas chlorination	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				
12	Condensate polishing unit including regeneration facility	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				Associated Civil, Str, & Arch Works inside BTG island in BHEL scope.

1x800MW SCCL
SCOPE MATRIX R01 (PRE - BID TIE UP)

BROAD SCOPE: All supplies/work (Civil, structural, architectural, mechanical, electrical, and C&I) outside BTG island will be in the scope of BOP vendor on EPC basis and inside BTG island shall be in BHEL scope.
(Refer Table below for exception points)

BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.

MAJOR INCLUSIONS (BOP PKG): CHP, AHP, Raw Water System, WATER TREATMENT, COOLING TOWERS, CHIMNEY, ASH DYKE, FUEL OIL HANDLING SYSTEMS, MISC. TANKS, HVAC , FIRE FIGHTING SYSTEM, STATION LIGHTING, MISC. EOT CRANES, AUXILLIARY BUILDINGS,ELEVATORS etc.

Sl. No.	Description	SCOPE IN AGENCY (BHEL / BOP)	Broad Scope	DETAIL SCOPE				Terminal Points Description	Terminal Point No.	Exclusions	Remarks
				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
13	**CW SYSTEM**										
A	Equipment Cooling water system including ACW pumps.	- Within BTG Island (Except CHP-BHP, AHP) - BHEL - Outside BTG island (including CHP-BHP, AHP in BTG area) - BOP vendor		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	TP for BOP area's ECW/DMCW ((Inside BTG Island) system shall be as per Battery limit near A row. BOP vendor shall terminate ECW Hot water return header at A row. Flow and Pr Drop to be provided by BOP vendor. For ACW system (Outside BTG Island)- BOP vendor will terminate TP near A row for inlet to ACW system. outlet Hot water pipe of ACW piping shall be terminted at A row by BHEL. Flow and Pr Drop to be provided by BHEL.			ACW & DMCW Pumps shall be in the scope of BHEL. ACW pumps location inside BTG Island (refer attached revised Battery limit R01 attached)
B	Circulating water system including CW pumps	BHEL/ BOP Vendor	Within BTG Island - BHEL Outside BTG island - BOP vendor	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	TP for CW (Inlet and return header) shall be at BTG area battery limit. A Row Puddle flange for CW Pipe		CW Pumps will be issued free of cost to BOP Vendor by BHEL.	Complete CW Pump house including Powerhouse requirement in BOP vendor scope. CW system limiting parameters will be intimated by BHEL to BOP Vendor: A.Flow B.Pressure drop
C	IDCT-Cooling towers for circulating water system	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				CW system limiting parameters will be intimated by BHEL to BOP Vendor: A. Flow B. Pressure drop
D	Chimney	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				
E	Aux water system including Raw water pumps	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				
14	**PLANT UTILITIES**										
A	Compressed air system	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP	BOP vendor shall provide tapping points (02 Nos.) near TG Gable end and boiler area for further distribution by BHEL within BTG boundary limit		Civil, Str & Arch. work inside BTG island battery limits shall be in BHEL Scope.	
B	Air conditioning and ventilation system	BOP Vendor	Complete Pkg (BTG + BOP Area) on EPC Basis	BOP	BOP	BOP	BOP			Civil, Str & Arch. work inside BTG island battery limits shall be in BHEL Scope.	SCOPE: Entre plant including BTG area shall be in vendor scope.
C	Fire detection and protection system	BOP Vendor	Complete Pkg (BTG + BOP Area) on EPC Basis	BOP	BOP	BOP	BOP			Civil, Str & Arch. work inside BTG island battery limits shall be in BHEL Scope.	SCOPE: Entire plant including BTG area shall be in vendor scope.

1x800MW SCCL
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(Refer Table below for exception points)

BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.

MAJOR INCLUSIONS (BOP PKG): CHP, AHP, Raw Water System, WATER TREATMENT, COOLING TOWERS, CHIMNEY, ASH DYKE, FUEL OIL HANDLING SYSTEMS, MISC. TANKS, HVAC , FIRE FIGHTING SYSTEM, STATION LIGHTING, MISC. EOT CRANES, AUXILLIARY BUILDINGS,ELEVATORS etc.

Sl. No.	Description	SCOPE IN AGENCY (BHEL / BOP)	Broad Scope	DETAIL SCOPE				Terminal Points Description	Terminal Point No.	Exclusions	Remarks
				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
15	COAL & BIOMASS HANDLING PLANT	BOP Vendor	Complete Pkg (BTG + BOP Area) on EPC Basis	BOP	BOP	BOP	BOP	1. Coal & Biomass feeding to the bunker shall be in scope of BOP vendor. 2. For civil & structural works-Bunker gallery (Support bracket in Bunker building shall be provided by BHEL)		Bunker gratings and bunker monorails shall be supplied by BHEL.	
16	FUEL OIL UNLOADING SYSTEM	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP	TP for FOHS shall be at Battery limit of BTG area (Supply and return line both)			Truncated Scope as per tender specification.
17	ASH HANDLING SYSTEM	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP	1. For bottom ash: after Boiler Seal plate. 2. For Economizer ash/APH ash/SCR/Duct/ESP ash handling system: from respective hopper bottom flange.			
18	MILL REJECT HANDLING SYSTEM	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				
19	LP DOSING AND OXYGENATED TREATMENT SYSTEM	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				
20	ELEVATORS	BOP Vendor	Complete Pkg on EPC Basis (except FGD absorber)	BOP	BOP	BOP	BOP				All Elevators except FGD absorber elevator are in BOP Vendor Scope on EPC Basis.
21	HOISTS	- Within BTG Island (Except CHP-BHP,		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				
22	EOT CRANES	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP			Civil, Str & Arch. work inside BTG island battery limits shall be in BHEL Scope.	All EOT cranes incldluing TG Hall EOT crane, BC Bay crane (for BFP) shall be in the scope of BOP vendor.
23	SEPARATION OF PLANT DRAINS FROM STORM WATER DRAINS	BOP Vendor	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				
								Additional points			
1	Service & Potable Water System	BHEL/ BOP Vendor	Within BTG Island - BHEL Outside BTG island - BOP vendor	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	Service & Potable water TP 1. Within battery Limit- BHEL 2. Outside Boundary Limit-- BOP Vendor TP for service /Potable water shall be at TG A- Row.			Following Inputs shall be provided by BHEL to BOP Vendor for BTG areas: Service water : Flow & Pressure Potable water : Flow & Pressure Pump house will be in BoP area
2	Hotwell Make Up System	BTG Scope	BHEL	BHEL	BHEL	BHEL	BHEL	1) DM makeup Discharge header terminal point near condenser for Normal make-up upstream of control station (A-Row) 2) Emergency makeup Discharge header terminal point near condenser for Emergency make-up u/s of control station (A-Row)		DM makeup pump, Boiler Fill Pump, Emergency make-up pump in BOP vendor scope.	

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(Refer Table below for exception points)

BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.

MAJOR INCLUSIONS (BOP PKG): CHP, AHP, Raw Water System, WATER TREATMENT, COOLING TOWERS, CHIMNEY, ASH DYKE, FUEL OIL HANDLING SYSTEMS, MISC. TANKS, HVAC , FIRE FIGHTING SYSTEM, STATION LIGHTING, MISC. EOT CRANES, AUXILLIARY BUILDINGS,ELEVATORS etc.

Sl. No.	Description	SCOPE IN AGENCY (BHEL / BOP)	Broad Scope	DETAIL SCOPE				Terminal Points Description	Terminal Point No.	Exclusions	Remarks
				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
3	Rain Water Harvesting System	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	Rain water collected from BTG area shall be terminated at 2 points in transformer area by BHEL.		Rain water collection from BTG area	
2	Weigh Bridge	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP				
3	FGD. Tanks & Agitator	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP				Except Absorber system, Bleed Pump, RC pump, Oxidation blowers and associated piping, all other requirements as per tender specifications for FGD System shall be in BOP Vendor scope. Terminal Point (TP) shall be 5 meter in and out away from Absorber. Typical PFD enclosed. Typical PFD enclosed.
4	Gypsum Dewatering system	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP	Piping and other equipment 5 mtr away from absorber outlet shall be in BoP vendor scope.			
5	Lime dosing system (For FGD) including waste water transfer pumps to ash pond	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP				
6	PIPE CUM CABLE RACKS - INSIDE BTG ISLAND (Within Battery Limit)	BHEL	Complete Pkg by BHEL	BHEL	BHEL	BHEL	BHEL				Pipe cum cable rack within BTG area shall be provided by BHEL. Pipe BOQ (size and number) which are coming on BTG area to be informed by BOP vendor for piperack design. However, the same shall be laid by BHEL <Refer plot plan>
7	PIPE RACKS - OUTSIDE BTG ISLAND (Outside Battery Limit)	BOP	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				Pipe cum cable rack within BOP area shall be provided by BOP contractor. Pipe BOQ (size and number) which are coming on BOP area to be informed by by BHEL for piperack design. However, the same shall be laid by BOP vendor <Refer plot plan>
8	Misc. Tanks	BOP	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				BOP vendor scope.
9	Centralized Nitrogen System	BOP	Complete Pkg on EPC Basis	BOP	BOP	BOP	BOP				Refer attached revised battery limit R01, complete Centralized Nitrogen System has been moved outside BTG Island, same shall be in BOP Vendor Scope.
B	**CIVIL/STR / ARCH Works**										
1	Buildings, Structures	- Within BTG Island (Except CHP-BHP,		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				
2	Roads and Drains	BHEL/ BOP Vendor	Within BTG Island - BHEL Outside BTG island - BOP vendor	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	Peripheral road & drains (BTG island) to be in BHEL scope.			Within the battery limit of BTG by BHEL (Proposed battery limit - Refer Plot plan)
3	Paving	BHEL/ BOP Vendor	Within BTG Island upto Absorber - BHEL Outside BTG island - BOP vendor	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				Within the battery limit of BTG by BHEL (Proposed battery limit- Refer Plot plan)
4	Geo-Technical Investigation and Topographical survey	BOP Vendor	Complete Pkg on EPC Basis.	BOP	BOP	--	---				Geotechnical Investigation & Topographical Survey of whole plant area shall be done by BOP vendor.
5	Ash Dyke	BOP vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP				

1x800MW SCCL
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(Refer Table below for exception points)

BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.

MAJOR INCLUSIONS (BOP PKG): CHP, AHP, Raw Water System, WATER TREATMENT, COOLING TOWERS, CHIMNEY, ASH DYKE, FUEL OIL HANDLING SYSTEMS, MISC. TANKS, HVAC , FIRE FIGHTING SYSTEM, STATION LIGHTING, MISC. EOT CRANES, AUXILLIARY BUILDINGS,ELEVATORS etc.

Sl. No.	Description	SCOPE IN AGENCY (BHEL / BOP)	Broad Scope	DETAIL SCOPE				Terminal Points Description	Terminal Point No.	Exclusions	Remarks
				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
6	Site Enabling work	BOP vendor	Complete Pkg on EPC Basis.	BOP	BOP	BOP	BOP				For Site Enabling work details refer Annexure -1 attached with Pre-bid queries.
C	**ELECTRICAL SYSTEM / EQUIPMENTS**										
1	Complete Electrical System	- Within BTG Island (Except CHP-BHP, AHP) - BHEL - Outside BTG island (including CHP-BHP, AHP in BTG area) - BOP vendor		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP			Supply of HT & LT transformers, Bus ducts (IPBD, SPBD & NSPBD), HV & LV Switchgear shall be in the scope of BHEL (within BTG island).	1. Complete cable, cabling and termination for equipment supplied by BoP vendor shall be in the scope of BoP vendor. Whereas, both ends supplied by BHEL, same shall be in BHEL scope. 2. BoP vendor has to provide cable & cabling details to BHEL for designing and routing (within BTG island) by BHEL. 3. In case of BHEL supplied equipment to be mounted in BoP area, cable laying and termination will be in BoP vendor scope.
2	Generator along with all auxiliaries, Neutral GroundingTransformer, NG Cubicle, SPVT, LAVT,	BHEL	Complete system in BHEL Scope	BHEL	BHEL	BHEL	BHEL				
3	Electrical Control Desk & DDCMIS for Electrical Breakers.	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				
4	Relay Panel (Generator, GT & UT protection panel and Station Transformer protection Panel)	BHEL	Complete system in BHEL Scope	BHEL	BHEL	BHEL	BHEL				
5	400KV AIS switchyard	BHEL	Complete system in BHEL Scope	BHEL	BHEL	BHEL	BHEL				
6	Substation Automation System	BHEL	Complete system in BHEL Scope	BHEL	BHEL	BHEL	BHEL				
7	Power Transformer (GT, ST, UT, Reactor)	BHEL	Complete system in BHEL Scope	BHEL	BHEL	BHEL	BHEL				Load & feeder requirement to be informed by BOP vendor for sizing of BTG scope Transformers.
8	Auxiliary Power Transformer (11/3.3 kV)	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				
9	Neutral Grounding Resistor (3.3kV & 11kV)	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				
10	Isolated Phase Bus Duct, Air Presurrizing System, HAB	BHEL	Complete system in BHEL Scope	BHEL	BHEL	BHEL	BHEL				
11	3.3 KV & 11 KV Segregated Phase Bus Ducts	- Within BTG Island (Except CHP-BHP, AHP) - BHEL - Outside BTG island (including CHP-BHP, AHP in BTG area) - BOP vendor		BHEL/BOP	BHEL/BOP	BHEL/BOP	BHEL/BOP				**Civil:** 1) Complete civil in BTG Island (Except CHP-BHP, AHP) by BHEL. 2) Complete civil in BOP Island (including CHP-BHP, AHP in BTG Island) by BOP vendor. **Supply:** Supply by BHEL for BTG & BOP Island. **Erection & Commissioning:** 1) E&C by BHEL in BTG Island. 2) E&C by BOP vendor in BOP Island.

1x800MW SCCL
SCOPE MATRIX R01 (PRE - BID TIE UP)

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BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.
MAJOR INCLUSIONS (BOP PKG): CHP, AHP, Raw Water System, WATER TREATMENT, COOLING TOWERS, CHIMNEY, ASH DYKE, FUEL OIL HANDLING SYSTEMS, MISC. TANKS, HVAC , FIRE FIGHTING SYSTEM, STATION LIGHTING, MISC. EOT CRANES, AUXILLIARY BUILDINGS,ELEVATORS etc.

Sl. No.	Description	SCOPE IN AGENCY (BHEL / BOP)	Broad Scope	DETAIL SCOPE				Terminal Points Description	Terminal Point No.	Exclusions	Remarks
				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
12	HV (11 kV & 3.3 kV) Switchgear	- Within BTG Island (Except CHP-BHP, AHP) - BHEL - Outside BTG island (including CHP-BHP, AHP in BTG area) - BOP vendor		BHEL/BOP	BHEL/BOP	BHEL/BOP	BHEL/BOP				**Civil:** 1) Complete civil in BTG Island (Except CHP-BHP, AHP) by BHEL. 2) Complete civil in BOP Island (including CHP-BHP, AHP in BTG Island) by BOP vendor. **Supply:** Supply by BHEL for BTG & BOP Area. **Erection & Commissioning:** 1) E&C by BHEL in BTG area. 2) E&C by BOP vendor in BOP areas. However, For BOP package, list of feeders/ electrical loads to be informed at tender stage by BOP vendor for sizing of HT
13	Service Transformer (Dry type Transformers).	- Within BTG Island - BHEL		BHEL	BHEL	BHEL	BHEL				Outside BTG island- DTT not applicable.
14	Service Transformer (Oil filled type Transformers).	- Within BTG Island (Except CHP-BHP, AHP) - BHEL - Outside BTG island (including CHP-BHP, AHP in BTG area) - BOP vendor		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				All Service Transformer (Oil filled type Transformers) except ESP & Switchyard shall be in BOP Vendor Scope. **Following details to be ensured/provided for Transformer in BOP vendor scope:** i. Losses of transformer shall be governed by IS & Technical Specification. ii. Auxiliary losses to be informed by BOP vendor. iii. Load & feeder requirement to be informed by BOP vendor for sizing of BTG scope Transformers.
15	415 V LT Switchgear & DC Boards	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				For BOP packages which are placed in BTG area, Uncabled feeder shall be provided by BHEL.However list of these feeders to be informed at tender stage by BOP vendor
16	Non Segregated Phase Bus Ducts & Sandwitch Busduct for DG Connection.	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				Sandwich busducts of BTG and BOP area are in BOP vendor scope.
17	Local Push Button Station & Miscellaneous Equipment	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				
18	AC & DC Motors	- Within BTG Island (Except CHP-BHP, AHP) - BHEL - Outside BTG island (including CHP-BHP, AHP in BTG area) - BOP vendor		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				**Civil:** 1) Complete civil in BTG Island (Except CHP-BHP, AHP) by BHEL. 2) Complete civil in BOP Island (including CHP-BHP, AHP in BTG Island) by BOP vendor. **Supply:** Supply HT motors by BHEL for BTG Area. Supply of HT motors (excl. Temp transmitter alongwith JB) required for BOP scope of work (except HT motors for compressors in CHP-BHP, AHP area) will be provided by BHEL to BoP vendor. LT motors outside BTG area (incl. CHP-BHP, AHP in BTG area) supply by BOP Vendor
19	Electrical Actuators with Integral Starters	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				

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(Refer Table below for exception points)

BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.

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				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
20	Cables (HV, LV, Control & Instrumentation)	Within BTG Island - BHEL:Supply & installation of HV & LV Power, Control and Instrumentation Cables for BTG package. Cable trays & supports required for these cables. Outside BTG Island -BOP vendor:Supply & Installation of HV & LV Power, Control and Instrumentation Cables for Balance of Plant Area. Cable		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				1. When equipment's at both ends are in BHEL's scope, supply & installation of HV & LV power, control and instrumentation cables including special cable along with cable carrier system and cable termination & accessories will be in BHEL's scope. For balance equipment's, supply & installation of HV & LV power, control and instrumentation cables including special cable along with cable carrier system and cable termination & accessories will be in BOP Vendor's scope.
21	Cable trays & supports	Within BTG Island - Cable trays & supports by BHEL. Refer note-2. Outside BTG Island - Cable trays & supports by BOP Vendor.Refer note-2.		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				2. All cable trays (along with supporting arrangement) required for both the two packages (BTG and BOP) within package boundary battery limits of BTG Package, shall be supplied & erected by the BTG package vendor. Similarly, within package (BTG and BOP) boundary Battery Limits of BOP Package, shall be supplied & erected by the BOP package vendor. BOP contractor shall inform details of cable trays (no & type) for cable in BOP vendor scope in BTG area.
22	Fire Sealing System	- Within BTG Island (Except CHP-BHP,		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				
23	220V DC Battery & Charger System	- Within BTG Island (Except CHP-BHP, AHP) - BHEL		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				
24	Illumination System	BOP vendor	Complete system in BOP Vendor Scope	BOP	BOP	BOP	BOP				
25	Earthing & Lightning Protection System	- Within BTG Island (Except CHP-BHP, AHP) - BHEL - Outside BTG island (including CHP-BHP, AHP in BTG area) - BOP vendor		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP				1A. Within BTG Island (For Equipment under BTG Scope)- Complete Earthing & Lightning Protection System (both underground & above ground) for BTG Area by BHEL. 1B. Within BTG Island (For Equipment under BOP Scope)- Above Ground Earthing by BOP vendor & underground earthing by BHEL. 2. Outside BTG Island- Complete Earthing & Lightning Protection System (both underground & above ground) for BOP areas by BOP vendor. It includes interconnection of BOP Package earth mat to earth mat of BTG Package.
26	Construction Power Supply	BOP vendor	Complete system in BOP Vendor Scope	BOP	BOP	BOP	BOP				BOP contractor shall provide sufficient no. of points at 415V to BHEL at suitable locations
27	PA System	BOP vendor	Complete system in BOP Vendor Scope	BOP	BOP	BOP	BOP				UPS load requirement for BOP portion of systems (viz. PA system) in BTG area shall be informed by BOP vendor.
28	DG Set	Within BTG Island - BHEL (for only civil works) Outside BTG Island (For FGD) - BOP		BHEL/ BOP	BHEL/ BOP	BOP	BOP				Load requiring emergency DG supply, BHEL may inform the emergency load of BTG island (Except FGD emergency laod) to be considered in main plant DG sizing. Cable for feeding these loads shall be in BOP vendor scope. Civil: 1) Complete civil works in BTG Island by BHEL. 2) Complete civil works in BOP Island by BOP vendor. Supply and E&C: Supply by BOP vendor for BTG & BOP Island.

1x800MW SCCL
SCOPE MATRIX R01 (PRE - BID TIE UP)

BROAD SCOPE: All supplies/work (Civil, structural, architectural, mechanical, electrical, and C&I) outside BTG island will be in the scope of BOP vendor on EPC basis and inside BTG island shall be in BHEL scope. (Refer Table below for exception points)
BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.
MAJOR INCLUSIONS (BOP PKG): CHP, AHP, Raw Water System, WATER TREATMENT, COOLING TOWERS, CHIMNEY, ASH DYKE, FUEL OIL HANDLING SYSTEMS, MISC. TANKS, HVAC , FIRE FIGHTING SYSTEM, STATION LIGHTING, MISC. EOT CRANES, AUXILLIARY BUILDINGS,ELEVATORS etc.

Sl. No.	Description	SCOPE IN AGENCY (BHEL / BOP)	Broad Scope	DETAIL SCOPE				Terminal Points Description	Terminal Point No.	Exclusions	Remarks
				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
29	Electrical Lab Equipment	BOP scope	BOP Package (for complete project scope) (refer note 9)	BOP	BOP	BOP	BOP				Electrical lab package for the complete project shall be in BOP vendor scope. Space requirement & LT Power feeder requirement for Electrical Lab package in main Plant to be informed by BOP vendor.
30	CCTV	BOP vendor	Complete system in BOP Vendor Scope	BOP	BOP	BOP	BOP				

Note:
1. For Electrical System design, BOP vendor has to provide Electrical details like impedance of transformers, number & rating of transformer, details of HT Motors etc. for BOP scope. Optimised transformer impedance calculated through system studies shall be binding for BOP vendor subject to relevant IS and detailed Technical Specification.
2. For establishing interconnection of BOP Package Earth mat with earth mat of BTG area, 4 nos. interconnecting earth pits shall be provided in BTG area in all four directions. Detailed location shall be provided during detailed engineering.

D Instrumentation & Control Works

1	Complete C&I System - for packages outside BTG area	- Within BTG Island (Except CHP-BHP, AHP, LHP-GHP) - BHEL - Outside BTG island (including CHP-BHP, AHP, LHP-GHP in BTG area) - BOP vendor		BHEL/ BOP	BHEL/ BOP	BHEL/ BOP	BHEL/ BOP			DCS and its HMI & LVS for various packages shall be supplied by BHEL/EDN. Vendor has to provide relevant engineering inputs.	1. Complete cable laying and termination upto marshalling panel for equipment supplied by BoP vendor shall be in the scope of BoP vendor. 2. BoP vendor has to provide cabling details to BHEL for designing and routing cable trays (within BTG island) by BHEL. 3. Wherever PLC is applicable, complete PLC system (incl. cabling) and its HMI, UPS, battery, battery charger (as appllicable) by BoP vendor. Wherever one end is in vendor scope, cable laying and termination upto DCS (main control room) will be in BoP vendor scope.
2	DDCMIS interface with PLC/microprocessor panel/Profibus COMM/local control panels	- Within BTG Island (Except CHP-BHP, AHP, LHP-GHP) - BHEL - Outside BTG island (including CHP-BHP, AHP, LHP-GHP in BTG area) - BOP vendor		BTG/ BOP Scope	BTG/ BOP Scope	BTG/ BOP Scope	BTG/ BOP Scope	DCS Panel at CCR.			1. For BOP packages - PLC side gateway/ LIU/ Profibus Controller will be provided by BoP vendor and DCS side will be provided by BHEL. 2. Inputs that will required by EDN to design the system and interface 1. I/O list 2. Logic Diagram 3. Functional Grouping 4. P&ID 5. Cable schedule for BHEL procured cables/ accessories 6. For Profibus , BoP vendor to share BOQ for the profibus system (from BHEL /Customer approved siurces) so that interface with
3	Vibration Monitoring system	BHEL	Complete work on PEC basis	BHEL	BHEL	BHEL	BHEL				Based on inputs received from concerned Units/ Vendor. Relevant inputs during bidding stage and detailed engineering stage to be provided by BOP vendor to BHEL/EDN.
4	a) Steam and Water Analysis System (SWAS), b) CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) c) AMBIENT AIR QUALITY MONITORING STATION (AAQMS)	BHEL	Complete work on PEC basis	BHEL	BHEL	BHEL	BHEL				

1x800MW SCCL
SCOPE MATRIX R01 (PRE - BID TIE UP)

BROAD SCOPE: All supplies/work (Civil, structural, architectural, mechanical, electrical, and C&I) outside BTG island will be in the scope of BOP vendor on EPC basis and inside BTG island shall be in BHEL scope. (Refer Table below for exception points)
BTG ISLAND: BTG island shall start from Switch Yard including Transformer Yard, Power House, Boiler, ESP, and shall be up to ID fan Outlet.
MAJOR INCLUSIONS (BOP PKG): CHP, AHP, Raw Water System, WATER TREATMENT, COOLING TOWERS, CHIMNEY, ASH DYKE, FUEL OIL HANDLING SYSTEMS, MISC. TANKS, HVAC , FIRE FIGHTING SYSTEM, STATION LIGHTING, MISC. EOT CRANES, AUXILLIARY BUILDINGS,ELEVATORS etc.

Sl. No.	Description	SCOPE IN AGENCY (BHEL / BOP)	Broad Scope	DETAIL SCOPE				Terminal Points Description	Terminal Point No.	Exclusions	Remarks
				DESIGN / ENGG	CIVIL/ STR/ ARCH (SUPPLY & ERECTION / EXECUTION)	SUPPLY & ERECTION (MECH, ELEC, C&I)	TESTING / COMMISIONING				
5	Remote Operation/Status Signals of Switchgear Breakers, Transformers.	- Within BTG Island (Except CHP-BHP, AHP, LHP-GHP) - BHEL - Outside BTG island (including CHP-BHP, AHP, LHP-GHP in BTG area) - BOP vendor		BTG/BOP	BTG/BOP	BTG/BOP	BTG/BOP				Remote operation (cable laying, termination and testing & commissioing) for BOP supplied vendor PLC will be done by BOP vendor. However, for BHEL supplied switchgear remote operations shall be done by BHEL. For BHEL supplied switchgear (used for operation of BoP vendor equipment), testing and commissioning for remote operation will be assisted by BOP vendor.
6	HART Management System	BHEL	Complete work on PEC basis	BHEL	BHEL	BHEL	BHEL				
7	Misc Items : ONLINE ORP MONITOR / ANALYSER, ORP/PH PORTABLE METER;	BOP Vendor	Complete work on EPC basis	BOP vendor	BOP vendor	BOP vendor	BOP vendor				
8	SAFETY CONTROL ROOM AND EQUIPMENT	BOP Vendor	Complete work on EPC basis	BOP vendor	BOP vendor	BOP vendor	BOP vendor				
9	CCTV	BOP vendor	Complete system in BOP Vendor Scope	BOP	BOP	BOP	BOP				As per contract Section VI-A Cl no-13.02.00 " Common IP based network for IP based PA system and IP based CCTV system involving common components viz. network switches, network media and power supplies may be acceptable subject to employer's approval during detail engineering "
10	PA System	BOP + BTG area	Complete system in BOP Vendor Scope	BOP	BOP	BOP	BOP				
11	UPS	- Within BTG Island (Except CHP-BHP,		BTG/BOP	BTG/BOP	BTG/BOP	BTG/BOP				

NOTES:

1	For soft-link communication and Hardwired interfacing between BOP's PLC/Microprocessor based control system etc, and BTG's DDCMIS all the interfacing hardware such as converters / modem /power supply unit, software etc shall be supplied by **BOP EPC supplier scope**, wherever
2	Complete Communication armored FO cables, signal cables and control cables between BOP's PLC/Microprocessor based control system/JB/MCC etc to BTG's DDCMIS shall be in BOP EPC Vendor's scope.
3	All the cables shall be routed through cable trays or GI conduit pipes/HDPE protection pipes in BOP EPC vendor scope.
4	In case of redundant communication cables, each cable shall be laid in two separate trays /conduit.
5	Supply, engineering, design, Erection, Laying and termination for all cables shall be in BOP EPC vendor scope including preparation of cable schedule, wherever single/one end are in BTG EPC supplier scope.
6	For Time Synchronization Signals from BTG's master clock system to BOP's PLC/DCS/Microprocessor based control system etc., all the interfacing hardware such as signal conditioner cards /converters / modem / power supply unit, software etc. shall be supplied by BOP EPC supplier,
7	Terminal point with respect to interface with DDCMIS / PLC / Microprocessor System of BOP Scope is the terminal boxes of DDCMIS panel(s) supplied under BTG scope and placed in Central Control Room
8	For BOP packages, BOP vendor shall provide ncessary JBs also for profibus based instruments.
9	Any instrument required for measuring and monitoring of BOP packages/ Systems shall be supplied by the BOP vendor including JB and cables, termination to be considered till DCS.
10	Control equipment room for common plant systems like Ash handling system, Coal handling system, Water treatment system, Makeup water system etc. shall be near respective MCC. Remote RIO rooms shall be be provided as per requirement and their location shall be finalized during
11	BOP packages for which DCS based control is envisaged, DCS panels shall be in Scope of BHEL. Corresponding details shall be shared with BOP vendor for accommodation in their layout.
12	3D Modelling of BOP Packages as per specifications.