PART-I-TECHNICAL & COMMERCIAL BID

1. Name of Work : Development of Madhuband Underground Mine and extraction of coal from Madhuband Underground Mine, Barora Area by mass production technology package for a minimum guaranteed production of 1.0 Mty of coking coal on turnkey basis. Work includes additional exploration (if desired so by the contractor); preparation of mining plan, detailed Project Report & EMP including acquisition of land & rehabilitation (if so required); obtaining approvals from concerned authorities.

2. Place of Work : Madhuband Colliery, Barora Area, BCCL

3. Tender Notice No. & Date : BCCL/ GM(CMC)/ F- GL/ GLOBAL BID-MB / 2010/ 571 Dated 06/04/2010

4. Earnest Money : Rs.25.0 Lacs or equivalent USD

5. Date & Time of submission of tender : On 21.06.2010 up to3.30PM

6. Date & Time of Opening of Part-I Tender : 16.00 Hrs. on 23.06.2010

7. Date & Time of opening of Price bid (Part-II) : Shall be communicated in due course after evaluation of Part-I tender.

8. Date of Issue of Tender Document


10. Approved for sale

TO---------------------------------------
-----------------------------------
General Manager (CMC)
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Name and Place of work

Development of Madhuband Underground Mine and extraction of coal from Madhuband Underground Mine, Barora Area by mass production technology package for a minimum guaranteed production of 1.0 Mty of coking coal on turnkey basis. Work includes additional exploration (if desired so by the contractor); preparation of mining plan, detailed Project Report & EMP including acquisition of land & rehabilitation (if so required) ; obtaining approvals from concerned authorities.
1. TENDER NOTICE

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PROJECT / AREA</th>
<th>TENDER NOTICE No/Global-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bharat Coking Coal Limited</td>
<td>Madhuband Underground Mine, Barora Area</td>
<td>BCCL/GM(CMC)/F-Global - MB/2010/571, Dated : 06.04.2010</td>
</tr>
</tbody>
</table>

Sealed turn-key tenders are invited for the following work:

<table>
<thead>
<tr>
<th>Name and Description of Work</th>
<th>Location</th>
<th>Contract period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of Madhuband Underground Mine and extraction of coal from Madhuband Underground Mine, Barora Area by mass production technology package for a minimum guaranteed production of 1.0 Mty of coking coal on turnkey basis. Work includes additional exploration (if desired so by the contractor); preparation of mining plan, detailed Project Report &amp; EMP including acquisition of land &amp; rehabilitation (if so required) ; obtaining approvals from concerned authorities.</td>
<td>Madhuband Colliery/Barora Area</td>
<td>Commercial production period shall be minimum <strong>NINE</strong> production years.</td>
</tr>
</tbody>
</table>

1.1 EARNEST MONEY

Rs. 25,00,000 (Twenty five lakh) or equivalent USD as Earnest Money / Bid Security is to be deposited in the form of irrevocable Bank guarantee (from Scheduled Bank) with validity 28 days beyond the validity of the Bid in the format given in the Bid Document. Certified Cheques and demand drafts will also be acceptable as Earnest Money / Bid Security drawn in favour of M/S BHARAT COKING COAL LIMITED on any scheduled bank payable at its branch at DHANBAD Earnest Money / Bid Security of the
unsuccessful bidders shall be refundable as promptly as possible after finalization of tender and shall bear no interest.

1.2 APPLICATION FEE FOR TENDER DOCUMENT

The price of a tender document will be INR 5000/- (five thousand only) or US Dollar $100 (One hundred) payable either in cash or by bank draft drawn in favour of M/S BHARAT COKING COAL LIMITED on any scheduled bank payable at its branch at Dhanbad.

1.3 AVAILABILITY OF TENDER DOCUMENTS

Tender documents including terms and conditions of work, shall be available on payment, from the following places, during the period as stated below:

From 20.04.2010 to 19.05.2010.

Place:
Office of the General Manager(CMC), Bharat Coking Coal Limited, Level –V, Koyla Bhawan, Dhanbad-826005, Jharkhand, India
Office of Chief Sales Manager, 6, Lyons Range, Kolkata-700001, India

Tender document is also available on our website http://www.bccl.cmpdi.co.in. The tenderers who downloads the tender documents will have to enclose a Bank Draft towards cost of tender document along with their tenders in a separate envelope with part –I superscribing “COST OF TENDER DOCUMENT”. The bank draft should be payable in favour of M/S BHARAT COKING COAL LIMITED drawn on any scheduled bank payable at its branch at Dhanbad.

1.4 GENERAL INSTRUCTIONS FOR SUBMISSION OF TENDER

A tenderer should strictly comply with the following instructions:

a) A tenderer is required to submit his offers in sealed covers giving reference to this Tender Notice No. and Date, containing offers in two parts prominently superscribed as Part I and Part II respectively.

b) The two parts of the offers shall contain details as follows:
Part I –

i) Full details of the firms (bidder), documentary evidences in support of qualification criteria, details of the projects handled, testimonials and documentary evidences in support of satisfactory performance, financial capabilities and any other relevant information and the Earnest Money Deposit.

ii) Technical offer along with detailed technical specifications of the Mass production technology package / equipments, know-how offered, drawings, pamphlets etc. strictly in terms of tender enquiry.

iii) A scheme having details of ‘Development activities’ with time schedule, mine entries & their duties, mine panel layouts indicating main trunk roadways, intake & return, traveling roadways, detailed description of method of development of the panels and the extraction of coal including scheme of support, ventilation, dewatering, transportation along with required safety measures, lighting and communication including acquisition of land & rehabilitation(if so required)

iv) Documentary evidence of similar scheme(s) have been successfully implemented in part or full.

v) Complete time schedule / PERT network for the entire scope of work.

vi) Sealed Tenders/bids have to be submitted by the tenderers in four envelopes duly sealed in, in one outer envelope indicating full postal address and telephone nos. of the tenderer. Four Envelopes as mentioned above will consist of : (1) Envelope for cost of tender document & undertaking (in case tender document is downloaded from website), (2) Envelope for Earnest Money Deposit, (3) Envelope for Techno commercial bid (Part-I) and (4) Envelope for Price Bid (Part-II). Outer sealed envelope will be marked as “Bidding Documents for……”

Part II – Price bid only in the format given in the tender document.

1.5 VALIDITY PERIOD OF OFFER

The rates offered in Part II should be valid for six calendar months from the date of opening of Part I of the tender.
1.6 RECEIPT OF TENDERS

Tenders are to be received in sealed covers up to 3.30 PM on 21.06.2010 at the following offices:

(i) Office of the General Manager(CMC), Bharat Coking Coal Limited, Level -V, Koyla Bhawan, Dhanbad-826005, Jharkhand, India
(ii) Office of Chief Sales Manager, Bharat Coking Coal Limited 6, Lyons Range, Kolkata-700001, India

1.7 OPENING OF THE TENDERS

Tenders will be opened at 4 PM on 23.06.2010 at the office of the Director (Technical),OP of BCCL, Level-IV, Koyla Bhawan, Dhanbad-826005

Part II of the offer shall be opened only in respect of such tenders as are found valid after scrutiny of Part I.

1.8 DEPUTATION OF REPRESENTATIVES FOR NEGOTIATION

After opening of the tender, if the company decides to negotiate, the tenderers should be in a position to depute their representatives, at short notice, with full authority for negotiating on the technical as well as commercial terms and conditions of the contract.

1.9 NOTE

The company is not under any obligation to accept the lowest tender/ tenders and reserves the right to reject any or all the tenders without assigning any reason whatsoever and also to distribute the work and allot the work / works to more than one tenderer, at its sole discretion.

The bidders are required to sign the Integrity Pact as per format given in the Tender document Part-I

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shri C.S. Samal, IAS</td>
<td>CA-193, Sector-I, Bidhan Nagar,</td>
</tr>
<tr>
<td></td>
<td>(Retd.)</td>
<td>Kolkata-700016</td>
</tr>
</tbody>
</table>
Distribution:

CC: Shri Shri C.S. Samal, IAS (Retd.), CA-193, Sector-I, Bidhan Nagar, Kolkata-700016

CC: PRO – with a request to publish the abridged NIT as enclosed in local as well as National dailies as per norms of the Company and also arrange to send the paper cutting to the Contract Management Cell.

CC: D(T) OP /D(T) P&P /D(F) /D(P) /CVO.

CC: CGM (Cordin) /CGM(F) /GM (P&P)/CGM(MM)/CGM(E&M)/GM(WJ)

CC: Shri B N Sahay, SE (Excn.), CMC, with a request to display this NIT in BCCL Website. The downloading facilities should be available during the period of sale of Tender document only.

CC: Sr. ES to CMD for kind information of CMD.

CC: HOD (Admn) with a request to display this NIT in Koyla Bhawan Notice Boards.

CC: All CGMs/GMs in the Areas including Washery Zones for wide circulation through display in the Notice Boards.

CC: Inspector, CISF- with a request to deploy security personnel at the office of Director (Technical)(OP), level-IV from 9.30 AM to 3.30 PM on 21.06.2010 and on 23.06.2010 from 4.00 PM till completion of meeting.

CC: Chief Sales Manager, Sales & Marketing Deptt, BCCL 6, Lyons Range, Kolkata

CC: CGM/GM (Contract Management Cell), ECL/WCL/CCL/SECL/NCL/MCL

CC: Embassies and Consulates : as per list enclosed

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<th>Sl. No.</th>
<th>Address</th>
<th>Sl. No.</th>
<th>Address</th>
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<tbody>
<tr>
<td>01</td>
<td>Trade Counsellor</td>
<td>02</td>
<td>Trade Counsellor</td>
</tr>
<tr>
<td></td>
<td>Office of the Consulate of Canada in India, New Delhi</td>
<td></td>
<td>Office of the Embassy of Indonesia in India, New Delhi</td>
</tr>
<tr>
<td>03</td>
<td>Trade Counsellor</td>
<td>04</td>
<td>Trade Counsellor</td>
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Embassies and Consulates:
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<th>Office of the Embassy of USA in India, New Delhi</th>
<th>Office of the Embassy of Poland in India, New Delhi</th>
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<tbody>
<tr>
<td>05</td>
<td>Trade Counsellor Office of the Embassy of Germany in India, New Delhi</td>
<td>Trade Counsellor Office of the Embassy of South Africa in India, New Delhi</td>
</tr>
<tr>
<td>07</td>
<td>Trade Counsellor Office of the Embassy of Ukraine in India, New Delhi</td>
<td>Trade Counsellor Office of the Embassy of Russia in India, New Delhi</td>
</tr>
<tr>
<td>09</td>
<td>Trade Counsellor Office of the Consulate of Australia in India, New Delhi</td>
<td>Trade Counsellor Office of the Consulate of U.K. in India, New Delhi</td>
</tr>
<tr>
<td>11</td>
<td>Trade Counsellor Office of the Embassy of China in India, New Delhi</td>
<td>Trade Counsellor Office of the Embassy of France in India, New Delhi</td>
</tr>
</tbody>
</table>

General Manager (CMC)
Bharat Coking Coal Limited
2 INSTRUCTIONS TO BIDDERS

2.1 SCOPE OF TENDER

The BHARAT COKING COAL LIMITED (referred to as Employer in this document) invites bids for the work on turnkey basis (as defined in this document and referred to as “the works”) detailed in NIT and Scope of Work. The Tenderers will submit tenders for all the works (package) detailed in the NIT and Scope of Work (Chapter 7).

The successful Bidder will be expected to complete the Works as per the time schedule given in the accepted DPR as specified in the Contract.

2.2 Eligibility Criteria

The Respondent should possess experience of successful planning and implementation of similar underground coal mining project(s) in India, or elsewhere as per the scope of work. The Respondent should have achieved a consistent yearly financial performance in the preceding three years, a turnover of at least Rupees (Indian) Four Billion or / USD One Hundred million or equivalent.

If the bidder is a subsidiary company / unit of the parent company (confirmed through authenticated documentary records), the audited / certified account / financial statement (in respect of mining / mining equipment business) as well as technical capability of the parent company shall also be considered towards eligibility of the bidder.

2.2.1 The bidder must have prepared at least 2 (Two) DPRs of One million tonnes / annum capacity under ground coal mines and implemented (or under
implementation) at least one such project in the last 07 (seven) years as per the scope of work mentioned above.

2.2.2 In case the bidder is a consortium of two or more parties, as members, either of the members or combination of members together should meet the above eligibility criteria. Members of the consortium shall enter into a Memorandum of Understanding (MOU) for the purpose of this project, which shall be submitted by the bidder along with tender. If the successful bidder is a Joint Venture or a Consortium, then all partners of the Joint Venture or all members of the consortium shall be required to be signatories to the contract agreement. The Consortium shall comply with the following requirements:

i) Authorization in favour of leader of the Consortium shall be evidenced by submitting with the bid a Power of Attorney signed by legally authorised signatories of each Consortium member and shall be responsible for the scope of the work of individual companies and the lead member will be solely responsible and liable for execution of the project and fulfillment of all the contract obligations and also responsible for acts of the other members of the consortium. For the purpose of submission of tender, consent letters from consortium members need to be submitted.

2.2.3 Bidder opting for a mine in which a particular method of mining/work is proposed, should have the experience in underground mines of same capacity or more or having experience in working their own underground mines of same capacity or more.

2.2.4 At the time of submitting applications, the prospective bidders individually must not be involved in any litigation (other than in its ordinary course of business) whatsoever. A declaration to this effect is to be submitted by the bidders bid

2.2.5 All application must be supported by documentary evidence in respect of Clauses as well as by
i. Audited Balance Sheet of the Company (in case of JV or Consortium, of each constituent) for the last three years and
ii. List of Client(s) of similar nature (Overseas and Indian).

If the bidder is a subsidiary company / unit of the parent company (confirmed through authenticated documentary records), the audited / certified account / financial statement (in respect of mining / mining equipment business) shall also be considered towards eligibility of the bidder.

2.3 **ELIGIBLE TENDERER**

2.3.1 The invitation of Bid is open to all Bidders eligible to participate. The qualifications of the bidders shall be evaluated before opening of their bids. If on evaluation, the bidder is found to have qualified, his bid will be opened, otherwise his bid will be rejected.

2.3.2 All bidders shall provide in Part I, Forms of Bid and Qualification Information, a statement that the Bidder (including all members of a joint venture company or consortium and subcontractors) is not associated, nor has been associated in the past, directly or indirectly, with the consultant or any other entity that has prepared the design, specifications and other documents for the Project or being proposed as Engineer for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the Works shall not be eligible to Bid.

2.3.3 CMPDIL, (a subsidiary of Coal India Limited) with its registered office at Gondwana place, Kanke road, Ranchi, India are the consultant of the owner for this work.

2.3.4 Joint Venture: A joint venture company may undertake the contract. Each member / entity of the joint venture company will be responsible for completing the task as per the contract.

Joint Venture Company shall comply with the following:
i) Documentary evidence of formation of the joint venture company must be included with the bid.

ii) The bid shall include all the information regarding capability, experience as required for a bidder for each partner. For the purpose of eligibility criteria, credentials of the members of a joint venture company will be considered collectively.

iii) A party can be a member in only one Joint Venture company. Bids submitted by other Joint Venture companies including the same party as member will be rejected.

iv) Separate bid by a member of a Joint Venture company will not be accepted.

2.3.5 **Consortium**: Two or more companies / parties may jointly undertake contract. Each member shall be responsible for the scope of the work of individual companies and the lead member will be solely responsible and liable for completing the task as per the contract and fulfillment of all the contract obligations and also responsible for acts of the other members of the consortium.

The consortium shall comply with the following requirements:
Authorization in favour of leader of the Consortium shall be evidenced by submitting with the bid a Power of Attorney signed by legally authorised signatories of each Consortium member. The extraction of coal is to be made by any mass production technology.

2.3.6 The Company reserves the right to allow Public Enterprises purchase reference facility as admissible under prevailing policy.

2.4 **QUALIFICATION OF THE TENDERER**

2.4.1 All bidders shall provide in Part I, Forms of Bid and Qualification Information, a preliminary description of the proposed work, method and schedule, including drawings and charts, as necessary; and if the bidder a consortium a certified copy of MOU as per clause no. 2.3.5 also.
2.4.2 Even though the bidders meet the qualifying criteria of bid, they are subject to be disqualified if they have:

a. made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or

b. record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.

2.5 ONE BID PER BIDDER

2.5.1 Each bidder is eligible for submitting one Bid, in the same legal capacity (company or consortium) in which they have participated in the tender.

2.6 COST OF BIDDING

2.6.1 The Bidder shall bear all costs associated with the pre-bid meetings, site/mine visit, the preparation and submission of his Bid, and the Employer will in no case be responsible or liable for those costs.

2.7 SITE VISIT

2.7.1 The Bidder at the Bidder’s own responsibility, cost and risk, is encouraged to visit and examine the Project/ mine/ Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for the Works. The cost of visiting the Site shall be at the Bidder’s own expense.

2.7.2 It shall be deemed that the Bidder has visited the mine/ site/area and got fully acquainted with the working conditions and other prevalent conditions and fluctuations thereto whether he actually visits the site/area or not and has taken all the factors into account while quoting his rates and prices.

2.8 CONTENT OF BIDDING DOCUMENTS
2.8.1 The set of bidding documents comprises the chapters listed below and addenda issued in accordance with Clause 2.10:

- Chapter 1: Notice Inviting Tender
- Chapter 2: Instructions to Bidders
- Chapter 3: Forms of Bid and Qualification Information
- Chapter 4: Conditions of Contract
- Chapter 5: Mine Profile & Geo-mining information
- Chapter 6: Tender Drawing
- Chapter 7: Scope of work, Time schedule and Form of price bid
- Chapter 8: Forms of Bank Guarantees for Bid security & Performance security and Form of Article of Agreement

2.9 CLARIFICATION OF BIDDING DOCUMENTS

2.9.1 A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing or by fax at the Employer’s address indicated in the Notice Inviting Tender. The Employer will respond to any request for clarification received earlier than 15 days prior to the deadline for the submission of Bids. Copies of the Employer’s response will be forwarded to all purchasers of the bidding documents, including a description of the inquiry but without identifying its source.

2.10 AMENDMENT OF BIDDING DOCUMENTS

2.10.1 Before the deadline for the submission of Bids, the Employer may modify the bidding documents by issuing addenda.

2.10.2 Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing or by fax to all purchasers of the bidding documents. Prospective Bidders shall acknowledge receipt of each addendum by fax to the Employer.

2.10.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer shall extend, as necessary, the deadline for submission of Bids, in accordance with Sub-clause 2.20.2. And the
same is also to be communicated simultaneously to all the purchaser of the bidding document.

2.11 LANGUAGE OF BID

2.11.1 All documents relating to the Bid shall be in the English language. In case any printed literature furnished by the Bidder, is written in another language and accompanied by a translation of all its pertinent passages in the English language, for the purposes of interpretation of the bid, such translation shall govern.

2.12 DOCUMENTS COMPRISING THE BID

2.12.1 The Bid, comprising of two parts, will be submitted by the bidder in the following manner:

   a. **Part I** of the bid to be submitted in 1st inner sealed envelope comprising of –

      i) Full details of the firms (bidder), documentary evidences in support of qualification criteria, details of the projects handled, testimonials and documentary evidences in support of satisfactory performance, financial capabilities and any other relevant information and the Earnest Money Deposit.

      ii) Technical offer along with detailed technical specifications of the Mass production technology package / equipments, know-how offered, drawings, pamphlets etc. strictly in terms of tender enquiry.

      iii) A **scheme having details of ‘Development activities’ with time schedule**, mine entries & their duties, mine panel layouts indicating main trunk roadways, intake & return, traveling roadways, detailed description of method of development of the panels and the extraction of coal including scheme of support, ventilation, dewatering, transportation along with required safety measures, lighting and communication.

      iv) Documentary evidence of similar scheme(s) have been successfully implemented in part or full.

      v) Complete time schedule / PERT network for the entire scope of work.
vi) Sealed Tenders/bids have to be submitted by the tenderers in four envelopes duly sealed in, in one outer envelope indicating full postal address and telephone nos. of the tenderer. Four Envelopes as mentioned above will consist of: (1) **Envelope for cost of tender document & undertaking** (in case tender document is downloaded from website), (2) **Envelope for Earnest Money Deposit**, (3) **Envelope for Techno commercial bid (Part-I)** and (4) **Envelope for Price Bid (Part-II)**. Outer sealed envelope will be marked as “Bidding Documents for…….”

All the inner sealed envelopes will then be placed in one outer envelope, sealed and marked properly as per Clause 2.19 and submitted to the Employer at its address before the dead line for submission of the bid as described in Clause 2.20.

### 2.13 BID PRICES

2.13.1 The contract shall be for the whole Work as described in Tender Notice, based on the scope of work as detailed in Chapter 7 of the tender document.

2.13.2 The Bidder shall submit rates and prices for all items of the Work described in the scope of works (Chapter 7). Corrections, if any, shall be made by crossing out, initialing, dating and rewriting.

2.13.3 The bidders are to quote the rate without taxes and duties. However, during evaluation/drawing of LRMC. Taxes and duties as applicable on the date of submission of tender will be loaded. But taxes and duties legally payable under this contract will be reimbursed at actual against documentary evidence of payment of such tax/duties to the appropriate authority.

2.13.4 Escallation on the rates and prices quoted by the Bidder shall be subject to variations in accordance with the price variation Clause no.4.1.39

### 2.14 CURRENCIES OF BID AND PAYMENT

2.14.1 The Bidder is to quote either in Euro, USD or INR for any or all the items in price bid. Any conversion from one currency to another by the bidder later
on will not be allowed. Payments will be made in the same currency in which price is quoted.

2.15 BID VALIDITY

2.15.1 Bid shall remain valid for a period not less than six calendar months from the date of opening of the part-I of the bid. A bid valid for a shorter period shall be rejected by the Employer.

2.15.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidder’s responses shall be made in writing or by fax. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid (Part-I) but will be required to extend the validity of his bid security for a period of the extension and in compliance with Clause 2.16 in all respects.

2.16 BID SECURITY/ EARNEST MONEY DEPOSIT

2.16.1 The bidder shall furnish, as part of his bid, a Bid Security/ Earnest Money of the amount as shown in NIT for this particular work. Bid security/ Earnest Money will be required to be deposited in the form of irrevocable Bank Guarantee (from Scheduled Bank/ Branch acceptable to the owner) with validity 28 days beyond the validity of the Bid, in the format given in the chapter 8 of the Bid document. Certified cheques and Demand Drafts will also be acceptable as Bid Security/ Earnest Money drawn in favour of M/S Bharat Coking Coal Limited on any Scheduled Bank payable at its branch at Dhanbad.

2.16.2 Any bid not accompanied by an acceptable Bid Security / Earnest Money Deposit shall be rejected by the Employer as non-responsive.

2.16.3 The Bid Security / Earnest Money Deposit of the unsuccessful Bidder shall be refunded as promptly as possible after finalization of tender and shall bear no interest.
The Bid Security/ Earnest Money Deposit of the successful bidder will be discharged when the Bidder has signed the Agreement and furnished the required Performance Security/ Security Deposit.

The Bid Security/Earnest Money may be forfeited:

a. if the Bidder withdraws the Bid after Bid opening during the period of Bid validity; or

b. in the case of a successful Bidder, if the Bidder fails within the specified time limit to:
   (i) sign the Agreement; or
   (ii) furnish the required Performance Security/ Security Deposit.

c. if the Bidder does not accept the correction of the Bid price pursuant to Clause 2.27.

The Bid Security/ Earnest Money Deposit with the Employer will not carry any interest.

2.17 ALTERNATIVE PROPOSALS BY BIDDERS

Bidders shall submit offers that comply with the requirements of the Bidding documents, including the scheme as detailed in clause 2.12 hereof. Alternative Offer will not be considered

2.18 FORMAT AND SIGNING OF BID

2.18.1 The Bidder shall prepare the Bid comprising the documents as described in Clause 2.12.
2.18.2 All documents of the Bid shall be typed or computer printed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Sub-clause 2.4.3(a) All pages of the Bid document shall be signed by the Bidder.

2.18.3 The Bid shall contain no alterations, or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Bidder, in which case such corrections shall be signed by the Bidder. Erasing or overwriting in the bid document may disqualify the Bidder.

2.19 SEALING, MARKING AND SUBMISSION OF BIDS

2.19.1 Sealed Tenders/bids have to be submitted by the tenderers in four envelopes duly sealed in, in one outer envelope indicating full postal address and telephone nos. of the tenderer. Four Envelopes as mentioned above will consist of: (1) Envelope for cost of tender document & undertaking (in case tender document is downloaded from website), (2) Envelope for Earnest Money Deposit, (3) Envelope for Techno commercial bid (Part-I) and (4) Envelope for Price Bid (Part-II)..”

a. Outer Sealed envelope will be marked as “Bid for development of Madhuband Colliery and extraction of coal from Madhuband Colliery by mass production technology package on turnkey basis”

2.19.2 The outer envelope and inner envelopes placed in outer envelope shall: be addressed to the Employer at the following address and submitted accordingly before the deadline for submission of bid as indicated in Clause 2.20:

THE GENERAL MANAGER (CMC)
Bharat Coking Coal Limited
Level-V,Koyla Bhawan Dhanbad-826005

inner and outer envelopes will bear the following additional identification:
- Tender Notice No. - Date- DO NOT OPEN BEFORE……………………….HRS on………….
2.19.3 In addition to the identification required in Sub-clause 2.19.2 the inner and outer envelopes shall indicate the name and address of the Bidder.

2.19.4 If the outer as well as inner envelopes are not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

2.20 DEADLINE FOR SUBMISSION OF BIDS

2.20.1 Bids shall be delivered to the Employer at the address specified above not later than 3.30PM on 21.06.2010. In the event of the specified date for the submission of bids being declared a holiday for the Employer, the Bids will be received up to the appointed time on the next working day.

2.20.2 The Employer may extend the deadline for submission of Bids by issuing an amendment in accordance with Clause 2.10, in which case all rights and obligations of the Employer and the Bidders, previously subject to the original deadline, will then be subject to the new deadline.

2.21 LATE BIDS

Any Bid received by the Employer after the deadline prescribed in Clause 2.20 due to any reason whatsoever will not be accepted.

2.22 MODIFICATION AND WITHDRAWAL OF BIDS

2.22.1 Bidders may modify or withdraw their Bids by giving notice in writing before the deadline prescribed in Clause 2.20, in case the bidder has submitted the bid well before the deadline or extended deadline.

2.22.2 Bidder’s modification shall be prepared in line with the original, but withdrawal shall be a plain paper letter with the outer and inner envelopes additionally marked “MODIFICATION” or “WITHDRAWAL”, as appropriate.

2.22.3 No Bid may be modified after the deadline / extended deadline for submission of Bids.
2.22.4 Withdrawal of a Bid between the deadline/ extended deadline for submission of Bids and the expiration of the period of Bid validity specified in the Bid document or as extended pursuant to Sub-clause 2.15.2 may result in the forfeiture of the Bid Security pursuant to Clause 2.16.

2.23 BID OPENING

2.23.1 The Employer will open Part - I of the bids first, including modifications made pursuant to Clause 2.22 in the presence of the bidders or their representatives who choose to attend at the time and in the place specified in Clause 1.7 of NIT (Chapter 1). In the event of the specified date of Bid opening being declared a holiday for the Employer the Bids will be opened at the appointed time and location on the next working day.

2.23.2 After examination and evaluation of Part -I of the bids in accordance with Clause 2.26 of these instructions, Part - II of the bids which are technically and commercially at par and substantially responsive in accordance with specifications, scope, terms and conditions and fulfilling the requirements of the instructions to the bidders, shall be opened. In case of delay in opening of Part- II i.e. Price bid within stipulated six calendar months from the date of opening of Part I of the tender, the Bidders shall be allowed to submit the revised Price bid.

2.23.3 Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 2.22 shall not be opened.

2.23.4 The Bidder’s names, Bid modifications and withdrawals, the presence or absence of Bid Security and other details as the Employer may consider appropriate, will be announced by the Employer at the opening.

2.24 PROCESS TO BE CONFIDENTIAL

2.24.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to
influence the Employer’s processing of Bids or award decisions may result in the rejection of his Bid.

2.25 CLARIFICATION OF BIDS

2.25.1 To assist in the examination, evaluation and comparison of Bids, the Employer may, at the Employer’s discretion, ask any Bidder for clarification of the Bidder’s Bid, including breakups of unit rates. The request for clarification and the response shall be in writing or by fax.

2.26 EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS

2.26.1 Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid:

a. meets the eligibility criteria;

b. has been properly signed;

c. is accompanied by the required securities; and

d. is substantially responsive to the requirements of the Bidding documents.

2.26.2 A substantially responsive Bid is one which confirms to all the terms, conditions & specifications of the Bidding documents without material deviation or reservation. A material deviation or reservation is one:

a. which affects in any substantial way the scope, quality or performance of the works;

b. which limits in any substantial way, inconsistent with the Bidding documents, the Employer’s rights or the Bidder’s obligations under the Contract; or

c. whose rectification would affect unfairly the competitive position of other Bidder’s presenting substantially responsive Bids.

2.26.3 Technical evaluation of the scheme submitted by the Bidder with their Bid will be done by the Employer by evaluating the adequacy of the infrastructure and specification of P&M with minimum production guaranteed by the Bidder. The Bidder will submit documentary evidence to prove that the mining method,
infrastructure and P&M proposed is a proven Technology and is working / has worked successfully.

2.26.4 If a Bid is not substantially responsive, it may be rejected by the Employer at its sole discretion.

2.27 CORRECTION OF ERRORS

2.27.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetical errors. Errors will be corrected by the Employer as follows:

a. where there is a discrepancy between the amounts in figures and in words, the amounts in words will govern; and
b. where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern,
c. discrepancy in totaling or carry forward in the amount quoted by the contractor shall be corrected.

The tendered sum so corrected and altered shall be substituted for the sum originally tendered and considered for evaluation instead of the original sum quoted by the tenderer along with other tender/tenders. Rounding off to the nearest rupee should be done in the final summary of the amount instead of in totals of various sections of the offer.

2.27.2 The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, shall be considered as binding upon the Bidder.

2.28 EVALUATION AND COMPARISON OF BIDS

2.28.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause 2.26.

2.28.2 In evaluating the Bids, the Employer will determine for each Bid, the evaluated Bid Price, by adjusting the Bid Price as follows:

a. making any correction for errors pursuant to Clause 2.27
b. making up appropriate adjustment for any other quantifiable acceptable variations, deviations.

c. making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Clause 2.22.

2.28.3 The Employer reserves the right to accept or reject any variation, deviation or other factors that are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the employer shall not be taken into account in Bid evaluation.

2.28.4 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer’s estimate of the cost of work, if any, the Employer may require the Bidder to produce detailed price analysis for any or all items of the work, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed.

2.29 AWARD CRITERIA

2.29.1 Subject to Clause 2.30, the Employer will award the Contract to the best qualified Bidder whose Bid has been determined to be substantially responsive to the Bidding documents and who has offered the lowest cost of coal production evaluated on the basis of long range marginal costing based on discounted cash flows. The discount rates for different currencies shall be as per the procedure are given below. The employer shall be sole judge in determining the evaluated bid:

a) All cash flows will be discounted at appropriate discount rate for that currency component.

b) The discounted values of components of different currencies will then be converted into INR as per the clauses given below.

2.29.2 Conversion to Single Currency

To facilitate evaluation and comparison, Employer will convert all bid prices to Indian Rupees at the bill selling rate declared by the State Bank of India. The bids shall be converted to Indian currency at the bill-selling rate on the date of opening of the Price Bid to
establish ranking. The tentative date for opening of price bids will be 70 days from the last date of submission of bids. However, the bidders are advised to submit the bids strictly as per the NIT without any deviation so that there is no need for any further clarification. Additionally if any clarification is sought by the owner, the bidders should respond within 

2.29.3 Evaluation and Comparison of Bids

The Employer will evaluate and compare the Bids, previously determined to be substantially responsive, pursuant to Clause 2.26 of this Section.

The financial evaluation of bid shall be made on LRMC (Long-Range Marginal Cost) basis using DCF (discounted cash flow) technique. In order to calculate LRMC the time stream of cash outflow for entire contract period including mine & associated infrastructure development period and commercial production period of nine years shall be considered. LRMC will comprise Cash outflows on account of the followings:

All payments (both in foreign exchange and INR) to the successful bidder to be made by the employer towards the cost of preparation of all reports including mining plan, DPR, EMP and any other scientific study to be made by the contractor as quoted in the price bid.

All payments (both in foreign exchange and INR) to the successful bidder to be made by the employer towards the cost of construction of deliverable mine and associated infrastructure including shaft sinking, incline drivage, drift drivage or any development work in coal before starting of commercial production period as quoted in the price bid.

All payments (both in foreign exchange and INR) to the successful bidder to be made by the employer towards the cost of supply, installation and commissioning for all deliverable P&M as quoted in the price bid. All payments (both in foreign exchange and INR) to the successful bidder to be made by the employer towards the cost of producing coal during commercial production period.
a) Ocean Freight, Ocean Insurance, Port Clearance, Loading & Unloading charges, Inland Freight & Insurance etc as per the formats of Chapter 7.

b) Cost towards the requirement of the Employer’s manpower as indicated by the Bidder.

c) All applicable statutory taxes & duties leviable on the Employer’s account in India.

2.29.4 The discounting rate for calculation of present value of the above outflow shall be as follows:-

a) In case of cash outflows in FC, the rate of discount will be five (5) years SWAP offer rates for USD or EURO (as the case may be) LIBOR plus 150 basis points for such purpose. The present value of the time stream of FC thus calculated is to be converted into equivalent INR amount at bill selling rate of State Bank of India as on the date of opening of price bid.

b) In case of INR component of the cash outflow, the discounting rate will be the Yield to maturity (YTM) of Govt. of India bonds with balance tenure of around five (5) years prevailing on the date of opening of the price bid plus 150 basis points.

c) To calculate the present value of the time stream of coal production the discounting rate will be as per the INR component of cash outflow (Clause b above).

The formula of such LRMC is given below: -

\[
\text{LRMC} = \frac{\text{Present value of aggregate cash outflow as per Clause (a) & (b) above}}{\text{Present value of the time stream of coal production as per clause (c) above}}
\]

d) Sample calculation is shown in Enclosure 1 of this chapter.

2.29.5 The bidder with the lowest LRMC in terms of overall cost/tonne will be selected as the successful bidder subject to the provision that such discounted cost of production of that bidder (L-1) is less than the ruling declared selling price of the coal/tonne and is fulfilling other criteria as per NIT. However, Company reserves the right to reject even the lowest bid under the following two conditions:-

a) In the event LRMC renders the project un-viable and/or
b) Where the technical details & safety records furnished by the bidder are found insufficient and considered unsatisfactory.

2.29.6 Bidders may like to note that economic evaluation of the bid will consider the total cost of the Project along with all other payment to be made to the bidder in accordance with the various terms and conditions as envisaged under terms of payment along with guaranteed production during commercial production period.

2.29.7 In case it is found that the rate and the amount of taxes included in the bid are in variation with the actual rate of taxes, duties, levies etc., The owner shall have the right to change taxes/levies and other statutory payment as per prevailing rate on the date of opening bid with an objective to ensure uniformity as applicable to all bidders. The above-adjusted rate will be used for bid evaluation as well as for payment.

2.30 EMPLOYER’S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

2.30.1 Notwithstanding Clause 2.29, the Employer reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer’s action.

2.31 NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT

2.31.1 The Bidder, whose Bid has been accepted, will be notified of the award by the Employer prior to expiration of the Bid validity period by fax & confirmed by registered letter. This letter (hereinafter and in the Conditions of the Contract called the “Letter of Acceptance”) will include payment schedule according to which payment is to be made to the Contractor in consideration of the execution of the Works by the Contractor as prescribed by the Contract.

2.31.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of a Performance Security / Security Deposit in accordance with Clause 2.32.
2.31.3 The Agreement will incorporate all agreements between the Employer and the successful Bidder within 28 days following the notification of award along with the letter of Acceptance.

2.31.4 Upon the furnishing by the successful Bidder of the Performance Security/Security Deposit, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful and refund the Bid Security / Earnest Money Deposit as early as possible.

2.31.5 The successful Bidder will have to sign an integrity pact as per the Format given in Chapter-8.

2.32 SECURITY DEPOSIT/ PERFORMANCE GUARANTEE

2.32.1 Security Deposit is the guarantee kept with the Company during the contract period. Security deposit / Performance Guarantee is intended to secure the performance of the entire Contract.

Security Deposit shall consist of two parts;

a) Performance Security to be submitted at award of work and
b) Retention Money.

The security deposit shall bear no interest.

**Performance security** in the form of BG shall be 1% of the value of preparation of DPR initially. Once the DPR is accepted, the contractor shall submit 1% security deposit of the remaining contract value. After submission of BG of 1% of total contract value, bid security /earnest money will be refunded to the contractor. Thereafter performance security will be in the form of rolling Bank Guarantee and will be for an amount equal to 1% of the remaining contract value and is to be submitted every year.

Bank Guarantee to be provided by the successful bidder as Performance security shall be issued either-

a) at Bidder’s option by a Scheduled Indian Bank or
b) by a foreign bank located in India and acceptable to the employer.
Bank Guarantee is to be submitted in the format prescribed by the Company in Chapter 8 of the bid document. Bank Guarantee shall be irrevocable.

2.32.2 Retention Money:

Retention money for mine and associated infrastructure and Deliverable P&M will be equal to 5% of the price quoted for the individual items/activities/P&M and it will be deducted from the bills. Retention money will be released on submission of equivalent amount of B.G. annually.

Retention money for deliverable mine & associated infrastructure items required to sustain coal production during commercial production period will be released after successful completion of first year of commercial production period.

Retention money for deliverable P&M items will be released after successful completion of second year of commercial production period.

2.32.3 The Security deposit shall be payable to the Employer without any condition whatsoever. Failure of the successful Bidder to comply with the requirements of Sub-Clause 2.32.2 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

2.32.4 The Performance Guarantee shall cover, additionally, the following guarantees to the Employer:

a) The successful bidder guarantees the successful and satisfactory operation of the P&M furnished and installed under the contract, as per the specifications quoted and documented.

b) The successful bidder further guarantees that the equipment provided and installed by him shall be, new not refurbished, free from all defects in design, material and workmanship.

2.32.5 The Company shall be at liberty to deduct/appropriate from the Performance Guarantee/Security Deposit such sums as are due and payable by the contractor to the Company as may be determined in terms of the contract, and the amount appropriated from the Performance Guarantee/Security Deposit shall have to be restored by Contractor subsequently.

2.32.6 The remaining Security deposit (i.e. 1% performance security in the form of remaining rolling Bank Guarantee) will be returned to the Contractor, if no
deduction is made as per the provision given above, without any interest at the end of the Contract Period.

2.33 EMPLOYMENT OF LOCAL LABOUR

Contractors may employ, to the extent possible, only local project affected people. The contractor will pay minimum wages which must not be less than as provided by the applicable statute.

2.34 LEGAL JURISDICTION

Matter relating to any dispute or difference arising out of this tender and subsequent contract awarded based on the bid shall be subject to the jurisdiction of Dhanbad court only.

All disputes shall be resolved as per the provisions of clause 4.1.40.

2.35 DEEMED EXPORTS

If the bidder has quoted any item/items under the deemed exports then it will be the responsibility of the Bidder to get all the benefits under deemed exports from the Government. The Company’s responsibility shall only be limited to the issuance of required certificates. The quotation of the Bidder will be unconditional and phrases like “Subject to availability of deemed exports benefit” will not find place in it.

2.36 CONSULTANTS NOT TO BID & VICE-VERSA

A firm which has been engaged by the Company to provide Goods or Works for a project or any of its affiliates will be barred from providing consultancy services for the same project. Conversely, a firm hired to provide consultancy services for the preparation or implementation of a project and any of its
affiliates will be barred from subsequently providing Goods or Works or services related to the initial assignment for the same project.

2.37 SUB-CONTRACTOR/ SUB-VENDOR

2.37.1 The contract agreement will specify major items of supply or of services for which the contractor proposes to engage Sub-Contractor/Sub-Vendor. The contractor may from time to time propose any addition or deletion from any such list and will submit the proposals in this regard to the Engineer in Charge/Designated Officer in Charge for approval well in advance so as not to impede the progress of work. Such approval of the Engineer in Charge/Designated Officer will not relieve the contractor from any of his obligation, duties and responsibilities under the contract.

2.37.2 If a contractor submits his bid, qualifies and does not get the contract because of his not being the lowest, he will be prohibited from working as a sub-contractor for the contractor who is executing the work.

2.38 NIT AND TENDER DOCUMENTS IN THE WEBSITE

2.38.1 The complete bid documents shall be available on the Company's website http://www.bcccl.mpdn.gov.in for the purpose of downloading and tender submitted on such downloaded bid documents shall be considered valid for participating in the tender process.

2.38.2 The company shall not be responsible for any delay / difficulties / inaccessibility of the downloading facility for any reason whatsoever. The downloading facility shall be available during the period of sale of tender paper.

2.38.3 The bidders, who will download the tender documents from the website of the company, will be required to pay the cost of tender documents (Application Fee) by Bank Draft as per NIT at the time of submission of tenders.

2.38.4 The bidders will be required to submit an undertaking that they will accept the tender documents as available in the website and their tender shall be rejected if
any tampering in the tender document is found to be done at the time of opening of tender.

2.38.5 The Bank Draft towards the cost of tender documents (Application Fee) and the undertaking of the tenderer (as per clause 2.38.4) shall be submitted in a separate envelope marked “Cost of Tender Documents and the Undertaking” and not with Part-I / EMD.

2.38.6 In case of any discrepancy between the tender documents downloaded from the web site and the master copy available in the office, the latter shall prevail and will be binding on the tenderers. No claim on this account will be entertained.
### 3. FORM OF BIDS AND QUALIFICATION INFORMATION

**FORMAT FOR DISCOUNTED CASH FLOW ANALYSIS**
*(FOR FINANCIAL EVALUATION OF THE PRICE BID)*

**ENCLOSURE – 1**

**A. Foreign component of the price**

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<th>Financial Year</th>
<th>Mine &amp; associated infrastructure construction price*</th>
<th>Price P&amp;M*</th>
<th>Cost per metric tonne*</th>
<th>Total Outflow</th>
<th>Discount Table</th>
<th>Present Value</th>
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<td>Price quoted by the bidder</td>
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* The price will be taken from the formats of price bid (Chapter-7)

**Conversion of “A” to INR at prevailing exchange rate = “B”**

**Notes:**

a) The money to be paid to the contractor in each year will be calculated on the basis of progress shown for shaft sinking, incline drivage, drift drivage and for the item which are shown to be completed in that particular year.

b) The outflow for supply of plant and machinery will be considered as per the schedule of supply, installation and commissioning of the plant and machinery given in the schedule in the scheme supply with the bidder.
c) The Evaluation will be done for Mine & associated construction period as specified in the approved scheme and nine (9) years of Commercial production period.

d) No mobilization advance will be paid.
**B. INR component of the price**

YTM rate for Govt Bond | 7.47% (Assuming)
Bps | 1.50%
Total Rate of Discount | 8.97%

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<tr>
<th>Financial Year</th>
<th>Mine &amp; associated infrastructure construction price*</th>
<th>Price P&amp;M*</th>
<th>Cost per metric tonne *</th>
<th>Total Outflow</th>
<th>Discount Table</th>
<th>Present Value</th>
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<td></td>
<td></td>
<td>0.84214</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IV</td>
<td></td>
<td></td>
<td></td>
<td>0.77282</td>
</tr>
<tr>
<td>2</td>
<td>Commercial production period</td>
<td>V</td>
<td>Firm price</td>
<td>0.70921</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VI</td>
<td></td>
<td>0.65083</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VII</td>
<td></td>
<td>0.59725</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>VIII</td>
<td></td>
<td>0.54809</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>IX</td>
<td></td>
<td>0.50297</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X</td>
<td>To be Projected using applicable Index for escalation</td>
<td>0.46157</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XI</td>
<td></td>
<td>0.42358</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>XII</td>
<td></td>
<td>0.38871</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XIII</td>
<td></td>
<td>0.35671</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XIV</td>
<td></td>
<td>0.32735</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Total</td>
<td></td>
<td></td>
<td>“C”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The price will be taken from the formats of price bid (Chapter- 7)

**Notes:**

e) The money to be paid to the contractor in each year will be calculated on the basis of progress shown for shaft sinking, incline drivage, drift drivage and for the item which are shown to be completed in that particular year.

f) The outflow for supply of plant and machinery will be considered as per the schedule of supply, installation and commissioning of the plant and machinery given in the schedule in the scheme supply with the bidder.

g) The Evaluation will be done for Mine & associated construction period as specified in the approved scheme and nine (9) years of Commercial production period.

h) No mobilization advance will be paid.
### B. Guaranteed coal production table

**Rate of Discount** 8.97% (equal to the INR discount rate)

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>Guaranteed coal production (Mty)</th>
<th>Discount Table</th>
<th>Discounted production</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>I</td>
<td>1.00000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>0.91768</td>
<td></td>
</tr>
<tr>
<td></td>
<td>III</td>
<td>0.84214</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>0.77282</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>0.70921</td>
<td></td>
</tr>
<tr>
<td>Mine &amp; associated infrastructure construction period</td>
<td>VI</td>
<td>0.65083</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VII</td>
<td>0.59725</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIII</td>
<td>0.54809</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IX</td>
<td>0.50297</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>0.46157</td>
<td></td>
</tr>
<tr>
<td></td>
<td>XI</td>
<td>0.42358</td>
<td></td>
</tr>
<tr>
<td></td>
<td>XII</td>
<td>0.38871</td>
<td></td>
</tr>
<tr>
<td></td>
<td>XIII</td>
<td>0.35671</td>
<td></td>
</tr>
<tr>
<td></td>
<td>XIV</td>
<td>0.32735</td>
<td></td>
</tr>
<tr>
<td>Commercial production</td>
<td>Total</td>
<td>“D”</td>
<td></td>
</tr>
</tbody>
</table>

**Total Cash Outflow (TCO) for Each Bidder will be as under:**

1. Item “B”
2. Item “C”

TOTAL “Y”

Total discounted coal production – “D” (same discount rate as applicable for INR component)
Long range Marginal cost of coal production = “Y”/“D” = “Z”

Party having the least value of “Z” will be considered as L1 Party.
FORMS OF BID AND QUALIFICATION INFORMATION

SECTION : 1

CONTRACTOR’S BID

Name of the work : ------------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

To

.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

Dear Sir,

We offer to execute the Works described above in accordance with the Conditions of Contract accompanying the Tender document issued to us. The Bid Security/Earnest Money in accordance with the Tender document amounting to Rs…………….. (in figures) ………………………………….. (in words) in the form as stipulated in Clause 2.15 (Chapter 2) is enclosed herewith (to be filled in by the Bidder).

The Bid and your written acceptance of it shall constitute a binding contract between us. We understand that you are not bound to accept the lowest or any Bid you receive.

We hereby confirm that this Bid complies with the Bid validity and Bid security required by the Bidding documents. We also confirm that E.M.D. and other required documentary evidences related to this part of the Bid are enclosed (as listed below) herewith either in original / copies attested by Gazetted officer / copies duly authenticated by us with signature and seal alongwith affidavit as per the format provided in the bid document.

Yours faithfully,
Authorised Signature……………………………………
Name and Title of the Signatory…………………………
Name of the Bidder……………………………………..(the contractor)
Address………………………………………………………….
Date……………………………………… (To be filled in by the Bidder)

Enclo:

i) E.M.D of Rs. .................................vide..................dt....... 
ii) .................................
iii) .................................
iv) .................................
v) .................................
vi) .................................
SECTION: 2

QUALIFICATION INFORMATION
(The information to be submitted by all the Bidders)

1.0 INDIVIDUAL BIDDERS OR INDIVIDUAL MEMBERS OF JOINT VENTURE COMPANY / CONSORTIUM

1.1 Constitution or Legal status of Bidder (attach copy)

Place of registration…………………………………………

Principal place of business …………………………………

Power of Attorney of signatory Bid: (attach)

1.2 Details of the turnover during the last 3 (three) years:

<table>
<thead>
<tr>
<th>Annual Turnover Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

1.3 Joint Venture Company / Consortium details:

<table>
<thead>
<tr>
<th>Name &amp; Role of all members of a joint venture company / consortium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1. Lead Member</td>
</tr>
<tr>
<td>2. Member</td>
</tr>
<tr>
<td>3. Member</td>
</tr>
</tbody>
</table>
### 1.4 Details of experience for similar nature and complexity of work in last 7(seven) years:

Use a separate sheet for each contract (Attach performance certificates from concerned customer)

<table>
<thead>
<tr>
<th>1.</th>
<th>Number of contract:</th>
<th>Name of contract:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Name &amp; address of the employer:</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Name &amp; address of the mine / project:</td>
<td>Capacity of u/g mine (in MTy):</td>
</tr>
<tr>
<td>4</td>
<td>Nature / description of work performed and special features if any:</td>
<td></td>
</tr>
</tbody>
</table>
| 5  | Contract role (tick one) | 1. Sole contractor  
2. Member in Consortium  
3. Member in Joint venture company |
| 6  | Value of the total contract: | |
| 7  | Date of award: | |
| 8  | Date of completion with original schedule and slippage, if any: | |
| 9  | Type of ‘mass production technology package’ deployed: | |

### 1.5 Subcontractors/Consultants and firms proposed to be involved:

(Attach performance credentials including Bio-data of key personnel)

<table>
<thead>
<tr>
<th>Section of work</th>
<th>Approx. value of subcontract</th>
<th>Sub-contractor (name &amp; address)</th>
<th>Experience in similar works</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.6 **Information on Bid Capacity.** (Works for which bids have been submitted and work which are yet to be completed) as on the date of this bid:

a. Total value of work executed in last five years (yearwise).

b. Details of existing commitments and ongoing works.

c. Details of Works for which bids already submitted.
1.7 Financial reports of the last five years: balance sheets, profit and loss statement, auditors report etc. (copies to be submitted and the following format be filled up)

<table>
<thead>
<tr>
<th>Financial information in Rs.</th>
<th>Actual: Previous five years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1. Total assets</td>
<td></td>
</tr>
<tr>
<td>2. Current Assets</td>
<td></td>
</tr>
<tr>
<td>3. Total Liabilities</td>
<td></td>
</tr>
<tr>
<td>4. Current Liabilities</td>
<td></td>
</tr>
<tr>
<td>5. Profit before tax</td>
<td></td>
</tr>
<tr>
<td>6. Profit after tax</td>
<td></td>
</tr>
</tbody>
</table>

1.8 Evidence of access to financial resources to meet the qualification requirements:

Cash in hand, liquid assets, unencumbered real assets, lines of credit and other financial means etc. sufficient to meet the construction cash flow (the copies to be submitted and the following format to be filled-up).

<table>
<thead>
<tr>
<th>Source of financing</th>
<th>Amount in Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>
1.9 Details of bankers:

<table>
<thead>
<tr>
<th>Banker</th>
<th>Name of the banker</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address of the banker</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Telephone</th>
<th>Contact name and title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fax</th>
<th>Telex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.10 Information about litigations, if any, in which bidder is involved:

<table>
<thead>
<tr>
<th>Year</th>
<th>Award FOR or AGAINST applicant</th>
<th>Name of the client, Cause of Litigation and Matter of dispute</th>
<th>Disputed amount in Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.11 Details of the P&M to be used for the work:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Equipment type and capacity</th>
<th>Make and model</th>
<th>Minimum number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Detailed specification of all the P&M is to be included with the Technical offer

1.12 Details of mine development/construction equipments to be used for the project, in the form given below:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Equipment - type and capacity</th>
<th>Make and model</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.13 Personnel capabilities:

The applicant must have suitably qualified personnel to fill the following key positions for the project. The applicant will supply information on a prime candidate and an alternate for each positions both of whom, wherever possible meet the experience requirements as specified in format below:

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Total post qualification experience (years)</th>
<th>In similar Works (years)</th>
<th>As Manager or Section leader of Similar Works (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager/ Colliery Manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site engineers of respective discipline.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative names</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance personnel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality assurance Engineer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site supervisors of respective discipline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative names</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

However the Contractor may change these personnel with personnel of equivalent qualification and experience during the contract period with advanced intimation to the Owner.

Details of expertise available may be furnished but the details of personnel as per the table may be furnished at the time of signing of the contract. However the change if any has to be required approval of concerned authority as and when required.
1.14 The bidder should list transport available for personnel, construction, plant, stores and machinery. Where transport is to be subcontracted the proposed arrangements should be clearly demonstrated.

1.15 The bidder should provide full details of his plant and maintenance facilities together with the full details of laboratory personnel, workshop personnel including fitters, mechanics, machinists etc.

1.16 Permanent Income Tax Account No. (PAN), wherever applicable.

1.17 DETAILS OF EARNEST MONEY / BID SECURITY

Deposit of Earnest Money by:

Draft No.: Bank Guarantee (BG) Details:

Drawn on: Name of the Bank:

Amount (Rs): Amount of BG: Bank Guarantee valid up to:

1.18 OTHER DETAILS

(a) Details of registration/ enlistment with Government organizations/ PSUs/ Subsidiaries of Coal India Limited.

(b) Certificate of registration as per statutory requirements under Sales Tax, Contract Labour Laws etc. as may be applicable

--------------------------------Signature of the Tenderer

NOTE: 1. Separate sheets may be attached to furnish details, if necessary
2. In case of Joint Venture Company or Consortium, Separate information for each member should be submitted.
3. Documentary evidence of qualifications of the bidder (as per qualification criteria) is to be submitted.
AFFIDAVIT

I, ........................................................................, Partner/Legal Attorney/ Accredited
Representative of M/S. .............................................................., solemnly declare that:

1. We are submitting Tender for the Work .................................................................
........................................................................................................................................
........................................................................................................................................ against Tender Notice No.
........................................................................................................................................ dated ......................

2. None of the Partners of our firm is relative of employee of
.................................................................................
..............................................................................(Name of the Company)

3. All information furnished by us in respect of fulfillment of eligibility criteria and qualification information of this Tender is complete, correct and true.

4. All documents / credentials submitted along with this Tender are genuine, authentic, true and valid.

5. If any information and document submitted is found to be false/ incorrect at any time, department may cancel my Tender and action as deemed fit may be taken against us, including termination of the contract, forfeiture of all dues including Earnest Money and banning/ delisting of our firm and all partners of the firm etc.

Signature of the Bidder,

Dated .........................

Seal of Notary
4. CONDITIONS OF CONTRACT

4.1 GENERAL TERMS AND CONDITIONS

4.1.1 DEFINITIONS

i. ‘Accepting Authority’ shall mean the management of the Company and includes an authorized representative of the Company or any other person or body of persons empowered in this behalf by the Company.

ii. When the words “Approved”, “Subject to Approval”, “Satisfactory”, “Equal to”, “Proper”, “Requested”, “As directed”, “Where directed”, “When directed”, “Determined by”, “Accepted”, “Permitted”, or words and phrases of like import are used, the approval, judgment, direction etc. is understood to be a function of the Owner/Engineer/Engineer-in-charge.

iii. “Bank Guarantee” shall mean the Bank Guarantee to be provided by the contractor to the Owner.

iv. “Codes” shall mean the following, including the latest amendments, and/or replacements, if any:

(a) Standards of Bureau of Indian Standards relevant to the works under the contract and their specifications.

(b) Other internationally approved Standards and/or rules and regulations touching the subject matter of the contract.

i) A.S.M.E. Test codes.

ii) A.I.E.E. Test codes.

iii) American Society of Materials Testing Codes.

iv) Indian Electricity Act and Rules and Regulations made thereunder.

v) Indian Explosive Act and Rules and Regulations made thereunder.

vi) Indian Petroleum Act and Rules and Regulations made thereunder.
vii) Indian Mines Act and Rules and Regulations made thereunder.

(c) Any other laws, rules, regulations and Acts applicable in the country with respect to labour, safety, compensation, insurance etc.

v. “Commercial Production Period” means coal production period of minimum <nine> ‘Production years’ starting from the date of commencement of this period and excluding the time taken in shifting of Mass production technology package from one panel/seam to another.

vi. “Commissioning” the ‘mass production technology package’ shall mean complete installation of the system in all respects and ready for commercial production.

vii. The word “Company” or “Employer” or “Owner” or “<……………Ltd>” wherever occurs in the tender document, means the Bharat Coking Coal Limited, Dhanbad represented at head quarter of the company by the (Chief) General Manager (……………..) or his authorized representative or any other officer specially deputed for the purpose.

viii. The ‘Contract’ shall mean the notice inviting tender, the tender as accepted by the company and the formal agreement executed between the company and the Contractor together with the documents referred to therein including conditions of contract, special conditions, if any, specifications, designs & drawings including those to be submitted during progress of work, scope of work, billing schedule/schedule of quantities with rates and amounts.

ix. “Contract Value”: All components of currencies proposed to be paid to the contractor will be discounted at the appropriate discount rate for each currency and thereafter will be converted into INR at the prevailing foreign exchange rates. The sum of these values is termed as contract value.

x. The word “Contractor”/”Contractors” wherever occurs means the successful Bidder/Bidders who has/have deposited the necessary
Earnest Money and has/have been given written intimation about the acceptance of tender and shall include legal representative of such individual or persons composing a firm or a company or the successors and permitted assignees of such individual, firm or company, as the case may be.

xi. “Contractor’s Works” shall mean the place of work used by the Manufacturer, the Contractor, their collaborators or sub-contractors for the performance of the works.

xii. “Consulting Engineer”/“Consultant” shall mean any firm or person duly appointed as such from time to time by the owner.

xiii. A ‘Day’ shall mean a day of 24 hours from midnight to midnight.

xiv. “Date of Contract” shall mean the date on which both the parties have signed the Contract agreement or 30th day from the issue of the ‘Letter of Acceptance’ whichever is earlier.

xv. “Deliverable P&M” means plant and machinery which are required to sustain coal production during commercial production period. Tools and tackles, spares and equipments used for completion of construction activities shall not be included in ‘Deliverable P&M’. For example sinking winder, winches etc. used for shaft sinking will NOT be a Deliverable P&M but permanent winder, if any, used for vertical transportation during commercial production period will be a Deliverable P&M.

xvi. ‘Deliverable mine & associated infrastructure construction items’ means items which are required to sustain coal production during commercial production period. Any temporary construction required for construction of Deliverable mine & associated infrastructure construction items shall not be included in ‘Deliverable mine & associated infrastructure construction items’. For example temporary hutment, sinking head frame, scaffolding etc. will not be a Deliverable mine & associated infrastructure construction item.


xviii. “Drawings”/ “Plans” shall mean all:
a) drawings furnished by the owner/consultant as a basis for proposals,
b) supplementary drawings furnished by the Owner/Consultant to clarify and to define in greater detail the intent of the contract,
c) drawings submitted by the contractor with his proposal provided such drawings are acceptable to the Owner/Consultant,
d) drawings furnished by the Owner/Consultant to the Contractor during the progress of the work, if any and
e) engineering data and drawings submitted by the Contractor during the progress of the work provided such drawings are acceptable to the Engineer.

xix. “DRC” means dispute resolution committee constituted and headed by area GM/CGM for resolution of any dispute arising out of difference of opinions between the Engineer and the Contractor. The decision of DRC should not be at variance with the express provisions of this contract.

xx. The word “Engineer” or “Engineer in-charge” or “Designated Officer-in-charge” wherever occurs, means the authorized representative or any other officer specially deputed by the Company for the purpose of Contract. He will be responsible for supervising and administering the contract, certifying payment due to the contractor, valuing variations to the contract, awarding extension of time and valuing compensation events. Engineer/Engineer-in-charge/Designated Officer-in-charge may further appoint his representatives i.e. another person or any other competent person and notify to the contractor who is directly responsible for supervising the work being executed at the site, on his behalf under the delegation of powers of the company. However, overall responsibility, as far as the contract is concerned will be that of the Engineer/Engineer-in-charge/Designated Officer-in-charge.
xxi. “Final Acceptance” shall mean the owner’s written acceptance of the works performed under the contract, after successful completion of respective works such as Preparation of Detailed Project Report & EMP, development activities, etc.

xxii. “Government Approval” shall mean all permits, licenses, authorizations, consents, clearances, decrees, waivers, privileges, approval from and filling with government instrumentalities necessary for the mining plan, DPR, EMP, development, construction and operation of the mine/project.

xxiii. “Initial operation” shall mean the first integral operation of the complete equipment covered under the contract with sub-systems and supporting equipment in service.

xxiv. “Inspector” shall mean the Owner or any person nominated by the Owner from time to time, to inspect the equipments, stores or Works under the contract and/or the duly authorised representative of the owner.

xxv. “Letter of Acceptance” of the tender shall mean the official notice issued by the company notifying the contractor that his tender has been accepted.

xxvi. “Mass production technology” means technology with coal production system, which is continuous in nature and without deploying drilling and blasting as a major means of getting coal, including use of CM and PSLW is defined as mass production technology. However in case of seams with average thickness more than 6 meters, any proven suitable technology with drilling and blasting will be included in Mass production technology for this bid.

xxvii. “Mass production Technology package” means equipment, machinery and things of all kinds to be supplied by the Contractor under the Contract specifically for extraction of coal of required quantity from the mine.

xxviii. “Mine and associated infrastructure construction period” is the time period from the starting of the contract and till the commercial production period starts.
xxix. “The mine or Site” shall mean the underground mine or site of the contract work including land and any building and erections thereon and any other land allotted by the company for contractor’s use in the performance of the contract.

xxx. “Month” shall mean a calendar month according to the Gregorian calendar.

xxxi. Words importing “Person” shall include firms, companies, corporations, and associations or bodies of individuals, whether incorporated or not.

xxxii. Production year

“Annual Production Period” (APP) means a period commencing after the date of successful commissioning of the equipment and completion of any preparatory works as notified by the Supplier and shall normally last for one (1) year i.e. 305 working days. In case of stoppages, for whatever reason which are beyond the control of either of the parties, working on Sundays and Public Holidays will be allowed to compensate such stoppages. Stoppages of duration less than one (1) hour shall be disregarded entirely for the purpose of accumulation. One day of additional work shall be allowed for every twenty (20) actual hours of stoppages accumulated. The working on Sunday or a Public Holiday shall be for the whole day as if it is a normal working day and not for part thereof. The actual hours worked on a Sunday or a Public Holiday will reduce the accumulated hours of stoppages on ‘hour by hour’ basis. Where accumulated hours could not be covered by working on Sundays and Public holidays as mentioned above, the APP shall be extended to reduce the accumulated stoppages to zero as quickly as is practicable before the commencement of the next APP. The first APP therefore shall last for 305 working days from start date plus any extension as provided in this sub clause. Each of the subsequent APP shall commence on the expiry of the previous APP and shall last for one (1) year plus any extension as provided in this sub clause.
“Scope of Work” means the work specified in Chapter 7, and includes Preparation of Detailed Project Report & EMP, Development and Extraction of the mine for the commercial production period of 9 production years to be carried out by the Contractor under the Contract.

“Specification” shall mean the technical specifications forming a part of the contract and such other schedules and drawings as may be mutually agreed upon.

“Start-up time” shall mean the time period required to bring the equipment / system covered under the Contract from an inactive condition, when installation is essentially complete, to the state ready for trial operation. The start-up shall include preliminary inspection and check up of equipment and supporting sub-systems; initial operation of the complete equipment covered under the Contract to obtain necessary pre-trial operation data, perform calibration and corrective action; shut down inspection and adjustment prior to the trial operation period.

The term “sub-contractor”, means any person to whom execution of any part of the work including supply of any Equipment, is sub-Contracted directly or indirectly by the Contractor, and includes his legal successors or permitted assigns.

“Trial operation”, “Reliability test”, “Trial Run”, “Complete Test”, shall mean the operation after “Start-up” during which the whole system under the contract is checked under the full load condition or in real working situation. The length of the Trial Operation shall be as determined by the Engineer, unless otherwise specified elsewhere in the Contract.

The ‘work’ shall mean Development of mine/ Project/ seam(s) and extraction of mine/ Project/ seam(s) including additional exploration (if desired so by the contractor); preparation of necessary reports including mining plan, detailed Project report & EMP etc. and obtaining necessary approvals from the concerned authorities for the
above. The ‘works’ shall mean and include supply and installation of ‘mass production technology package’ and other plant and machinery; construction of all infrastructures underground as well as on the surface; the furnishing of equipment, labour and the services in accordance with the contract or parts thereof as the case may be and shall also include all extra or additional, altered or substituted works or any work of emergent nature, which in the opinion of the Engineer, become necessary during the progress of the works to obviate any risk or accident or failure or become necessary for security.

Note: The successful bidder shall prepare EMP considering the guidelines of Ministry of Environment and Forests, Govt. of India in this regard and BCCL would extend all necessary help towards obtaining necessary clearance as required under statutory obligation.

xxxviii ‘Written Notice’ shall mean a notice or communication in writing and shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an office of the contractor /Company for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

xxxix Words importing singular only shall also include the plural and vice-versa where the context so requires.

xxxx Terms and expressions, not defined herein, shall have the same meaning as are assigned to them in the Indian Contract Act, failing that in the Indian Sale of Goods Act, and failing that in the General Clauses Act.
4.1.2 CONTRACT DOCUMENTS

The following documents shall constitute the contract documents:

i) Articles of Agreement

ii) Notice Inviting Tender

iii) Letter of Acceptance of Tender indicating deviations, if any, from the conditions of contract incorporated in the Tender document issued to the bidder and/or the Bid submitted by the bidder.

iv) Conditions of contract, including general terms and conditions, technical terms and conditions, erection terms and conditions, special conditions, if any etc. forming part of the Agreement

v) Specifications

vi) Scope of works /schedule of works

vii) Contract Drawings/ finalised work programme.

viii) Any other relevant documents

4.1.2.1 After acceptance of tender the Contractor shall be deemed to have carefully examined all Contract Document to his satisfaction. If he shall have any doubt as to the meaning of any portion of the Contract Documents, he shall before signing the Contract, set forth the particulars thereof, and submit them to the Owner in writing in order that such doubt may be removed. The Owner will provide such clarifications as may be necessary in writing to the Contractor. Any information otherwise obtained from the Owner or the Engineer shall not in any way relieve the Contractor of his responsibility to fulfill his obligations under the Contract.

4.1.2.2 The Contractor shall enter into a Contract Agreement with the Owner within 60 (sixty) days from the date of ‘letter of acceptance of tender’ or within such extended time as may be granted by the owner. If the successful bidder is a consortium / Joint Venture company, the contract agreement should be signed jointly by each member of consortium / Joint Venture Company. The performance Bank Guarantee for the proper fulfillment of the contract shall be furnished by the contractor in the prescribed form within 30 (thirty) days of signing of contract.
agreement. The performance guarantee shall be as per terms prescribed in clause 2.31 (Chapter-2).

4.1.2.3 The owner, after the issue of the letter of Acceptance of Tender, will send one copy of the final agreement to the contractor for his scrutiny and approval.

4.1.2.4 The agreement, unless otherwise agreed to, shall be signed within 60 days of the issue of the letter of Acceptance of tender, at the office of the owner on a date and time to be mutually agreed. The contractor shall provide for signing of the contract, performance guarantee in copies as required, appropriate power of attorney and other requisite materials. In case it is agreed mutually that the contract is to be signed beyond the stipulated time, the bid security submitted with the tender will have to be extended accordingly.

4.1.2.5 The agreement will be signed in six originals and the contractor shall be provided with one signed original and the rest will be retained by the owner. None of these documents shall be used by the contractor for any purpose other than this contract and the contractor shall ensure that all persons employed for this contract strictly adhere to this and maintain secrecy, as required of such documents.

4.1.2.6 The contractor shall provide free of cost to the owner all the engineering data, drawings and descriptive materials submitted with the bid, in at least six (6) copies to form a part of the contract immediately after issue of letter of acceptance.

4.1.2.7 Subsequent to signing of the contract, the contractor at his own cost shall provide the owner with at least six (6) true copies of agreement within thirty (30) days after the signing of the contract.

4.1.2.8 The contract shall be considered as having come into force from the date of signing the contract agreement.
4.1.2.9 The laws applicable to this contract shall be the laws in force in India. Court of Dhanbad shall have exclusive jurisdiction in all matters arising under this contract.

4.1.3 SECURITY DEPOSIT/ PERFORMANCE GUARANTEE

4.1.3.1 **Security Deposit** is the guarantee kept with the Company during the contract period. Security deposit / Performance Guarantee is intended to secure the performance of the entire Contract.

Security Deposit shall consist of two parts;

i) Performance Security to be submitted at award of work and

ii) Retention Money.

The security deposit shall bear no interest.

(a) **Performance security** in the form of BG shall be 1% of the value of preparation of DPR initially. Once the DPR is accepted, the contractor shall submit 1% security deposit of the remaining contract value. After submission of BG of 1% of total contract value, bid security /earnest money will be refunded to the contractor. Thereafter performance security will be in the form of rolling Bank Guarantee and will be for an amount equal to 1% of the remaining contract value and is to be submitted every year.

Bank Guarantee to be provided by the successful bidder as Performance security shall be issued either-

1) at Bidder’s option by a Scheduled Indian Bank or

2) by a foreign bank located in India and acceptable to the employer.

Bank Guarantee is to be submitted in the format prescribed by the Company in Chapter 8 of the bid document. Bank Guarantee shall be irrevocable.

Retention Money: Retention money for mine and associated infrastructure and Deliverable P&M will be equal to 5% of the price quoted for the individual items/ activities/ P&M and it will be deducted from the bills.

Retention money for deliverable mine & associated infrastructure items required to sustain coal production during commercial production period will
be released after successful completion of first year of commercial production period.

Retention money for deliverable P&M items will be released after successful completion of second year of commercial production period.

4.1.3.2 The Security deposit shall be payable to the Employer without any condition whatsoever. Failure of the successful Bidder to comply with the requirements of Sub-Clause 4.1.3.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

4.1.3.3 The Performance Guarantee shall cover, additionally, the following guarantees to the Employer:

i) The successful bidder guarantees the successful and satisfactory operation of the P&M furnished and installed under the contract, as per the specifications quoted and documented.

ii) The successful bidder further guarantees that the equipment provided and installed by him shall be, new not refurbished, free from all defects in design, material and workmanship.

4.1.3.4 The Company shall be at liberty to deduct / appropriate from the Performance Guarantee / Security Deposit such sums as are due and payable by the contractor to the Company as may be determined in terms of the contract, and the amount appropriated from the Performance Guarantee / Security Deposit shall have to be restored by Contractor subsequently.

4.1.3.5 Remaining Security deposit (i.e 1% performance security in the form of remaining rolling Bank Guarantee) will be returned to the Contractor, if no deduction is made as per the provision given above, without any interest at the end of the Contract Period.
4.1.4 ASSIGNMENT AND SUBLETTING OF CONTRACT

4.1.4.1 The contractor may, after informing the engineer and getting his written approval, assign or sub-let the contract or any part thereof other than for raw materials, minor detail or any part of the plant for which makes are identified in the contract. Supplies of the equipment not identified in the contract or any change in the identified supplier shall be subject to approval by the engineer. The experience list of the equipment vendors under consideration by the contractor for this contract shall be furnished to the engineer for approval prior to procurement of all such items/equipments. Such assignment sub-letting shall not relieve the contractor from any obligation, duty or responsibility under the contract. Any assignment as above without prior written approval of engineer shall be void. Approvals required for subletting, inspection and testing will be given by the Engineer within 7 days of the request made for the above. In case of delay/ dispute in giving approval, the successful bidder can take the issue to the dispute resolution committee (DRC) constituted by area GM/CGM for this purpose.

4.1.4.2 For components/ equipments procured by the contractors for the purposes of the contract, after obtaining the written approval of the owner, the contractor’s purchase specification and enquiries shall call for quality plans to be submitted by the suppliers alongwith their proposals. The quality plans called for from the vendors shall set out, during the various stages of manufacture and installation, the quality practices and procedures followed by the vendor’s quality control organization, the relevant reference documents/standards used, acceptance level, inspection documentation raised etc. Such quality plans of the successful vendor shall be discussed and finalized in consultation with the engineer and shall form a part of the purchase order/ contract between the contractor and the vendor. Within 3 weeks of the release of the same purchase order/contracts for such bought out items/components, a copy of the same without price details but together with detailed purchase specifications, quality plans and delivery conditions shall be furnished to the engineer by the contractor.
4.1.5 PATENT RIGHTS AND ROYALTIES

4.1.5.1 Royalties and fees for patent covering materials, articles, apparatus, devices, equipment or processes used in the works shall be deemed to have been included in the contract price. The contractor shall satisfy all demands that may be made at any time for such royalties or fees and he alone shall be liable for any damages or claims for patent infringements and shall keep the owner indemnified in that regard. The contractor shall, at his own cost and expense, defend all suits or proceedings that may be instituted for alleged infringement of any patent involved in the works, and in case of an award of damages, the contractor shall pay for such award. In the event of any suit or other proceedings instituted against the owner, the same shall be defended at the cost and expenses of the contractor who shall also satisfy/comply any decree, order or award made against the owner. But it shall be understood that no such machine, plant, work, material or thing has been used by the owner for any purpose or any manner other than that for which they have been furnished and installed by the contractor and specified under these specifications. Final payment to the contractor by the owner will not be made while any such suit or claim remains unsettled. In the event any apparatus or equipment, or any other matter thereof furnished by the contractor, is in such suit or proceedings held to constitute infringement, and its use is enjoined, the contractor shall at his option and at his own expense, either procure for the owner, the right to continue use of said apparatus, equipment or part thereof, replace it with non-infringing apparatus or equipment or modify it, so it becomes non-infringing.

4.1.6 TIME – THE ESSENCE OF CONTRACT

4.1.6.1 Time schedule shall be given with the scheme submitted with the bid and this scheme after approval by the Company, shall be incorporated in the DPR. The time for completion of the works as stipulated in the contractor’s proposals i.e in the scheme submitted with the bid and accepted by the owner without or with modifications, if any and so incorporated in the award letter and DPR later on shall be deemed to be the essence of the contract. The
contractor shall so organize his resources and perform his work as to complete it not later than the date agreed to.

4.1.6.2 The contractor shall submit a detailed PERT network within the time frame agreed above consisting of adequate number of activities covering various key phases of the works, such as development of mine; construction of infrastructure for underground as well as surface facilities; supply, installation and commissioning of all P&M including mass production technology package; extraction of coal seam etc. This network shall be included in the DPR.

4.1.6.3 The PERT network in DPR shall be reviewed and periodic review reports shall be submitted by the contractor as directed by the engineer.

4.1.6.4 Inordinate delays in completion of activities as given in the agreed scheme or in DPR as applicable may result in termination of the contract and encashment of Bank guarantees without prejudice to any other remedies available in the contract or under the law available to the company.

4.1.7 CONTRACT PRICE

4.1.7.1 Total prices comprising of all components quoted by the contractor in his bid with additions and deletions as may be agreed before signing of the contract, for the entire scope of the work shall be treated as the contract price.

4.1.8 DEDUCTIONS FROM CONTRACT PRICE

4.1.8.1 All costs, damages or expenses which the owner may have paid, for which under the contract the contractor is liable, will be claimed by the owner. All such claims shall be billed by the owner to the contractor regularly as and when they fall due. Such bills shall be supported by appropriate and certified vouchers or explanations, to enable the contractor to properly identify such claims. Such claims shall be paid by the contractor within fifteen (15) days of the receipt of the corresponding bills and if not paid by the contractor within the said period, the owner may then deduct the amount, from any moneys
due or becoming due by him to the contractor under the contract or may be
recovered by actions of law or otherwise, if the contractor fails to satisfy the
owner of such claims.

4.1.9 CONTRACT PRICE ADJUSTMENT

4.1.9.1 All adjustments in the contract price shall be computed in
accordance with the conditions and formulae prescribed in the ‘price
variation clause no.4.1.39’ and further satisfying the requirements specified
herein.

4.1.9.2 The contract price stated in the contract agreement is the base price. 20%
of the base price shall not be subject to any price adjustment. The balance
80% shall only be subject to price adjustment.

4.1.10 PACKING, FORWARDING AND SHIPMENT

4.1.10.1 The contractor, wherever applicable, shall after proper painting, pack
and crate all equipments in such a manner as to protect them from
deterioration and damage during transportation to the site and storage at the
site till the time of erection installation. The contractor shall be held
responsible for all damages due to improper packing and transportation.

4.1.10.2 The contractor shall notify the owner of the date of each shipment from
his works, and the expected date of arrival at the site for the information of the
owner.

4.1.10.3 The contractor shall also give all shipping information concerning the
weight, size and content of each packing including any other information the
owner may require.

The following documents shall be sent by registered post to the owner within
7 days from the date of shipment

a) Invoice (3 copies)
b) Packing list (3 copies)
c) Pre-despatch clearance certificate, if any (3 copies)
d) Test certificate, wherever applicable (3 copies)

4.1.10.4 The contract shall prepare detailed packing list of all packages and containers, bundles and loose material forming each and every consignment despatched to site. The contractor shall further be responsible for making all necessary arrangements for loading, unloading and other handling right from his works upto the site and also during Contract period. He shall be solely responsible for proper storage and safe custody of all equipment.

4.1.11 DEMURRAGE, WHARFAGE, ETC.

All demurrage, wharfage and other expenses incurred due to delayed clearance of the material or any other reason shall be to the account of the contractor.

4.1.12 INSURANCE

4.1.12.1 The contractor shall arrange, secure and maintain insurance as may be necessary and for all such amounts to protect his interests and the interests of the owner, against all risks as detailed herein in the joint names of the Owner and the Contractor with the condition that payments against all claims shall be payable by insurers to the owner as elaborated at clause 0. All premiums and other charges of the said insurance policies shall be paid by the contractor and the same will be re-imbursed to the contractor on submission of documentary evidence. The form and the limit of such insurance, together with the under-writer thereof in each case should be acceptable to the owner. However irrespective of such acceptance, the responsibility to maintain adequate insurance coverage on comprehensive all risks basis at all time during the period of contract shall be that of the contractor alone. The contractor’s failure in this regard shall not relieve him of any of his contractual responsibilities and obligations.

4.1.12.2 Any loss of damage to the equipment, during handling, transporting, storage and erection, shall be to the account of the contractor. The contractor shall be responsible for preferring of all claims and make good for the damage or loss by way of repairs and /or replacement of the portion of the works
damaged or lost. The contractor shall provide the owner with a copy of all insurance policies and documents taken out by him in pursuance of the contract. Such copies of document shall be submitted to the owner immediately after such insurance coverage. The contractor shall also inform the owner in writing at least sixty (60) days in advance regarding the expiry, cancellation and/or change in any of such documents and ensure revalidation/renewal, etc. as may be necessary well in time.

4.1.12.3 The risk that are to be covered under the insurance shall include, but not be limited to, the loss or damage in transit, theft, pilferage, riot, civil commotion, weather conditions, accidents of all kinds, fire etc. The scope of such insurance shall cover the entire value of the works from time to time.

4.1.12.4 All costs on account of insurance liabilities covered under the contract will be on contractor's account. The amount of insurance shall be separately indicated.

4.1.12.5 All insurance claims, payable by the insurers, shall be paid to the Owner which shall be released to the contractor in instalments as may be certified by the Engineer for the purpose of rebuilding or replacement or repair of the works and/or goods destroyed or damaged for which payment was received from the insurers.

4.1.12.6 In addition to the insurance covered above, the following provisions will also apply to the portion of the works to be done beyond the contractor’s own or his sub-contractor’s works

a) Workmen’s compensation insurance:
This insurance shall protect the contractor against all claims applicable under the Workmen’s Compensation Act, 1948 (Government of India). This policy shall also cover the contractor against claims for injury, disability, disease or death of his or his sub-contractor’s employees, which for any reasons are not covered under the Workmen Compensation Act, 1948. The liabilities shall not be less than

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b) **Comprehensive Automobile Insurance**
This insurance shall be in such a form to protect the contractor against all claims for injuries, disability, disease and death to members of public including the owner’s men and damage to the property of others arising from the use of motor vehicles during on or off the site operations, irrespective of the ownership of such vehicles.

c) **Comprehensive General Liability Insurance**
This insurance shall protect the contractor against all claims arising from injuries, disabilities, disease or death of members of public or damage to property of others, due to any act or omission on the part of the contractor, his agents, his employees, his representatives and sub-contractors or from riots, strikes and civil commotion. The insurance shall also cover all the liabilities of the contractor arising out of the clause entitled defense of suits under clause 4.1.33.

The hazards to be covered will pertain to all the works which and areas where the contractor, his sub-contractor’s, his agents and his employees have to perform work pursuant to the contract.

d) The above are only illustrative list of insurance covers normally required and it will be the responsibility of the contractor to maintain all necessary insurance coverage to the extent both in time and amount to take care of all his liabilities either direct or indirect, in pursuance of the contract.

4.1.13 **LIABILITY FOR ACCIDENTS AND DAMAGES**

4.1.13.1 The Company will not be responsible for any accident during work to any workman / staff or any one who is assigned job by the Contractor.

4.1.13.2 **Under the contract, the contractor shall be responsible for loss or damage to the development works, equipments etc. during entire Contract period.**
4.1.14 LIQUIDATED DAMAGES FOR DELAY IN COMPLETION

4.1.14.1 If the contractor fails to maintain the required progress in terms of the agreed time and progress chart or to complete the activities on or before the date of completion of the activities or extended date of completion, he shall without prejudice to any other right or remedy available under the law to the company on account of such breach, pay as compensation/Liquidated Damages @ half percent (1/2 %) of the quoted & accepted price for that activity per week of delay. The aggregate of such compensation / compensations shall not exceed ten percent (10%) of total quoted & accepted price for that activity. This will also apply to items or group of items for which separate period of completion has been specified. The amount of compensation may be adjusted or set off against any sum payable to the contractor under this or any other contract with the company.

a) The company, if, satisfied that the works can be completed by the contractor within a reasonable time after the specified time of completion, may allow further extension of time as its discretion with or without the levy of L.D. In the event of extension granted being with L.D, the company will be entitled without prejudice to any other right or remedy available in that behalf, to recover from the contractor as agreed damages equivalent to half percent (1/2%) of the contract value of the activity for each week or part of the week subject to a ceiling of ten percent (10%) of the quoted & accepted price for that activity.

b) The company, if not satisfied that the development and construction works can be completed by the contractor and in the event of failure on the part of the contractor to complete work within further extension of time allowed as aforesaid, shall be entitled, without prejudice to any other right, or remedy available in that behalf, to rescind the contract.

c) The company, if not satisfied with the progress of the contract and in the event of the failure of the contractor to recoup the delays in the mutually agreed time frame, shall be entitled to terminate the contract.
d) In the event of such termination of the contract as described in clauses 4.1.14.1(b) or 4.1.14.1(c) or both, the company, shall be entitled to recover L.D up to ten percent (10%) of the quoted & accepted value of the activity and forfeit the security deposit made by the contractor besides getting the work completed by other means at the risk and cost of the contractor.

4.1.14.2 The company may waive the payment of compensation (liquidated damages), depending upon merit of the case, on request received from the contractor if the entire work is completed within the date as specified in the contract or as validly extended without stipulating any penalty.

4.1.14.3 The liquidated damages (LD) recovered as per the clause No. 4.1.14 of the bid will be refunded in total to the contractor, in case if he is able to start commercial production as per schedule.

No liquidated damages (LD) recovered will be refunded to the contractor if he is not able to start commercial production within 180 days of scheduled date of commencement of commercial production.

If the commercial production period starts after scheduled date to within 180 days from the scheduled date of commencement of commercial production, the refund of liquidated damages (LD) recovered as per the clause No. 4.1.14 of the bid will be as follows.

Within 30 days from the scheduled date of commencement of commercial production- 86%

From 31 days to within 60 days from the scheduled date of commencement of commercial production- 72%

From 61 days to within 90 days from the scheduled date of commencement of commercial production- 58%

From 91 days to within 120 days from the scheduled date of commencement of commercial production- 44%
From 121 days to within 150 days from the scheduled date of commencement of commercial production- 30%

From 151 days to within 180 days from the scheduled date of commencement of commercial production- 16%.

4.1.15 CONTRACTOR’S DEFAULT

4.1.15.1 If the contractor shall neglect to execute the works with the diligence and expedition or shall refuse or neglect to comply with any reasonable orders given to him, in writing by the engineer in connection with the works or shall contravene the provisions of the contract, the owner may give notice in writing to the contractor to make good the failure, neglect or contravention complained of. Should the contractor fail to comply with the notice within thirty (30) days from the date of service thereof, then and in such case the owner shall be at liberty to employ other workmen and forthwith execute such part of the works as the contractor may have neglected to do or if the owner shall think fit, it shall be lawful for him, without prejudice to any other right he may have under the contract, to take the works wholly or in part thereof and in that event the owner shall have free use of all contractor’s equipment that may have been at the time on the site in connection with the works without being responsible to the contractor for fair wear and tear thereof and to the exclusion of any right of the contractor over the same, and the owner shall be entitled to retain and apply any balance which may otherwise be due on the contract by him to the contractor, or such part thereof as may be necessary, the payment of the cost of executing the said part of the works or of completing the works as the case may be. If the cost of completing the works or executing a part thereof as aforesaid shall exceed the balance due to the contractor, the contractor shall pay such excess. Such payment of excess amount shall be independent of the liquidated damages for delay which the contractor shall have to pay if the completion of work is delayed.
4.1.15.2 In addition, such action by the owner as aforesaid shall not relieve the contractor of his liability to pay liquidated damages for delay in completion of works as defined in clause 4.1.14 of this section.

4.1.15.3 The termination of the contract under this clause shall not entitle the contractor to reduce the value of the performance bank guarantee nor the time thereof.

The value and the validity of the Performance Security will remain in accordance with Clause 4.1.3.

4.1.15.4 If the contractor fails to complete the work and the order is cancelled, the amount due to him on account of work executed by him, if payable, shall be paid to him only after due recoveries as per the provisions of the contract and that too after alternative arrangements to complete the work has been made.

4.1.16  FORCE MAJEURE

4.1.16.1 Force majeure is herein defined as any cause which is beyond the control of the contractor or the owner as the case may be which they could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affect the performance of the contract, such as:

a) Natural phenomena, including but not limited to floods, draughts, earthquakes and epidemics.

b) Act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, Projectade, embargo, revolution, riot insurrection, civil commotion, priorities, quarantines, act of terrorism or sabotage, in each case occurring inside or indirectly involving India.

c) Strikes, lockouts or other difficulties, which are politically motivated (rather than motivated primarily by a desire to improve compensation or working conditions of those involved) or are caused in whole or part by another event of Political Force Majeure or are part of a nationwide or regional strike, or other generalized labour action occurring within India; (excluding such events which are Site specific and attributable to the Contractor);
d) Geological disturbances such as fault having upthrough/downthrough more than 2 mtrs, abnormal fold and dyke more than 2 mtrs shall be considered as force majeure.  
Provided either party shall within fifteen (15) days from the occurrence of such a cause notify the other in writing of such causes.

4.1.16.2 a) The Contractor will advise, in the event of his having resort to this clause by a registered letter duly certified by the local chamber of commerce or statutory authorities, the beginning and end of the cause of delay, within fifteen days of the occurrence and cessation of such Force Majeure condition. In the event of delay, lasting over two months, if arising out of Force Majeure, the contract may be terminated at the discretion of the company.

b) For delays arising out of Force Majeure, the bidder/ contractor will not claim extension in completion date for a period exceeding the period of delay attributable to the causes of Force Majeure and neither company nor the bidder shall be liable to pay any extra cost (like increase in rates, remobilization advance, idle charges for labour and machinery etc.). Provided it is mutually established that the Force Majeure conditions did actually exist.

c) If any of the Force Majeure conditions exists in the place of operation of the bidder even at the time of submission of bid he will categorically specify them in his bid and state whether they have been taken into consideration in their quotations.

4.1.16.3 The contractor or the owner shall not be liable for delays in performing his obligations resulting from any Force Majeure cause as referred to and/or defined above. The date of completion will, subject to hereinafter provided, be extended by a reasonable time even though such cause may occur after contractor’s performance of his obligations has been delayed for other causes.

4.1.17 DELAY BY OWNER OR HIS AUTHORISED AGENT

4.1.17.1 In case the contractor’s performance is delayed due to any act of omission on the part of the owner or his authorised agents, then the contractor shall be given due extension of time for the completion of the works, to the extent such omission on the part of the owner has caused delay
in the contractor’s performance of his work. Regarding reasonableness or otherwise of the extension of time, the decision of the engineer / DRC (dispute resolution committee) as the case may be shall be final.

For other delays extension of time period and subsequent escalation only are admissible. The Contractor shall be entitled to claim escalation on the quoted & accepted price as per the escalation clause 4.1.39. A buffer of 60 days is kept for making good of any loss of production during commercial production period. Any consequential losses to the contractor due to any act of omission on the part of the owner or his authorised agents are not admissible.

4.1.17.2 Any delay in finalisation of mutual agreement in regard to any of the contractor’s claim/compensation against any act of omission on the part of the owners or his authorised agents should not result in any work stoppage/further delay on the part of the contractor.

4.1.18 EXTENSION OF DATE OF COMPLETION FOR MINE AND ASSOCIATED INFRASTRUCTURE CONSTRUCTION

4.1.18.1 On happening of any events, causing delay, as stated hereinafter, the contractor shall intimate immediately in writing the Engineer,

a) due to delay on account of the owner in handing over the site & required land
b) due to any reasons defined as Force Majeure
c) of non-availability of stores which are the responsibility of the owner to supply
d) of non-availability or breakdown of tools and plant to be made available or made available by the owner
e) on the part of the contractors or tradesmen engaged by the owner not forming part of the contract, holding up further progress of the work
f) of non-availability of working drawings / work programme in time, which are to be made available by the company during progress of the work or

any other causes for which company is responsible.
4.1.18.2 A “Hindrance Register” shall be maintained by both the Company and the Contractor at site to record the various hindrances, as mentioned above encountered during the course of execution.

4.1.18.3 The contractor may request the company in writing for extension of time within 14 days of happening of such event causing delay stating also, if practicable, the period for which extension is desired. The company may, considering the eligibility of the request, give a fair and reasonable extension of time for completion of the work. Such extension shall be communicated to the contractor in writing by the company through the Engineer-in-charge within 1 month of the date of receipt of such request. The contractor shall however use his best efforts to prevent or make good the delay by putting his endeavors constantly as may be reasonably required of him to the satisfaction of the Engineer-in-charge.

4.1.18.4 Provisional extension of time may also be granted by the Engineer-in-charge during the course of execution, on written request for extension of time within 15 (fifteen) days of happening of such events as stated above, reserving the company’s right to impose/waive liquidated damages at the time of granting final extension of time as per contract agreement.

4.1.18.5 When the period fixed for the completion of the development or construction works is about to expire, the question of extension of the time schedule of that activity may be considered at the instance of the Contractor or the Company or both. The extension will have to be by party’s expressed agreement.

4.1.18.6 In case the Contractor does not apply for grant of extension of time within 15 (fifteen) days of hindrance occurring in execution of the work and the Company wants to continue with the work beyond the stipulated date of completion for reason of the work having been hindered, the Engineer-in-charge at his sole discretion can grant provisional extension of time even in the absence of application from the Contractor. Such extension of time granted by the Engineer-in-charge is valid provided the Contractor accepts the same either expressly or implied by actions before and subsequent to the
date of completion. Such extension of time shall be without prejudice to Company’s right to levy compensation under the relevant clause of contract.

4.1.19 TERMINATION, SUSPENSION, CANCELLATION & FORECLOSURE OF CONTRACT

4.1.19.1 The owner shall, in addition to other remedial steps to be taken as provided in the conditions of contract, be entitled to cancel the contract in full or in part, if the contractor

a. makes default in proceeding with the works with due diligence and continues to do so even after a notice in writing from the Engineer-in-charge, then on the expiry of the period as specified in the notice

or

b. commits default/breach in complying with any of the terms and conditions of the contract and does not remedy it or fails to take effective steps for the remedy to the satisfaction of the Engineer-in-charge, then on the expiry of the period as may be specified by the Engineer-in-charge in a notice in writing

or

c. fails to complete the work or items of work with individual dates of completion, on or before the date/dates of completion or as extended by the company, then on the expiry of the period as may be specified by the Engineer-in-charge in a notice in writing

or

d. shall offer or give or agree to give any person in the service of the company or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for act/acts of favour in relation to the obtaining or execution of this or any other contract for the company.

or

e. shall try to obtain a contract with the company by way of ring tendering or other non-bonafide method of competitive tendering.

or

f. Transfers, sublets, assigns the entire work or any portion there of without the prior approval in writing from the Engineer-in-charge. The Engineer-in-charge
may be giving a written notice, cancel the whole contract or portion of it in default.

4.1.19.2 The owner shall in such an event give fifteen (15) days notice in writing to the contractor of his decision to do so.

4.1.19.3 The contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and contracts to the extent they are related to the work terminated and terms satisfactory to the owner, stop all further sub-contracting or purchasing activity related to the work terminated, and assist the owner in maintenance, protection, and disposition of the works acquired under the contract by the owner.

4.1.19.4 The contract shall stand terminated under the following circumstances unless the owner is satisfied that the legal representatives of the individual contractor or of the proprietor of the proprietary concern and in the case of partnership the surviving partners, are capable of carrying out and completing the contract and the owner shall in any way not be liable to payment of any compensation to the estate of deceased contractor and/or to the surviving partners of the contractor’s firm on account of the termination of the contract:

a. If the contractor being an individual in the case of proprietary concern or in the case of a partnership firm any of its partners is declared insolvent under the provisions of insolvency act for the time being in force, or makes any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors amounting to proceedings for liquidation or composition under any insolvency act.

b. In the case of the contractor being a company, its affairs are under liquidation either by a resolution passed by the company or by an order of court, not being a voluntary liquidation proceedings for the purpose of amalgamation or reorganisation, or a receiver or manager is appointed by the court on the application by the debenture holders of the company, if any.
c. If the contractor shall suffer an execution being levied on his/their goods, estates and allow it to be continued for a period of 21 days.

d. On the death of contractor being a proprietary concern or of any of the partners in the case of a partnership concern and the company is not satisfied that the legal representative of the deceased proprietor on the other surviving partners of the partnership concern are capable of carrying out and completing the contract. The decision of the company in this respect shall be final and binding which is to be intimated in writing to the legal representative or to the partnership concern.

4.1.19.5 If the contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the contractor is a partnership concern and one of the partners dies, then unless the owner is satisfied that the legal/representatives of the individual contractor or of the proprietor of the proprietary concern and in the case of partnership the surviving partners, are capable of carrying out and completing the contract the owner shall be entitled to cancel the contract as to its incomplete part without being in any way liable to payment of any compensation to the estate of deceased contractor and/or to the surviving partners of the contractor’s firm on account of the cancellation of the contract.

The decision of the owner that the legal representative of the deceased contractor or surviving partners of the contractor’s firm cannot carry out and complete the contract shall be final and binding on the parties. In the event of such cancellation the owner shall not hold the estate of the deceased contractor and/or the surviving partners of the estate of the deceased contractor and/or the surviving partners of the contractor’s firm liable to damages for not completing the contract.

4.1.19.6 On cancellation of the contract or on termination of the contract, the Engineer-in-charge shall have powers:

a. To take possession of the site and any materials, constructional plant, implements, stores, etc. thereon.
b. To determine the amount to be recovered from the contractor for completing the remaining work or in the event the remaining work is not to be completed, the loss/damage suffered, if any, by the company after giving credit for the value of the work executed by the contractor up to the time of termination/cancellation less on a/c payments made till date and value of contractor's materials, plant, equipment, etc. taken possession of after termination/cancellation.

c. to recover the amount determined as above, if any, from any moneys due to the contractor or any account or under any other contract and in the event of any shortfall, the contractor shall be called upon to pay the same on demand.

The need for determination of the amount of recovery of any extra cost/expenditure or of any loss/damage suffered by the company shall not however arise in the case of termination of the contract for death/demise of the contractor as stated in clause 4.1.19.4(d).

4.1.19.7 Suspension of work – The company shall have power to suspend the progress of the work or any part thereof and the Engineer-in-charge may direct the contractor in writing to suspend the work, for such period and in such manner as may be specified therein, on account of any default on the part of the contractor, or for proper execution of the work for reasons other than any default on the part of the contractor, or on ground of safety of the work or part thereof, in the event of suspension for reason other than any default on the part of the contractor, extension of time shall be allowed by the company equal to the period of such suspension. Any necessary and demonstrable costs incurred by the contractor as a result of such suspension of the works will be paid by the owner, provided such costs are substantiated to the satisfaction of the Engineer. The owner shall not be responsible for any liabilities if suspension or delay is due to some default on the part of the contractor or his sub-contractor.

The work shall, be carried out with all due diligence on the part of the contractor. In the event of termination or suspension of the contract, on account of default on the part of the contractor, as narrated herein before, the security deposit and other dues of this work or any other work done under this
company shall be forfeited and brought under the absolute disposal of the company provided, that the amount so forfeited shall not exceed 10% of the contract value.

4.1.19.8 Foreclosure of contract in full or in part – If at any date after acceptance of the tender, the company decides to abandon or reduce the scope of the work for any reason whatsoever the company, through its Engineer-in-charge, shall give notice in writing to that effect to the contractor. In the event of abandonment/reduction in the scope of work, the company shall be liable

a. To pay the contractor at the contract rates full amount for works executed and measured at site upto the date of such abandonment/reduction in the work.

b. To pay reasonable amount assessed and certified by the Engineer of the expenditure incurred, if any, by the contractor on preliminary works at site e.g. temporary access roads, temporary construction for labour and staff quarters, office accommodation, storage of materials, water storage tanks and supply for the work including supply to labour/staff quarters, office, etc.

c. To pay for the materials brought to site or to be delivered at site, which the contractor is legally liable to pay, for the purpose of consumption in works carried out or were to be carried out but for the foreclosure, including the cost of purchase and transportation and cost of delivery of such materials. The materials to be taken over by the company should be in good condition and the company may allow at its discretion the contractor to retain the materials in full or part if so desired by him and to be transported by the contractor from site to his place.

d. To take back the materials issued by the company but remaining unused, if any, in the work on the date of abandonment/reduction in the work, at the original issued price less allowance for any deterioration or damage caused while in custody of the contractor.

e. To pay for the transportation of tools and plants of the contractor from site to contractor’s place or to any other destination, whichever is less.
The contractor shall, if required by the Engineer-in-charge, furnish to him books of accounts, papers, relevant documents as may be necessary to enable the Engineer-in-charge to assess the amount payable in terms of clause 4.1.19.8 (b), (c) and (e) above, the contractor shall not have any claim for compensation whatsoever either for abandonment or for reduction in the scope of work, other than those as specified above.

4.1.20 NO WAIVER OF RIGHTS

Neither the inspection by the owner or the engineer or any of their officials, employees or agents nor any order by the owner or the engineer for payment of money or any payment for or acceptance of, the whole or any part of the works by the owner or the engineer, nor any extension of time, nor any possession taken by the engineer shall operate as a waiver of any provision of the contract, or of any power herein reserved to the owner, or any right to damages herein provided, nor shall any waiver of any breach in the contract be held to be a waiver of any other or subsequent breach.

4.1.21 CERTIFICATE NOT TO AFFECT RIGHT OF OWNER AND LIABILITY OF CONTRACTOR

No interim payment certificate of the engineer, nor any sum paid on account, by the owner, nor any extension of time for execution of the works granted by the engineer shall affect or prejudice the rights of the owner against the contractor or relieve the contractor of his obligations for the due performance of the contract, or be interpreted as approval of the works done or of the equipment furnished and no certificate shall create liability for the owner to pay for alterations, amendments, variations or additional works not ordered, in writing, by the engineer or discharge the liability of the contractor for the payment of damages whether due, ascertained, or certified or not, or any sum against the payment of which he is bound to indemnify the owner, nor shall any such certificate nor the acceptance by him of any sum paid on account or otherwise affect or prejudice the rights of the contractor against the owner.

4.1.22 GRAFTS AND COMMISSION ETC.

Any graft, commission, gift or advantage given, promised or offered by or on behalf of the contractor or his partner, agent, officers, director, employee or
servant or any one of his or their behalf in relation to the obtaining or to the execution of this or any other contract with the owner, shall, in addition to any criminal liability which it may incur, subject the contractor to the cancellation of this and all other contracts and also to payment of any loss or damage to the owner resulting from any cancellation. The owner shall then be entitled to deduct the amount so payable from any money otherwise due to the contractor under the contract.

4.1.23 LANGUAGE AND MEASURES

All documents pertaining to the contract including specifications, schedules notices, correspondence, operating and maintenance instructions, drawings or any other writing shall be written in English language. The SI system of measurement shall be used exclusively in the contract.

4.1.24 RELEASE OF INFORMATION

The contractor shall not communicate or use in advertising, publicity, sales releases or in any other medium, photographs or other reproduction of the works under this contract, or descriptions of the site, dimensions, quantity, quality or other information, concerning the works unless prior written permission has been obtained from the owner.

4.1.25 CONSTRUCTION OF THE CONTRACT

4.1.25.1 Notwithstanding anything stated elsewhere in the bid documents, the contract to be entered into will be a single turnkey contract executed in two phases. During the first phase i.e. ‘mine and associated infrastructure construction’ period, the Contractor will plan and construct the mine and all of its associated infrastructure as shaft sinking, incline drivage, service buildings, stores, workshops, roads CHP etc and arrange for electricity, water, ventilation, transport, pumping etc. All deliverable P&M including winding engine and mass production technology package will be installed and commissioned by the contractor during this period. During the second phase i.e. commercial production period of nine years, the Contractor will produce coal in accordance with the minimum guaranteed production given by him in the price bid.
4.1.25.2 The contract shall in all respects be construed and governed accordingly to Indian Laws.

4.1.26 COMPLETION OF CONTRACT

Unless otherwise terminated under the provisions of any other relevant clause, this contract shall be deemed to have been completed at the expiration of the commercial production period.

4.1.27 ENFORCEMENT OF TERMS

The failure of either party to enforce at any time of the provisions of this contract or any rights in respect thereto or to exercise any option herein provided, shall in no way be construed to be a waiver of such provisions, rights or options or in any way to affect the validity of the contract. The exercise by either party of any of its rights herein shall not preclude or prejudice either party from exercising the same or any other right it may have hereunder.

4.1.28 ENGINEER’S DECISION

4.1.28.1 In respect of all matters which are left to the decision of the engineer including the granting or with holding of the certificates, the engineer shall, if required to do so by the contractor give in writing a decision thereon.

4.1.28.2 If in the opinion of the contractor, a decision made by the engineer is not in accordance with the meaning and intent of the contract, the contractor may file with the dispute resolution committee (DRC) constituted by area GM/CGM, within fifteen (15) days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered as acceptance of the engineer’s decision and the decision shall become final and binding.

4.1.28.3 The engineer’s decision and the filling of the written objection with the dispute resolution committee (DRC) constituted by area GM/CGM shall be a condition precedent to the right to any legal proceedings under clause 4.1.40. It is the intent of the agreement that there shall be no delay in the execution of
the works and the decision of the engineer as rendered shall be promptly observed.

4.1.29 TRAINING OF OWNER’S PERSONNEL

4.1.29.1 The contractor shall undertake to train engineering personnel selected and sent by the owner in India & abroad for operation, maintenance and other services of the Equipments installed under the Contractor’s scope of work. The period and the nature of training for the individual personnel shall be agreed upon mutually between the contractor and the owner. These engineering personnel shall be given special training in the shops where the equipment will be manufactured and/or their collaborator’s works and where possible, in any other plant where such equipment manufactured by the contractor or his collaborator is under installation or test, to enable these personnel to become familiar with the equipment being furnished by the contractor.

4.1.29.2 All traveling and boarding & lodging expenses for the engineering personnel to be trained during the total period of training will be borne by the owner. Other arrangements and expenses are to be done / borne by the Contractor. These engineering personnel while undergoing training shall be responsible to the contractor for discipline.

4.1.29.3 In the event of the owner, for any reason, failing to avail of the training facilities, the owner shall not be entitled for any rebate whatsoever on this account.

4.1.30 POWER TO VARY OR OMIT WORK

4.1.30.1 No alterations, amendments, omissions, suspensions or variations of the works (hereinafter referred to as ‘Variation’) under the contract as detailed in the contract documents, shall be made by the contractor except as directed in writing by the Engineer, but the Engineer shall have full power subject to the provision hereinafter contained from time to time during the execution of the contract, by notice in writing, to instruct the contractor to make such variation without prejudice to the contract. The contractor shall carry out such
variation and be bound by the same conditions as far as applicable as though the said variation occurred in the contract documents. If any suggested variation would, in the opinion of the contractor, if carried out, prevent him from fulfilling any of his obligations or guarantees under the contract, he shall notify the Engineer thereof in writing and the Engineer shall decide forthwith, whether or not the same shall be carried out and if the Engineer confirm his instructions, contractor’s obligations and guarantees shall be modified to such an extent as may be mutually agreed. Any agreed difference in cost occasioned by any such variation shall be added to or deducted from the contract price as the case may be.

4.1.30.2 In the event of the Engineer requiring any variation, such reasonable and proper notice shall be given to the contractor to enable him to work his arrangements accordingly, and in cases where goods or materials are already prepared or any design, drawings of pattern made or work done requires to be altered, a reasonable and agreed sum in respect there of shall be paid to the contractor.

4.1.30.3 In any case in which the contractor has received instructions from the engineer as to the requirement of carrying out the altered or additional substituted work which either then or later on, will in the opinion of the contractor, involve a claim for additional payments, the contractor shall immediately and in no case later than thirty (30) days, after receipt of the instructions aforesaid and before carrying out the instructions, advise the engineer to that effect. But the Engineer shall not become liable for the payment of any charges in respect of any such variations, unless the instructions for the performance of the same shall be confirmed in writing by the Engineer.

4.1.30.4 If any variation in the works, results in reduction of contract price, the parties shall, agree, in writing, so to the extent of any change in the price, before in contractor proceeds with the change.

4.1.30.5 In all the above cases, in the event of a disagreement as to the reasonableness of the said sum, the decision of the Engineer shall prevail.
4.1.30.6 Notwithstanding anything stated above in this clause, the Engineer shall have the full power to instruct the contractor, in writing, during the execution of the contract, to vary to quantities of the items or groups of items. The contractor shall carry out such variations and be bound by the same conditions, as though the said variations occurred in the contract documents. However, the contract price shall be adjusted at the rates and the prices provided for the original quantities in the contract. In case of any dispute in this regard, the successful bidder can take the issue to the dispute resolution committee (DRC) constituted by area GM/CGM for this purpose.

4.1.31 GUARANTEE

The contractor shall warrant that the equipments / P&M will be in accordance with the specification given in the contract documents, scheme / DPR. The P&M must be new, nor refurbished or overhauled and free from any defects in material and workmanship for the entire contract period.

4.1.32 REPLACEMENT OF DEFECTIVE P&M, PARTS AND MATERIALS

4.1.32.1 As the essence of the contract is to get minimum guaranteed production of coal from the Contractor operating the mass production technology package supplied by him and using mine infrastructure planned designed and constructed by him, any expenditure incurred on account of operations, repair and maintenance of infrastructure including replacement of P&M, if required, will be borne by the contractor for the whole contract period.

4.1.32.2 No separate payment on account of repair and maintenance of the mine and associated infrastructure and P&M will be admissible.

4.1.32.3 In case there is a need to replace, over-haul any deliverable P&M item due to normal operations or due to defective construction by the Contractor or due to defective/ underrated /inadequate equipment supplied by him, the Contractor is to arrange for the same at his all own cost. No payment on account of replacement/over-hauling of any of the equipment is admissible under the contract.
4.1.33 DEFENSE OF SUITS

If any action in court is brought against the owner or engineer or an officer or agent of the owner for the failure or neglect on the part of the contractor to perform any acts, matters, covenants or things under the contract, or for damage or injury caused by the alleged omission or negligence on the part of the contractor, his agents, representatives or his sub-contractors, workmen, suppliers or employees, the contractor shall in all such cases indemnify and keep the owner, and the engineer and/or his representative, harmless from all losses, damages, expenses or decrees arising of such action.

4.1.34 LIMITATIONS OF LIABILITIES

The final payment by the owner in pursuance of the contract shall mean, the release of the contractor from all his liabilities under the contract. Such final payment shall be made only at the end of the Contract period. All other payments made under the contract shall be treated as on account payments.

4.1.35 MARGINAL NOTES

The marginal notes to any clause of the contract shall not affect or control the construction of such clause.

4.1.36 LONG TERM AVAILABILITY OF SPARES

It will be Contractor’s responsibility to provide spares during the entire contract period.

4.1.37 MOBILISATION ADVANCE

No mobilization advance shall be paid to the contractor.

4.1.38 PAYMENT

4.1.38.1 The Contractor will give a complete list of mine and associated infrastructure construction items such as service buildings, offices, residential buildings, roads and other construction items. These items are to be constructed as per the specifications given in annexures VI-VIII. The bidders
have to quote against all the items, which are required to sustain coal production during commercial production period. Some of the major construction items are included in the annexure-I but the list is not exhaustive. The Contractor will quote with number of items to be constructed as well as area to be covered against each item giving detailed technical specification. The contractor will be paid after completion of each set of items. No payment will be made before completion of the construction item in all respect.

Payment for shaft sinking, incline/ drift drivage will be made monthly based on actual physical progress.

The Contractor will give a complete list of all plant and machinery which are required to sustain coal production during commercial production period with detailed specifications of each item. Some of the major P &M items are included in the annexure-I but the list is not exhaustive. The contractor may add or remove items from the list as per requirement in accordance with the scheme submitted. The payment against supply, installation and commissioning of each item quoted for will be made after verification against the specification provided by the contractor.

The Contractor will be paid only for mine and associated infrastructure construction and P&M items, which are deliverable. No payment will be made for the temporary construction work and P&M deployed for construction of deliverable mine and associated infrastructure items or for supply, installation and commissioning of deliverable P&M.

The items of work for which rates have been invited will be deemed to include thereof the provision of all labour, materials, constructional plant, temporary works and everything whether of a temporary nature required in and for such construction, completion and maintenance of the items of works. The rates for the items of work will be deemed to include thereof all the charges for any ancillary works required to be done for the execution of the items in question and no additional claims for any ancillary work will be entertained. The disposal of muck at specified areas within a radius of approximately 500 meters from the incline/shaft mouth and leveling of the dumps as per the direction of the Engineer or his representatives will be deemed to be an
ancillary work. The contractor will be paid in the following way during the period of the Contract:

4.1.38.2 Payments for preparation of reports:
Payments for preparation of reports/studies will be made only after submission of approved reports.

4.1.38.3 During mine and associated infrastructure construction period:

a) For construction and development of mine and associated infrastructure
i. The contractor will be paid on the basis of bills raised by him as per physical progress and verification of shaft sinking, incline drivage, drift drivage, /drivage in coal prior to commercial production period or any other construction such as strata bunker etc., on monthly basis. Payment for development & excavation in coal before commercial production period will also be made on the basis of price quoted per meter of drivage.

ii. All other the associated construction works such as construction of office, development of roads, workshops, stores, etc. as given in Annexure VI-VIII will be paid on completion of the construction work. Payments will be made only after physical verification of associated infrastructure construction items.

iii. Payment for CHP will be made separately after successful commissioning of CHP and physical verification as per the specifications submitted with the bid.

iv. Payment of on account bills: 95% of the on account bills for shaft sinking, incline drivage or any other drivage during mine and associated infrastructure construction period will only be considered for payment and the remaining 5% will be kept as retention money as per clause 2.31.2. 75% of 95% of on account bills for shaft sinking, incline drivage or any other drivage during mine and associated infrastructure construction period will be paid within 3 days of submission of valid and certified bills and 25% of 95% of on account bills will be paid within a month. The remaining 5% of the on account bills retained as retention money will be dealt with as per clause 2.31.3.

v. Payment for P&M

vi. P&M items, which are quoted for, will be paid as per the provisions given
vii. **For imported items,**

5% of contract amount towards imported P&M item will be released through telegraphic transfer in SWIFT mode by BCCL within three months from the date of approval of DPR provided the successful bidder furnishes a BG against such advance payment. The amount of BG should include 5% of the cost of imported P&M on the terms of FOB ...... (port of origin) plus an interest @ 6 months’ LIBOR plus 150 basis points upto the date of arrival of equipment at designated port plus delay period, if any, attributable on successful bidders account.

The BG covering 5% of contract amount towards imported P&M item including interest thereon will be released within fifty days of the FAX date of receipt towards shipping advice for the complete P&M item followed by registered Air Mail of the said documents to reach BCCL before release of the BG.

viii. Payment will be facilitated by letter of credit.

    a) 70% of the total price of deliverable P&M, spares & consumables shall be paid by confirmed and irrevocable letter of credit to be opened by the buyer through State Bank of India, CAG Branch, Kolkata in favour of the supplier and confirmed by a first class bank in the Country from where goods are supplied by the supplier. The costs on account of opening at actual and confirmation of the Letter of Credit and usance charges including confirmation in ...... (Name of the Country) for 18 months sight and other LC operating charges in India shall be on account of the buyer. All charges towards negotiation of Letter of Credit in ...... (Name of the Country) shall on account of the supplier. Letter of Credit shall be payable at 18 months sight in the ...(Name of the Country) (against shipping documents) and permit shipments from ......... sea ports. Part shipments and transshipments shall be allowed.

    b)The said Letter of credit will be established as soon as possible but in any event not later than five months prior to the scheduled FOB .......... Port delivery date of the first package of equipment. The terms of the LC shall call for presentation of the following documents by the supplier evidencing supply of the equipment, spares and consumables of the contract.
• Three originals and two copies of each clean on board ocean Bill of Lading marked “Freight payable at destination” and made out to order, blank endorsed and notifying BCCL at the port of destination and State Bank of India, CAG branch, Kolkata.
• Five copies of each freight certificate.
• Five copies of each commercial invoice covering the prices of the goods.
• Five copies of each detailed packing list.
• Five copies of each supplier’s inspection certificate issued by the manufacturer.
• The supplier shall within 72 hours after completion of the loading notify the port consignee with a copy to BCCL by cable or FAX the contract number, description of goods, quantity, gross weight, volume in cubic metres, invoice value, name of carrying vessel and date of its sailing.
• Five copies of each certificate of origin.
• One certificate from the supplier in supplier’s own format certifying that the entire equipment, spares and consumables for the full value of …… have been shipped by them.
• Stale documents shall be acceptable under the Letter of Credit.

ix. On production of proof of dispatch along with the bills, **70%** of FOB price (format 7.4.6 - A) for deliverable P&M will be released. In case of any mishap or eventualities causing loss in transit for which insurance claim will be made by BCCL & BCCL will get 100% of the cost of the equipment. As the successful bidder will be paid **70%** of FOB price of the deliverable P&M as per the clause **in addition to 5% paid earlier**, then in case of 100% insurance claim made & received by BCCL due to loss of consignment in transit, the balance **25%** will be paid to the tenderer. When the next replacement consignment will be put to transit again by the bidder, on production of proof of dispatch along with the bills, **75%** of FOB price (format 7.4.6 - A) for deliverable P&M will be released. **However, necessary insurance shall be done by the bidder for the next consignment and the same will be re-imbursed to the contractor on submission of documentary evidence.**

x. Taxes, duties and levies as per statute will be reimbursed at actual on production of documentary proof.

xi. Payment for the bills for the remaining FOB price and for other expenses (format
7.4.6- A) will be made on successful commissioning of full set of equipment at site after deduction of retention money. The retention money which will be equal to 5% of the quoted price excluding taxes, duties and levies, will be deducted at the time of above remaining payment.

xii. Retention money will be released on successful completion of two years of commercial production period.

xiii) For indigenous items

5% FOR destination value of indigenous P&M item will be released within three months from the date of approval of DPR by drawing account payee cheque / electronic transfer with any Nationalized Indian Bank, provided the successful bidder furnishes a BG against re-imbursement of such advance payment. The amount of BG should include an interest at a rate of yield to maturity (YTM) for six years GOI bonds plus 150 basis points upto the date of arrival of equipment at the site of work plus delay period, if any.

The BG covering 5% of contract amount towards indigenous P&M item including interest thereon will be released within fifty days of receipt of complete indigenous P&M item at work site.

xiv. 70% of ex-works price (Format 7.4.6-B) will be paid on delivery of the complete equipment set at the site.

a) Taxes, duties and levies as per statute will be reimbursed at actual on production of documentary proof.

b) Payment for the bills for the remaining FOB price and for other expenses (format 7.4.6- A) will be made on successful commissioning of full set of equipment at site after deduction of retention money. The retention money which will be equal to 5% of the quoted price excluding taxes, duties and levies, will be deducted at the time of above remaining payment.

c) Retention money will be released on successful completion of two years of commercial production period.

4.1.38.4 During Commercial production period:

The measurement and payment for the coal produced during commercial
production period will be made as per the following

A) **Measurement of coal:**

Measurement of coal will be in metric tones. Net weight of coal will be derived from weighment readings of the belt weightometer(s) installed at CHP. The belt weightometer(s) shall be calibrated as per the schedule specified by the manufacturer. Wherever possible, it would be cross checked by underground survey. In case of panel extraction, cross checking by underground survey will be done, if feasible. In case of breakdown of belt weightometer(s), measurement by underground survey of face advance will be adopted.

 Calibration of belt weightometer(s) and measurements shall be taken jointly by the Engineer-in-Charge or his authorized representative and by the contractor or his authorized representative. Before taking up calibration of weightometer(s) or measurements of any work, the Engineer-in-Charge or the person deputed by him for the purpose shall intimate the contractor to attend or to send his representative to attend the calibration / measurement. Every calibration / measurement thus taken shall be signed and dated by both the parties on the site on completion of the calibration / measurement. If the contractor objects to any of calibration(s) / measurements, a note to that effect shall be made in the Measurement Book and signed and dated by both the parties. In the event of failure on the part of contractor to attend or to send his authorized representative to attend the calibration / measurement after receiving the intimation, or to record objection within a week from the date of the calibration / measurement, the calibration / measurement taken by the Engineer-in-Charge or by his authorized representative shall be taken to be the correct measurement.
B) Payment for coal production:

Employer is not liable for payment of interest on the amount of bill(s). During commercial production period, payment for coal produced will be made on the basis of quoted and agreed cost per tonne of coal produced.

The contractor shall submit bill(s) for the coal produce in accordance with the contract. The Engineer shall then arrange for verification of the bill/bills with reference to the measurement taken or to be taken or any other records relevant for the purpose. However, in any case

The bill(s) will be prepared every month, i.e, for the period 1st to end of the month. Monthly payment shall be made on producing of the ‘Production guarantee certificate’ for the respective month after deducting the recovery of advance payment, if any.

Payment will be made monthly, the interim adjustment for bonus or penalty, if any, will be done quarterly and the final adjustment will be made on the basis of coal production in that particular production year.

Payment of on account bills: 75% of on account bills for coal production during commercial production period will be paid within 3 days of submission of valid and certified bills and the 25% will be paid within a month after thorough measurement and scrutiny of bills.

Any certificate given by the Engineer-in-Charge for the purpose of payment of bills shall not of itself be conclusive evidence that any work to which it relates is /are in accordance with the contract and may be modified or corrected by the Engineer-in-Charge by any subsequent certificate or by the final certificate.

The Company reserves the right to recover / enforce recovery of any overpayments detected after payment as a result of post-payment audit or technical examination or by any other means, not withstanding the fact that the amount or disputed claims, if any, of the contractor exceeds the amount of such overpayment and irrespective of the facts whether such disputed claims of the contractor are the subject matter of arbitration or not. The contractor
shall pay the amount of overpayment on demand, or else the amount of such overpayments may be recovered from the subsequent bills under the contract, failing that from contractor’s claim under any other contract with the Company or with other Subsidiary Companies of Coal India Limited or from the contractor’s Security Deposit.

No payment shall be made to the Contractor against coal production before commencement of ‘Commercial production period’

4.1.38.5 The payment to the contractor for the performance of the works under the contract will be made by the owner as per the guidelines and conditions specified herein. All payments made during the contract shall be on account payments only. The final payment will be made on completion of all the works and on fulfillment by the contractor of all his liabilities under the contract.

**ESCROW Mechanism**

In order to provide adequate coverage of timely payment, BCCL shall be in a suitable position through ESCROW mechanism to accord priority for such payment against receipt of sale of coal to identified large customer.

**Note:** ESCROW mechanism shall mean an arrangement under which something (money, a document or property) is held in trust by a third party until the occurrence of a condition allowing its release to a party to an underlying transaction.

4.1.38.6 CURRENCY OF PAYMENT

The Bidder is to quote either in Euro, USD or INR for any or all the items in price bid. Any conversion from one currency to another by the bidder later on will not be allowed. Payments will be made in the same currency in which price is quoted.

4.1.38.7 DUE DATES FOR PAYMENT
The owner will make progressive payments as and when the payments are due. Payment will become due and payable by the owner within thirty (30) days from the date of receipt of contractor’s bill/ invoice/ debit note by the owner, provided the documents submitted are complete in all respects.

4.1.38.8 PAYMENT SCHEDULE
During mine and associated construction period, payment for P&M will be made on successful commissioning of the same and for shaft sinking, incline drivage or drift drivage or drivage in coal, the payment will be made monthly on the basis of actual physical progress. During Commercial production period, payment will be made monthly on the basis of actual coal produced in that particular period. The interim adjustment for bonus or penalty will be done quarterly and the final adjustment will be made on the basis of coal production in that particular production year.

4.1.38.9 APPLICATION FOR PAYMENTS
The contractor shall submit application/ bills for the payments. Each such application / bill shall state the amount claimed and shall set forth in detail, in order of the payment schedule, particulars of the works including the works executed at site and of the equipment shipped to / installed on the site pursuant to the contract upto the date mentioned in the application and for the period covered since the last preceding bill, if any. Every interim payment certificate shall certify the contract value of the works executed upto the date mentioned in the application for the payment certificate, provided that no sum shall be included in any interim payment certificate in respect of the works that, according to the decision of the engineer, does not comply with the contract, or has been perform, at the date of certificate prematurely.

4.1.38.10 MODE OF PAYMENT
The payment due on supply of equipments, accessories and their erection /installation shall be made direct to the contractor by the Employer.
4.1.38.11 COMMITMENTS TOWARDS AGREED GUARANTEED PRODUCTION

The Contractor would guarantee production of coal from the mining districts and delivery of the same on the surface at the designated transfer point as per agreed annual guaranteed production.

(A) Commitment Charges:
In case, the Contractor fails to meet the agreed annual guaranteed production, he will pay commitment charges as indicated below.

<table>
<thead>
<tr>
<th>Actual Production in percentage of agreed annual Guaranteed production (AGP)</th>
<th>Penalty to be Deducted</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 100% to 90%</td>
<td>Nil</td>
</tr>
<tr>
<td>From 90% to 70%</td>
<td>@10% of per tonne rate charged on the difference of production from 90% of annual guaranteed production (AGP)</td>
</tr>
<tr>
<td>Less than 70%</td>
<td>Over and above the deduction made at the rate of 10% as per (b) above, further @ 20% of per tonne rate charged on the difference of production from 70% of annual guaranteed production (AGP)</td>
</tr>
</tbody>
</table>

(B) Bonus Payment:
In case the Contractor is able to achieve more than 110% of scheduled annual guaranteed production, during any production year, the Contractor would get bonus at the rate mentioned below.

<table>
<thead>
<tr>
<th>Actual Production in %age of agreed annual Guaranteed production (AGP)</th>
<th>Bonus payable</th>
</tr>
</thead>
<tbody>
<tr>
<td>from100% to 110%</td>
<td>Nil</td>
</tr>
<tr>
<td>More than 110%</td>
<td>@ 8 % of per tonne rate payable for that</td>
</tr>
</tbody>
</table>
production year on incremental production above 110% of Annual Guaranteed Production in that production year provided that the maximum price per tonne inclusive of bonus etc. remains less than the notified selling price of the coal produced.

Payment coal production during commercial production period will be made monthly. The interim adjustment for penalty will be done quarterly and the final adjustment will be made on the basis of coal production in that particular production year. No interim adjustment for bonus part will be done. In case in any two consecutive production years, the production of coal falls below the 70% of agreed annual Guaranteed production, the termination of the Contract will be considered by the Dispute Resolution Committee in the third year.

4.1.38.12 INLAND TRANSPORTATION AND INSURANCE

The price on account of transportation of P & M (including port handling) and insurance should be separately indicated in the price of supply items quoted which shall be paid as per the provision of clause 4.1.12.

4.1.39 PRICE VARIATION CLAUSE

4.1.39.1 The contract price shall remain firm without any price variation due to escalation for the portions of survey, geo-engineering investigations, planning, design & engineering, constructions, supply of P&M and the agreed price for coal production as per the contract except as detailed in clause 4.1.39.3 hereof and for the statutory increase/decrease in taxes and duties such as excise duty, sales tax, import duty etc.

4.1.39.2 If any work under the contract is to be extended beyond the stipulated period for completion of that work due to fault on the part of the contractor escalation on prices shall not be allowed.

4.1.39.3 Escalation

The price quoted for the items / activities of mine and associated infrastructure construction and price of coal production per tonne for the first
production year, shall be firm unless there is any delay in scheduled completion of these items/activities due to the fault on part of the Employer. Incase there is a delay in completion schedule of any item or activities due to the fault on part of the Employer the following provisions shall apply:

(A) Escalation for Report Preparation

No escalation on INR as well as on the foreign exchange component of the price will be paid.

(B) Escalation for mine and associated infrastructure construction prior to start of commercial production period and in the price of per tonne coal production during commercial production period.

In case there is any delay in starting of any activity due to the fault on the part of the Employer, Escalation as per the following will be applied.

a) 20% of the all prices quoted in the price bid will be fixed and no escalation shall apply to them.

b) The balance 80% percent of the base price shall only be subject to price adjustment.

i) Escalation for the INR component of the quoted and accepted prices of the shaft sinking, incline drivage, drift drivage, drivage in coal, construction of strata bunker prior to commercial production period, and price per tonne of coal produced during commercial production period etc. will be calculated as below.

- Other than the fixed component mentioned in (a), the half of remaining INR component (50% of balance 80%) will be escalated in accordance with the escalation in the Wholesale Price Index (WPI) and the remaining half (50% of balance 80%) with the All India Consumer Price Index (AICPI).

- Escalation for the INR component of the quoted and accepted prices of civil construction items such as service buildings, residential buildings, roads, etc. will be calculated on the basis of building cost index calculated as per guidelines of Bureau of Public Enterprises.
ii) Escalation for foreign exchange component of the quoted and accepted prices will be as follows:

- Other than the fixed component mentioned in (a), the remaining foreign exchange component would be escalated in accordance with the escalation in the applicable indices as suggested by the Contractor for USD and EURO. In case the price component is quoted in USD, the indices suggested for USD must be for USA, in case the price component is quoted in EURO, the indices suggested for it must be for European Union. The indices so suggested must be in the public domain.

(C) Escalation for deliverable P&M

i) Bidder will quote rate for deliverable P&M based on the prevailing indices of the country of origin as on date of submission of the tender and the price of the said deliverable P&M will be considered as original quoted rate. The indices so suggested by the bidder must be in the public domain. If the bidder revise their quoted rate subsequently, revised rate should also accompany the indices of the country of origin on the date of submission of revised rate.

ii) The escalation / de-escalation will be as per prevalent indices of the same P&M on the scheduled date of delivery. Any escalation for the delay period from the date of scheduled delivery will be paid in case the delay is not due to the fault of the contractor.

The bidder has to clearly state the indices of the country of origin at the time of submission of tender and successful bidder shall also provide indices of the said country of origin at the time of actual delivery of material with supporting document. The indices so suggested must be in the public domain.

(D) For escalation, increase in the applicable index corresponding to delay from the construction schedule (all activities prior to commercial production period) as mentioned in the bid, to new construction schedule due to delay on account of the Employer, will only be considered. For escalation on deliverable P&M (required during commercial production period to sustain production) increase in the applicable index corresponding to delay from the
year of the delivery schedule as mentioned in the bid to new delivery schedule due to delay on account of the Employer will only be considered.

4.1.39.4 The Employer will pay to the contractor only allowable escalation as per above clause, any other expenditure claimed by the contractor under any heads whatsoever, during mine and associated infrastructure construction period and commercial production period incurred due to normal operations or due to defective construction by the contractor or due to normal mining operations or defective/under rated/inadequate equipment supplied by the contractor, shall not be admissible.

4.1.40 SETTLEMENT OF DISPUTES

4.1.40.1 Conciliation:

Any dispute, or difference arising out of or concerning the contract between the parties shall be settled through mutual negotiation by parties and parties shall make all endeavours to settle this matter amicably. In case such amicable solution is not possible, the parties shall take recourse to the conciliation proceedings for resolving such dispute, question, claim or differences.

The parties with their mutual consent shall nominate a Conciliator, who shall conduct the conciliation proceedings in accordance with the provision of Arbitration and Conciliation Act 1996. The venue of conciliation shall be the location where the contract is executed. The settlement so arrived at during conciliation shall be binding on both parties and will not be called in question before any court or forum whatsoever. Reference to Arbitration shall be made only when the conciliation has failed.

4.1.40.2 Arbitration: The applicable rules for Conciliation proceedings shall be that of “SCOPE forum of Conciliation and Arbitration” (SCFA). The Arbitration Clause is to be invoked by the parties to the Contract only on failure of conciliation proceedings.
Arbitration with foreign contractor or in Consortium contracts (including foreign contractor), shall be governed by the Rules of Arbitration of International Chamber of Commerce (ICC), Paris. The venue of the arbitral proceedings shall be New Delhi or Kolkata.

It is also proposed that during the pendency of the Conciliation or Arbitration proceedings both the parties shall continue to perform their contractual obligations.

4.1.41 TAXES ON WORKS

The bidders are to quote the rate without taxes and duties. However during evaluation/drawing of LRMC, taxes and duties as applicable on date of submission of tender will be loaded. But taxes and duties legally payable under this contract will be reimbursed at actual against documentary evidence of payment of such taxes/duties to the appropriate authorities.

4.1.42 POACHING OF COMPANY’S MAN POWER

The Contractor is prohibited from poaching the existing man power of the Company to explore, plan, develop and operate the mine /project/ Project except for those nominated by the employer with mutual consent. He can, however, employ the person who has resigned from the Company only after written permission of the Company.
4.2 ADDITIONAL TERMS AND CONDITIONS

4.2.1 GENERAL

4.2.1.1 The following shall supplement the conditions already contained in the other parts of these documents and shall govern the work of this contract to be performed.

4.2.1.2 The contractor upon signing of the contract shall, in addition to a project co-ordinator, nominate another responsible officer as his representative at site suitably designated for the purpose of overall responsibility and co-ordination of the works to be performed at site. Such person shall function from the site office of the contractor during the pendency of contract.

4.2.2 REGULATION OF LOCAL AUTHORITIES AND STATUTES

4.2.2.1 The contractor shall comply with all the rules and regulations of local authorities during the performance of his field activities. He shall also comply with minimum wages act, 1948 and payment of wages act (both of the Government of India and the local state government) and the rules made thereunder in respect of any employee or workman employed or engaged by him or his sub-contractor. The Contractor will pay minimum wages which must not be less than as provided by the applicable statute. The Contractor shall make all necessary payments for Provident fund for the workmen employed by him for the works as per the laws prevailing under provisions of CMPF and allied schemes and CMPF and Miscellaneous provisions Act 1948 or Employees Provident Fund and Miscellaneous provisions Act 1952 as the case may be. The Contractor will also indemnify the Company against payment of workmen’s compensation under the Workmen’s Compensation Act and also litigation arising out of the above. The Contractor shall also abide by the provisions of the Contract labour and Regulation Act 1970. All registration and statutory inspection fees, if any, in respect of his work pursuant to this contract shall be to the account of the contractor.
4.2.3  **OWNER’S LIEN ON EQUIPMENT**

The owner shall have lien on all equipments / P&M brought to the site. The owner shall continue to hold the lien on all such equipment throughout the period of contract. No equipment /P&M brought to the site shall be removed from the site by the contractor and/or his sub-contractors without the prior written approval of the engineer.

4.2.4  **INSPECTION**

The engineer shall have the right to re-inspect any work, equipment after the same are completed and/or installed at site /mine. If by the above inspection, the engineer rejects any work or equipment, the contractor shall make good for such rejection either by replacement or modifications/ repairs as may be necessary, to the satisfaction of the engineer or dispute resolution committee (DRC) as the case may be. Such replacement will also include the replacement or re-execution of such of those works of other contractors and/or agencies which might have got damaged or affected by the replacements or re-work done to the contractor’s work.

4.2.5  **ACCESS TO SITE AND WORKS ON SITE**

4.2.5.1 Suitable access to and possession of the site shall be accorded to the contractor by the owner in reasonable time.

4.2.5.2 In the execution of the works, no persons other than the contractor or his duly appointed representative, sub-contractor and workmen, shall be allowed to do work on the site, except by the special permission, in writing of the engineer or his representative.

4.2.6  **CONTRACTOR’S SITE OFFICE ESTABLISHMENT**

The contractor shall establish a site office at the site and keep posted an authorised representative for the purpose of the contract. Any written order or instruction of the engineer or his duly authorised representative shall be communicated to the said authorised resident representing the contractor and
the same shall be deemed to have been communicated to the contractor at his legal address.

4.2.7 CO-OPERATION WITH OTHER CONTRACTORS

4.2.7.1 The contractor shall co-operate with all other contractors or tradesmen of the owner, who may be performing other works on behalf of the owner and the workmen who may be employed by the owner and doing work in the vicinity of the works under the contract. The contractor shall also so arrange to perform his work as to minimise, to the maximum extent possible, interference with the work of other contractors and his workmen. Any injury or damage that may be sustained in the employees of the other contractors and the owner, due to the contractor's work shall promptly be made good at his own expense. The engineer shall resolve any difference or conflict that may arise between the contractor and other contractors or between the contractor and the workmen of the owner in regard to their work. If the works of the contractor is delayed because of any acts or omissions of another contractor, the contractor shall have no claim against the owner on that account other than an extension of time for completing his works.

4.2.7.2 The engineer shall be notified promptly by the contractor of any defects in the other contractor's works that could affect the contractor's works. The engineer shall determine the corrective measures if any, required to rectify this situation after inspection of the works and such decisions by the engineer shall be binding on the contractor.

4.2.7.3 The contractor shall agree to co-operate with the owner’s other contractors and consultants and freely exchange with them such technical information as is necessary to obtain the most efficient and economical design and to avoid unnecessary duplication of efforts. The Engineer shall be provided with three copies of all correspondence addressed by the contractor to other sub-contractors and consultants in respect of such exchange of technical information.
4.2.8 DISCIPLINE OF WORKMEN

The contractor shall adhere to the disciplinary procedure set by the engineer in respect of his employees and workmen at site. The engineer shall be at liberty to object to the presence of any representative or employees of the contractor at the site, if in the opinion of the engineer such employee has mis-conducted himself or be incompetent or negligent or otherwise undesirable and then the contractor shall remove such a person objected to and provide in his place a competent replacement.

4.2.9 CONTRACTOR’S FIELD OPERATION

4.2.9.1 The contractor shall keep the engineer informed in advance regarding his field activity plans and schedules for carrying out each part of the works. Any review of such plan or schedules or method of work by the engineer shall not relieve the contractor of any of his responsibilities forwards the field activities. Such reviews shall also not be considered as an assumption of any risk or liability by the engineer or the owner or any of his representatives and no claim of the contractor will be entertained because of the failure or inefficiency of any such plan or schedule or method of work reviewed. The contractor shall be solely responsible for the safety, adequacy and efficiency of plant and equipment and his procedures.

4.2.9.2 The contractor shall have complete responsibility for the conditions of the work site/ mine including the safety of all persons employed by him or his sub-contractor and all the properties under his custody during the performance of the contract. This requirement shall apply continuously till the completion of the contract and shall not be limited to normal working hours. The construction review, if any, by the engineer is not intended to include review of contractor’s safety measures in, on or near the work-site, and their adequacy or otherwise.
4.2.10 PROGRESS REPORT AND PHOTOGRAPHS

The contractor shall furnish monthly progress report detailing out the progress achieved on all mine and associated infrastructure construction activities as compared to the schedules. The report shall also indicate the reasons for the variance between the scheduled and actual progress and the action proposed for corrective measures wherever necessary.

The monthly progress report should include the photographs of the work done at site. Photographs shall be taken as and when indicated by the engineer. Photographs shall be adequate in size and number to indicate various stages of construction. Each photograph shall contain the date, the name of the contractor and the title of the photographs. The contractor shall furnish three (3) prints each of such photographs.

4.2.11 MAN-POWER REPORT

4.2.11.1 The contractor shall submit to the engineer, on the first day of every month, a man hour schedule for the month, detailing the man hours scheduled for the month, skill wise and area-wise.

4.2.11.2 The contractor shall also submit to the engineer on the first day of every month, a manpower report of the previous months detailing the number of persons scheduled to have been employed and actually employed, skill wise and areas of employment of such labour.

4.2.12 PROTECTION WORK

The contractor shall have total responsibility for protecting his works during entire period of contract. No claim will be entertained by the owner or the engineer for any damage or loss to the contractor’s works and the contractor shall be responsible for the complete restoration of the damaged works to its original condition to comply with the specifications and drawings. Should any such damage to the contractor’s works occur because of other party not under his supervision or control, the contractor shall make his claim directly with the party concerned. If dis-agreement or conflict or dispute develops
between the contractor and the other party or parties concerned regarding the responsibility for damage to the contractor's works the same shall be resolved as per the provisions of the clause 4.2.7. The contractor shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The contractor shall proceed to repair the work immediately and the cause thereof will be assigned pending resolution of such dispute.

4.2.13 EMPLOYMENT OF LABOUR

4.2.13.1 The contractor will be expected to employ on the work only his regular skilled employees with experience of his particular work. No female labour shall be employed after darkness and no person below the age of eighteen years shall be employed.

4.2.13.2 All traveling expenses including provisions of all necessary transport to and from site, lodging and other payments to contractor’s employees shall be the sole responsibility of the contractor.

4.2.13.3 The hour of work on the site shall be decided by the owner and the contractor shall adhere to it. The work will normally be done on 3 shifts of 8 hours per day basis. Working hours per worker will normally be eight (8) hours per day.

4.2.13.4 Contractor's employees shall wear identification badges while on work on site.

4.2.13.5 The contractor will pay minimum wages which must not be less than as provided by the applicable statute. In case the owner become liable to pay any wages or dues to the labour or to any Government agency under any of the provisions of the Minimum Wages Act, Workmen compensation act, Contract Labour Regulation Abolition Act, CMPF Act/EPF Act or any other law due to act of omission or commission of the contractor, the owner may make such payments and shall recover the same from the contractor's bills.

4.2.14 FACILITIES TO BE PROVIDED BY THE EMPLOYER
The details of facilities to be provided by the Employer will be given in the 'special terms and conditions' and will be site specific. However, the following facilities subject to details given in 'special terms and conditions' will be provided.

4.2.14.1 Space

Exact requirement of space for his office, mess-room, storage area, pre-assembly and fabrication areas, labour colony area, toilets, etc. shall be mentioned in the DPR. Space will be provided by the Employer as per the provision of approved DPR in a phased manner.

4.2.14.2 Electricity

The Employer will provide electricity for the purposes of the contract only at one point in the project site free of cost by the company for production holding consumption of power including mine office / workshop. Cost towards supply of electricity for other installations / uses etc. is to be deducted from on account bills of the contractor. The distribution from the point thus provided to different required points for production activities will be the responsibility of the bidder. The bidder is to comply the terms and conditions of Indian Electricity Rules and any other statutory rules for all the distribution and transmission of power. The bidder shall state the maximum demand of power and rate of consumption of power for the work.

4.2.14.3 Medical facilities

Medical facilities from near-by area hospital will be made available to the Contractor’s employees on chargeable basis. The owner will provide the contractor, in case of an emergency the services of an ambulance, if available for transportation to the nearest hospital.

4.2.14.4 Water

It will be the owner's responsibility to identify source of water and to get required approvals of drawing water from the source from the statutory bodies.

4.2.14.5 Explosives
The Employer will provide the explosives and accessories from the nearby mine magazine free of cost. However, norms of powder factor shall be decided by the company during the time of actual execution of the work. The Contractor will make his own arrangement for transporting the explosive and detonator in accordance with applicable rules and regulations with proper security arrangement.

4.2.15 FACILITIES TO BE PROVIDED BY THE CONTRACTOR

4.2.15.1 Tools, tackles and scaffoldings

The contractor shall provide all the construction equipment, tools, tackles and scaffoldings required for pre-assembly, erection, testing and commissioning of the equipment covered under the contract. He shall submit a list of all such materials to the engineer before the commencement of pre-assembly at site. These tools and tackles shall not be removed from the site without the written permission of the engineer.

4.2.15.2 First-aid & Medical facilities

The contractor shall provide necessary first-aid facilities for all his employees, representatives and workmen working at the site. Enough number of contractor’s personnel shall be trained in administering first-aid. All medical expenses arranging out of any accident or otherwise involving personnel of the contractor shall be borne by the contractor.

4.2.15.3 Water

The Contractor shall make his own arrangements for bringing water up to the site and its distribution for surface and underground facilities.

4.2.15.4 Cleanliness

i) The contractor shall be responsible for keeping the entire area allotted to him clean and free from rubbish, debris etc. during the period of contract. The contractor shall employ enough number of special personnel to thoroughly clean his work area. All such rubbish and scrap material shall be stacked or
disposed in a place to be identified by the engineer. Materials and stores shall be so arranged to permit easy cleaning of the area. In areas where equipment might drip oil and cause damage to the floor surface, a suitable protective cover of a flame resistant, oil proof sheet shall be provided to protect the floor from such damage.

ii) Similarly the labour colony, the offices and the residential areas of the contractor’s employees and workmen shall be kept clean and neat to the entire satisfaction of the engineer. Proper sanitary arrangement shall be provided by the contractor, in the work areas, office and residential areas of the contractor.

4.2.16 LINES AND GRADES

All the works shall be performed to the lines, grades and elevations indicated on the drawings. The contract shall be responsible to locate and layout the works. Basic horizontal and vertical control points will be established and marked by the contractor at site at suitable points. These points shall be used as datum for the works under the contract. The contractor shall inform the engineer well in advance of the times and places at which he wishes to do work in the area allotted to him. Any work done without being properly located may be removed and/or dismantled by the engineer at contractor’s expense.

4.2.17 FIRE PROTECTION

4.2.17.1 The work procedures that are to be used during the contract period shall be those which minimize fire hazards to the extent practicable. Combustible materials, Combustible waste and rubbish shall be collected and removed from the site at least once each day. Fuels, oils, and volatile or flammable materials shall be stored away from the construction and equipment and materials storage areas in safe containers. Untreated canvas, paper, plastic or other such flammable materials shall not at all be used at site for any other purpose unless otherwise specified. If any such materials are received with the equipment at the site, the same shall be removed and replaced with acceptable material before moving into the construction area or storage.
4.2.17.2 Similarly corrugated paper fabricated cartons etc. will not be permitted in the construction area either for storage or for handling of materials. All such materials used shall be water proof and flame resistant type. All the other materials such as working drawings, plans, etc. which are combustible but are essential for the works to be executed shall be protected against combustion resulting from welding sparks, cutting flames and other similar fire source.

4.2.17.3 All the contractor's supervisory personnel and sufficient number of workers shall be trained for fire-fighting and shall be assigned specific fire protection duties. Enough of such trained personnel must be available at the site during the entire period of the contract.

4.2.17.4 The contractor shall provide enough fire protection equipment of the types and the number for the warehouses, office, temporary structures, labour colony area etc. Access to such fire protection equipment, shall be easy and kept open at all times.

4.2.18 SECURITY

The contractor shall have total responsibility for all equipment and materials in his custody stored, loose, semi-assembled and/or installed by him at site. The contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages and loss.

4.2.19 CONTRACTOR’S AREA LIMITS

The engineer will mark out the boundary limits of access roads, parking spaces, storage and construction areas for the contractor and the contractor and his personnel should ensure that their activities are not interfering adversely with the operation of owner or other contractors. In case the area or facilities not allotted to the contractor are required, the same can be used only with the written permission of the engineer.
4.2.20 CONTRACTOR’S CO-OPERATION WITH THE OWNER

In cases where the performance of the work by the contractor affects the operation of the owner, such work of the contractor shall be scheduled to be performed only in the manner stipulated by the engineer and the same shall be acceptable at all times to the contractor. The engineer may impose such restrictions on the facilities provided to the contractor such as electricity, water etc. as he may think fit in the interest of the owner and the contractor shall strictly adhere etc. such restrictions and co-operate with the engineer. It will be the responsibility of the contractor to provide all necessary instrumentation and other measuring devices required during start-up and operation of the equipment systems which are installed by him. The contractor shall also be responsible for flushing and initial filling of all the oil and lubricants required for the equipment furnished and installed by him, so as to make such equipment ready for operation. The contractor shall be responsible for supplying such flushing oil and other lubricants in addition to the requirement of fills during operation.

4.2.21 PRE-COMMISSIONING TRIALS AND INITIAL OPERATIONS

The pre-commissioning trials and initial operations of the all equipments/ P&M furnished and installed by the contractor shall be the responsibility of the contractor. The contractor shall provide, in addition, test instruments, calibrating devices etc. and the labour required for the successful performance of these trials. It is anticipated that the above test may prolong for a long time, the contractor’s workmen required for the above test shall always be present at site during such trials.

4.2.22 MATERIALS HANDLING AND STORAGE

4.2.22.1 All the equipment furnished under the contract and arriving at site shall be promptly received, unloaded and transported and stored in the storage spaces by the contractor.
4.2.22.2 Contractor shall be responsible for examining all the shipment and notify the engineer immediately for any damage, shortage, discrepancy, etc. for the purpose of engineer’s information only. The contractor shall submit to the engineer every week a report detailing all the receipts during the week. However, the contractor shall be solely responsible for any shortage or damage in transit, handling and/or in storage and erection of the equipment at the site. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the contractor.

4.2.22.3 The contractor shall maintain an accurate and exhaustive record detailing out the list of all equipment received by him for the purpose of mine development and keep such record open for the inspection of the engineer at any time.

4.2.22.4 All equipment shall be handled very carefully to prevent any damage or loss. The equipment stored shall be properly protected to prevent damage either to the equipment or to the floor where they are stored. The equipment from the store shall be moved to the actual location at the appropriate time so as to avoid damage of such equipment at site.

4.2.22.5 All electrical panels, control gear, motors and such other devices shall be properly dried by heating before they are installed and energised. Motor bearings, slip rings, commutators and other exposed parts shall be protected against moisture ingress and corrosion during storage and periodically inspected. Heavy rotating parts in assembled condition shall be periodically rotated to prevent corrosion due to prolonged storage.

4.2.22.6 All the electrical equipment such as motors, generators, etc. shall be tested for insulation, resistance at least once in three months from the date of receipt till the date of commissioning and a record of such measured insulation values maintained by the contractor. Such records shall be open for inspection by the engineer.
4.2.22.7 The contractor shall ensure that all the packing materials and protection devices used for the various equipment during transit and storage are removed before the equipments are installed.

4.2.22.8 The consumable and other supplies likely to deteriorate due to storage must be thoroughly protected and stored in a suitable manner to prevent damage or deterioration in quantity and quality by storage.

4.2.22.9 All the materials stored in the open or duty location must be covered with suitable weather-proof and flame-proof covering materials wherever applicable.

4.2.22.10 If the materials belonging to the contractor are stored in areas other than those earmarked for him, the engineer will have the right to get it moved to the area earmarked for the contractor at the contractor’s cost.

4.2.22.11 The contractor shall be responsible for making suitable indoor storage facilities to store all equipment which require indoor storage. Normally, all the electrical equipment such as motors, control gear, generators, exciters and consumables like electrodes, lubricants etc. shall be stored in the closed storage space. The engineer, in addition, may direct the contractor to move certain other materials which in his opinion will require indoor storage, to indoor storage areas which the contractor shall strictly comply with.

4.2.23 CONSTRUCTION MANAGEMENT

4.2.23.1 The field activities of the contractors working at site, will be coordinated by the engineer and the engineer’s decision shall be final in resolving any disputes or conflicts between the contractor and other contractors and tradesman of the owner regarding scheduling and coordination of work. Such decision by the engineer shall not be a cause for extra compensation or extension of time for the contractor.

4.2.23.2 The engineer shall hold weekly meetings of all the contractors working at site, at a time and a place to be designated by the engineer. The
contractor shall attend such meetings and take notes of discussions during the meeting and the decisions of the engineer and shall strictly adhere to those decisions in performing his works. In addition to the above weekly meetings, the engineer may call for other meetings either with individual contractors or with selected number of contractors and in such a case the contractor, if called will also attend such meetings.

4.2.23.3 Time is the essence of the contract and the contractor shall be responsible for performance this works in accordance with the schedule. If at any time, the contractor is falling behind the schedule, he shall take necessary action to make good for such delays by increasing his work force or by working overtime or otherwise accelerate the progress of the work to comply with the schedule and shall communicate such actions in writing to the engineer, satisfying that his action will compensate for the delay. The contractor shall not be allowed any extra compensation for such action.

4.2.23.4 The engineer shall however not be responsible for provision of additional labour and/or materials or supply or any other services to the contractor except for the co-ordination work between various contractors, if any, as set out earlier.

4.2.24 FIELD OFFICE RECORDS

All records required by any statute, including the requirement imposed by DGMS, are to be kept in prescribed way during the contract period. The contractor shall maintain at his site office up-to-date copies of all drawings, specifications and other contract documents and any other supplementary data complete with all the latest revisions thereto. The contractor shall also maintain in addition the continuous record of all changes to the above contract documents, drawings, specifications, supplementary data etc. effected at the field and on completion of his total assignment under the contract shall incorporate all such changes on the drawings and other engineering data to indicate as installed condition of the equipment furnished and erected under the contract. Such drawings and engineering data shall be submitted to the engineer in required number of copies. Daily work
programme with progress of the previous day and deployment of labour related to work programme and attendance of workmen deployed during the previous day shall be maintained in a register. This register shall be signed by authorized representative of the contractor which will then be checked and signed by the owner’s representative. Every three months this register shall be deposited to the owner which shall then be owners’ property.

Additional records need to be kept during mine operation.

4.2.25 CONTRACTOR’S MATERIALS BROUGHT ON TO SITE

4.2.25.1 The contractor shall bring to site all equipment, parts, materials, including construction equipment, tools and tackles for the purpose of the works with intimation to the engineer. All such goods shall, from the time of their being brought vest in the owner, but may be used for the purpose of the works only and shall not on any account be removed or taken away by the contractor without the written permission of the engineer. The contractor shall nevertheless be solely liable and responsible for any loss or destruction thereof and damage thereto.

4.2.25.2 The owner shall have a lien on such goods for any sum or sums which may at any time be due or owing to him by the contractor, under, in respect of or by reasons of the contract. After giving a fifteen (15) days notice in writing of his intention to do so, the owner shall be at liberty to sell and dispose of any such goods, in such manner as he shall think fit including public auction or private treaty and to apply the proceeds in or towards the satisfaction of such sum or sums due as aforesaid.

4.2.25.3 After the completion of the works, the contractor shall remove from the site under the direction of the engineer the materials such as construction equipment, erection tools and tackles, scaffolding etc. with the written permission of the engineer. If the contractor fails to remove such materials within fifteen (15) days of issue of a notice by the engineer to do so then the engineer shall have the liberty to dispose of such materials as detailed under
clause 4.2.25.2 above and credit the proceeds thereto the account of the contractor.
4.2.26 PROTECTION OF PROPERTY AND CONTRACTOR’S LIABILITY

4.2.26.1 The contractor shall be responsible for any damage resulting from his operations. He shall also be responsible for protection of all persons including members of public and employees of the owner and the employees of other contractors and sub-contractors and all public and private property including structures, buildings, other plants and equipment and utilities either above or below the ground.

4.2.26.2 The contractor will ensure provision of necessary safety equipment such as fire fighting equipment, barriers, sign-boards, warning lights and alarms etc. to provide adequate protection to persons and property. The contractor shall be responsible to give reasonable notice to the engineer and the owners of public or private property and utilities when such property and utilities are likely to get damaged or injured during the performance of his works and shall make all necessary arrangements with such owners, related to removal and/or replacement or protection of such property and utilities.

4.2.27 PAINTING

All exposed metal parts of the equipment including piping, structure, railing etc. wherever applicable after installation unless otherwise surface protected, shall be first painted with at least one coat of suitable primer which matches the shop primer paint used, after thoroughly cleaning all such parts of all dirt, rust, scales, greases, oils and other foreign materials by wire brushing, scarping or sand blasting, and the same being inspected and approved by the engineer for painting. Afterwards, the above parts shall be finished with two coats of alloyed resin machinery enamel paints. The quality of the finish paint shall be as per BIS standards or equivalent and to be of the colour as approved by the engineer.

4.2.28 UNFAVOURABLE WORKING CONDITIONS

The contractor shall confine all his field operations to those works which can be performed without subjecting the equipment and materials to adverse effects, during inclement weather conditions, like monsoon, storms etc. and
during other unfavorable construction conditions. No field activities shall be performed by the contractor under conditions which might adversely affect quality and efficiency thereof, unless special precautions or measures are taken by the contractor in a proper and satisfactory manner in performance of such works and with concurrence of the engineer. Such unfavorable construction conditions will in no way relieve the contractor of his responsibility to perform works as per the schedule.

4.2.29 PROTECTION OF MONUMENTS AND REFERENCE POINTS

The contractor shall ensure that any finds such as relic, antiquity, coins, fossils etc. which he might come across during the course of performance of his works either during excavation or elsewhere, are properly protected and handed over to the engineer. Similarly the contractor shall ensure that the bench marks, reference points, etc. which are marked out either with the help of engineer or by the engineer shall not be disturbed in any way during the performance of his works. If any work is to be performed which disturb such references, the same shall be done only after these are transferred to other suitable locations under the direction of the engineer. The contractor shall provide all necessary materials and assistance for such relocation of reference points etc.

4.2.30 WORK AND SAFETY REGULATIONS

4.2.30.1 The contractor shall ensure proper safety of all the workmen, materials, plant and equipment belonging to him or the Company or to others, working at or near the site. The contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislation and the Engineer-in-charge as he may deem necessary.

4.2.30.2 The contractor will notify well in advance to the Engineer-in-charge of his intention to bring to the site any container filled with liquid or gaseous
fuel or explosive or petroleum substance or such chemicals which may involve hazards. The Engineer-in-charge shall have the right to prescribe the conditions, under which such container is to be stored, handled and used during the performance of the works and the contractor shall strictly adhere to and comply with such instructions. The Engineer-in-charge shall have the right at his sole discretion to inspect any such container or such construction plant/equipment for which material in the container is required to be used and if in his opinion, its use is not safe, he may forbid its use. No claim due to such prohibition shall be entertained by the owner. Nor the owner shall entertain any claim of the contractor towards additional safety provisions/conditions to be provided or constructed as per Engineer-in-charge's instructions.

Further any such decision of Engineer-in-charge shall not, in any way, absolve the contractor of his responsibilities, and in case, use of such a container or entry there of into the site area is forbidden by Engineer-in-charge, the contractor shall use alternative methods with the approval of Engineer-in-charge without any cost implication to Company or extension of work schedule.

4.2.30.3 Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives, the contractor shall be responsible for carrying out such provision and/or storage in accordance with the rules and regulations laid down in Petroleum Act 1934, Explosives Act 1948, and Petroleum and Carbide of Calcium Manual Published by the Chief Inspector of Explosives of India. All such storage shall have prior approval of the Engineer-in-charge. In case, any approvals are necessary from the Chief Inspector (Explosives) or any statutory authorities, the contractor shall be responsible for obtaining the same.

4.2.30.4 All equipment used in development and construction purpose by contractor shall meet Indian, Inter-national Standards and where such standards do not exist, the contractor shall ensure these to be absolutely safe. All equipment shall be strictly operated and maintained by the contractor in accordance with manufacturer’s operation manual and safety instructions and per Guidelines/ Rules of the Company in this regard. Provisions of Coal
mine regulations and related circulars must be satisfied in this regard. Any other law, for the time being in force, connected with coal mining operation should be strictly adhered to.

4.2.30.5 Periodical Examinations and all tests for all lifting/hoisting equipment and tackles shall be carried out in accordance with the relevant provisions of Factories Act 1948, Indian Electricity Act 2001 and associated Laws/Rules enforced from time to time. A register of such examination and tests shall be properly maintained by the contractor and will be promptly produced as and when desired by Engineer-in-charge or by the person authorised by him.

4.2.30.6 The contractor shall be fully responsible for the safe storage of his and his sub-contractors radio-active sources, if any, in accordance with BARC/DAE Rules and other applicable provisions. All precautionary measures stipulated by BARC/DAE in connection with use, storage and handling of such material will be taken by contractor.

4.2.30.7 The contractor shall provide suitable safety equipment of prescribed standard to all employees and workmen according to the need or as may be directed by Engineer-in-charge who will also have right to examine these safety equipment to determine their suitability, reliability, acceptability and adaptability.

4.2.30.8 Where explosives are to be used, the same shall be used under the direct control and supervision of an expert, experienced, qualified and competent person strictly in accordance with the code practices/rules framed under Indian Explosives Act pertaining to handling, storage and use of the explosives.

4.2.30.9 The contractor shall provide safe working conditions to all workmen and employees at the site including safe means of access, railings, stairs, ladders, scaffoldings etc. The scaffoldings, stairs, ladders etc. shall be erected under the control and supervision of an experienced and competent person. For erection, good and standard quality of material only shall be used by the contractor.
4.2.30.10 The contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to the owner or other contractors under any circumstances, whatsoever, unless expressly permitted in writing by the Company to handle such fuses, wiring or electrical equipment.

4.2.30.11 Before the contractor connects any electrical appliances to any plug or socket belonging to the other contractor or owner, he shall:
   a. Satisfy the Engineer-in-charge that the appliances is in good working condition.
   b. Inform the Engineer-in-charge of the maximum current rating, voltage and phases of the appliances.
   c. Obtain permission of the Engineer-in-charge detailing the sockets / bus bars to which the appliances may be connected.

4.2.30.12 The Engineer-in-charge will not grant permission to connect until he is satisfied that:
   a. The appliance is in good condition and is fitted with a suitable plug.
   b. The appliance is fitted with a suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.

4.2.30.13 No electrical cable which is in use by the contractor/owner will be disturbed without prior permission. No weight of any amount will be imposed on any cable and no ladder or similar equipment will rest against or attached to it.

4.2.30.14 No repair work shall be carried out on any live equipment. The equipment must be declared safe by Engineer-in-charge and a permit to work shall be issued by Engineer-in-charge before any repair work is carried out by the contractor. While working on electric lines/equipments, whether alive or dead, suitable type and sufficient quantity of tools will have to be provided by contractor to electricians/workmen/officers.

4.2.30.15 The contractor shall employ necessary number of qualified, full time electricians/electrical supervisors to maintain electrical installations.
4.2.30.16 The contractor employing more than 250 workmen whether temporary, casual, probationer, regular or permanent or on contract, shall employ at least one full time officer exclusively as safety officer to supervise safety aspects of the equipment and workmen who will co-ordinate with the project safety officer. In case of work being carried out through sub-contractor’s, the sub-contractor’s workmen/employees will also be considered as the contractor’s employees/workmen for above purpose. The name and address of such safety officer of contractor will be promptly informed in writing to Engineer-in-charge with a copy to safety officer-in-charge before he starts work or immediately after any change of the incumbent is made during currency of the contract.

4.2.30.17 In case any accident occurs during the construction/erection or other associated activities undertaken by the contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the contractor to promptly inform the same to the company’s Engineer-in-charge in prescribed form and also to all the authorities envisaged under the applicable laws.

4.2.30.18 The Engineer-in-charge shall have the right at his sole discretion to stop the work, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and/or property, and/or equipment. In such cases, the contractor shall be informed in writing about the nature of hazards and possible injury/accident and he shall comply to remove short comings promptly. The contractor after stopping the specific work, can, if felt necessary, appeal against the order of stoppage of work to the General Manager of the project within 3 days of such stoppage of work and decision of the project G.M. in this respect shall be conclusive and binding on the contractor.

4.2.30.19 The contractor shall not be entitled for any damages/compensation for stoppage of work due to safety reasons as provided in clause 4.2.30.18 above and the period of such stoppage of work will not be taken as an extension of time for completion of work and will not be the ground for waiver of levy of liquidated damages.
4.2.30.20 The contractor shall follow and comply with all the Company safety rules relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without demur, protest or content or reservation. In case of any inconformity between statutory requirement and the Company safety rules referred above, the later shall be binding on the contractor unless the statutory provisions are more stringent.

4.2.30.21 If the contractor fails in providing safe working environment as per the Company safety rules or continues the work even after being instructed to stop work by Engineer-in-charge as provided in clause 4.2.30.18 above, the contractor shall promptly pay to the Company, on demand i.e. by the owner compensation at the rate of Rs. 5,000/- per day or part thereof till the instructions are complied with and so certified by the Engineer-in-charge. However in case of accident taking place causing injury to any individual, the provisions contained in clause 4.2.30.22 shall also apply in addition to compensation mentioned in this clause.

4.2.30.22 If the contractor does not take all safety precautions and/or fails to comply with the safety rules as prescribed by the Company or under the applicable laws for the safety of the equipment and plant and for the safety of personnel and the contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other contractors, or the Company employees or any other person who are at site or adjacent thereto, the contractor shall be responsible for payment of compensation under the relevant provisions of the workmen’s compensation act and rules framed thereunder or any other applicable laws as applicable from time to time. Permanent disablement shall have same meaning as indicated in workmen’s compensation act. The compensation mentioned above shall be in addition to the compensation payable to the workmen / employees under the relevant provision of the workmen’s compensation act and rules framed thereunder or any other applicable laws as applicable from time to time.

In case the owner is made to pay such compensation then the contractor is
liable to reimburse the owner such amount.

4.2.31 CODE REQUIREMENTS
The erection requirements and procedures to be followed during the installation of the equipment shall be in accordance with the relevant Codes/Regulations. ASME codes and accepted good engineering practice, the engineer’s drawings and other applicable Indian recognized codes and the laws and regulations of the Government of India.

4.2.32 FOUNDATION DRESSING AND GROUTING
4.2.32.1 The surfaces of foundations shall be dressed to bring the top surface of the foundations to the required level, prior to placement of equipment/equipment bases on the foundations.

4.2.32.2 All the equipment bases and structural steel base plates shall be grouted and finished as per these specifications unless otherwise recommended by the equipment manufacturer.

4.2.32.3 The concrete foundation surfaces shall be properly prepared by chipping, grinding as required to bring the type of such foundation to the required level, to provide the necessary roughness for bondage and to assure enough bearing strength. All laitance and surface film shall be removed and cleaned.

4.2.33 GROUTING MIX
The grouting mixtures shall be composed of Portland cement, sand and water. The Portland cement to be used shall conform to ISI No. 269 or equivalent, sand shall conform to ISI No. 383/2386 or equivalent. The grout proportions for flat based where the grouting space does not exceed 35 mm shall be 50 kg bag of cement to 75 kg of sand. Only the required quantity of water shall be added so as to make the mix quaky and flowable and the mix shall not show excess water on top when it is being puddle in place. For thicker grout beds upto 65 mm, the amount of sand shall be increased to 105 kg per bag of cement. Bases which are hollow and are to be filled full of grouting shall be filled to a level of 25 mm above the outside rim with a mortar mix in the volumetric proportions of one bag of cement and 1.5 bags
sand and 1.5 part 6 mm granite gravel. An acceptable plasticiser may be added to the grout mixes in a proportion recommended by the plasticisers manufacturer. All such grouts shall be thoroughly mixed for not less than five minutes in an approved mechanical mixer and shall be used immediately after mixing.

4.2.33.1 PLACING OF GROUT

After the base has been prepared, its alignment and level has been checked and approved and before actually placing the grout a low dam shall be set around the base at a distance that will permit pouring and manipulation of the grout. The height of such dam shall be at least 25 mm above the bottom of the base. Suitable size and number of chains shall be introduced under the base before placing the grout, so that such chains can be moved back and forth to push the grout into every part of the space under the base.

The grout shall be poured either through grout holes if provided or shall be poured at one side or at two adjacent sides giving it a pressure head to make the grout move in a solid mass under the base and out in the opposite side. Pouring shall be continued until the entire space below the base is thoroughly filled and the grout stands at least 25 mm higher all around than the bottom of the base. Enough care should be taken to avoid any air or water pockets beneath the bases.

4.2.33.2 FINISHING OF THE EDGES OF THE GROUT

The poured grout should be allowed to stand undisturbed until it is well set. Immediately thereafter, the dam shall be removed and grout which extends beyond the edges of the structural or equipment base plates shall be out off flush and removed. The edges of the grout shall then be pointed and finished with 1:2 cement mortar pressed firmly to bond with the body of the grout and smoothed with a tool to present a smooth vertical surface. The work shall be
done in a clean and scientific manner and the adjacent floor spaces, exposed edges of the foundations, and structural steel and equipment base plates shall be thoroughly cleaned of any spillage of the grout.

4.2.33.3 CHECKING OF EQUIPMENT AFTER GROUTING

After the grout is set and cured, the contractor shall check and verify the alignment of equipment, alignment of shafts of rotating machinery, the slopes of all bearing pedestals, centering of rotors with respect to their sealing bores, couplings, etc. as applicable and the like items to ensure that no displacement had taken place during grouting. The values recorded prior to grouting shall be used during such post grouting check-up and verifications. Such pre and post grout records of alignment details shall be maintained by the contractor in a manner acceptable to the engineer.

4.2.34 SHAFT ALIGNMENTS

All the shafts of rotating equipment shall be properly aligned to those of the matching equipment to as perfect accuracy as practicable. The equipment shall be free from excessive vibration so as to avoid over-heating of bearings or other conditions which may tend to shorten the life of the equipment. All bearings, shafts and other rotating parts shall be thoroughly cleaned and suitably lubricated before starting.

4.2.35 DOWELLING

All the motors and other equipment shall be suitably doweled after alignment of shafts with tapered machined dowels as per the direction of the engineer.

4.2.36 CHECK OUT OF CONTROL SYSTEMS/POWER SUPPLY

After completion of wiring, cabling, the contractor shall check out the operation of all control systems for the equipment furnished and installed under these specifications and documents. The contractor shall get the drawings pertaining to the control system, power supply etc. approved from
Directorate General of Mine Safety (DGMS) or any other appropriate authority as necessary, wherever required as per the rules and regulations of the Indian Mines Act governed by D.G.M.S.

4.2.37 COMMISSIONING SPARES

The contractor shall make arrangement for an adequate inventory at site of necessary commissioning spares prior to commissioning of the equipment furnished and erected so that any damage or loss during these commissioning activities necessitating the requirements of spares will not come in the way of timely completion of the works under the contract.

4.2.38 CABLELING

4.2.38.1 All cables shall be supported by conduits or cable tray run in air or in cable channels. These shall be installed in exposed runs parallel or perpendicular to dominant surfaces with right angle turn made of symmetrical bends or fittings. When cables are run on cable trays, they shall be clamped at a minimum interval of 2000 mm or otherwise as directed by the engineer.

4.2.38.2 Each cable, whether power or control, shall be provided with a metallic or plastic sheath of an approved type, bearing a cable reference number indicated in the cable and conduit list (prepared by the contractor) at every 5 m run or part there of and at both ends or the cable adjacent to the terminations. Cable routing is to be done in such a way that cables are accessible for any maintenance and for easy identification.

4.2.38.3 Sharp bending and kinking of cables shall be avoided. The minimum radii for PVC insulated cables 1100 V grade shall be 15D, where D is the overall diameter of the cable. Installation of other cables like high voltage, coaxial, screened, compensating, mineral insulated shall be in accordance with the cable manufacturer’s recommendations. Wherever cables cross roads and water, oil, sewage or gas lines, special care should be taken for the protection of the cables in designing the cable channels.
4.2.38.4 In each cable run some extra length shall be kept at a suitable point to enable one to two straight through joints to be made should the cable develop fault at a later date.

4.2.38.5 Control cable terminations shall be made in accordance with wiring diagrams, using identifying codes subject to engineer’s approval. Multi-core control cable jackets shall be removed as required to train and terminate the conductors. The cable jacket shall be left on the cable, as far as possible, to the point of the first conductor branch. The insulated conductors from which the jacket is removed shall be neatly twined in bundles and terminated. The bundles shall be firmly but not tightly tied utilizing plastic or nylon ties or specially treated fungus protected cord made for this purpose. Control cable conductor insulation shall be securely and evenly cut.

4.2.38.6 The connectors for control cables shall be covered with a transport insulating sleeve so as to prevent from accidental ground fault or short circuiting between the adjacent terminals and shall preferably terminate at the terminals and washers. The insulating sleeve shall be fire resistant and shall be long enough to over-pass the conductor insulation. All control cables shall be fanned out and connection made to terminal Projects and test equipment for proper operation before cables are corded together.
4.2.39 INSTRUCTION MANUALS

The contractor shall submit to the owner, preliminary instruction manuals for all the, P&M covered under the contract within the time agreed upon between the owner & the contractor. The final instruction manuals complete in all respects shall be submitted by the contractor thirty (30) days before the first shipment of the equipment. The instruction manuals shall contain full details and drawings of all the equipment furnished, the installation procedures, testing procedures, operation and maintenance procedures of the equipment. Six copies of instruction manuals shall be submitted.

The contractor shall furnish to the owner, six (6) sets of spare parts catalogue.

4.2.40 REFERENCE STANDARDS

4.2.40.1 The codes and/or standards referred to in these specifications shall govern, in all cases wherever such references are made. In case of a conflict between such codes and/or standards and the specifications, the latter shall govern. Such codes and/or standards referred to shall mean the latest revisions, amendments/changes adopted and published by the relevant agencies. In case of any further conflict in this matter, the same shall be referred to the engineer whose decision shall be final and binding.

4.2.40.2 Other internationally acceptable standards, which ensure equal or higher performance than those specified shall also be accepted.

4.2.41 DESIGN IMPROVEMENT

4.2.41.1 The engineer or the contractor may propose changes in the specification of the equipment or quality thereof and if the parties agree upon any such changes the specifications shall be modified accordingly.

4.2.41.2 If any such agreed upon change is such that it affects the price and schedule of completion, the parties shall agree in writing as to the extent of any change in the price and/or schedule of completion before the contractor
proceeds with the change. Following such agreement the provision thereof, shall be deemed to have been amended accordingly.

4.2.42 QUALITY ASSURANCE

4.2.42.1 Quality Assurance Programme

To ensure that the equipment and services under the scope of the contract whether manufactured or performed within the contractor’s works or at his sub-contractor’s premises or at the owner’s site or at any other place of work are in accordance with the specifications, the contractor shall adopt suitable quality assurance programme to control such activities at all points necessary. Such programme shall be outlined by the contractor and shall be finally accepted by the Engineer after discussions before the issue of letter of acceptance of tender. A quality assurance programme of the contractor shall generally cover the following:

a. his organisation structure for the management and implementation of the proposed quality assurance programme:

b. documentation control system:

c. qualification data for bidder’s key personnel:

d. the procedure for purchase of materials, parts components and selection of sub-contractor’s services including vendor analysis, source inspection, incoming raw-materials inspection, verification of materials purchased etc.:

e. system for shop manufacturing and site installation control including process control and fabrication and assembly controls:

f. control of non-conforming items and system for corrective actions:

g. inspection and test procedure both for manufacture and field activities:

h. control of calibration and testing of measuring and testing equipment:

i. system for indication and appraisal of inspection status:
j. system for quality audits:

k. systems for authorizing release of manufactured product to the owner:

l. system for maintenance of records:

m. system for handling storage and delivery: and

n. a quality plan detailing out the specific quality control procedure adopted for controlling the quality characteristics relevant to each item of equipment furnished and each work at different stages executed at work site.

4.2.42.2 Quality Assurance Documents

The contractor shall be required to submit the following Quality Assurance Documents within three weeks after despatch of the equipment:

i) all non-destructive examination procedures stress relief and weld repair procedure actually used during fabrication.

ii) welder and welding operator qualification certificates

iii) welder identification list, listing welder's and welding operator's qualification procedure and welding identification symbols.

iv) material mill test reports on components

v) the inspection plan with verification, inspection plan check points, verification sketches, if used, and methods used to verify that the inspection and testing points in the inspection plan were performed satisfactorily.

vi) sketches and drawings used for indicating the method of traceability of the radiographs to the location on the equipment.

vii) all non-destructive examination result reports including radiography interpretation reports.

viii) stress relief time temperature charts.
ix) factory test results for testing required as per applicable codes and standards.

x) the engineer or his duly authorized representative reserves the right to carry out quality audit and quality surveillance of the systems and procedures of the contractor /his vendor’s quality management and control activities.

4.2.43 ENGINEER’S SUPERVISION

4.2.43.1 To eliminate delays and avoid disputes and litigation it is agreed between the parties to the contract that all matters and questions shall be referred to the engineer or dispute resolution committee (DRC) as the case may be and their decision shall be final.

4.2.43.2 The work shall be performed under the direction and supervision of the engineer. The scope of the duties of the engineer, pursuant to the contract, will include but not be limited to the following:

a) Interpretation of all the terms and conditions of these documents and specification.

b) Review and interpretation of all the contractor’s drawings, engineering data etc.

c) Witness or authorize his representative to witness tests and trials either at the manufacture’s works or at site, or at any place where work is performed under the contract.

d) Inspect, accept or reject any equipment, material and work under the contract.

e) Issue certificate of acceptance and/or progressive payment and final payment certificates.

f) Review and suggest modifications and suggestions in completion schedules from time to time.
g) Supervise the quality assurance programme implementation at all stages of the works.

h) To receive and endorse the despatch documents enabling the contractor to clear the consignments.

4.2.44 INSPECTION, TESTING AND INSPECTION CERTIFICATE

4.2.44.1 The engineer, his duly authorised representative and/or outside inspection agency acting on behalf of the owner shall have at all reasonable times, access to the contractor’s premises or works and shall have the power after a reasonable notice period of 2 days for inspection at local works/locations and 7 days for foreign works/locations except for surprise inspection, if required, to inspect and examine the materials and workmanship of the works during its manufacture or installation and if part of the works is being manufactured or assembled at other premises or works, the contractor shall obtain permission for the engineer to inspect as if the works were manufactured or assembled on the contractor’s own premises or works.

4.2.44.2 The contractor shall give the Engineer/ Inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the contractor’s account except for the expenses of the Inspector. The Engineer/ Inspector, unless witnessing of the tests is waived, will attend such tests within fifteen (15) days of the date on which the equipment is notified as being ready for test/inspection, failing which the contractor may proceed with the test which shall be deemed to have been made in the Engineer/ Inspector’s presence and he shall forthwith forward to the Inspector duly certified copies of tests in triplicate.

4.2.44.3 The Engineer or Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the contractor, of any objection to any drawings and all or any equipment and workmanship which in his opinion is not in accordance with the contract. The contractor shall give due consideration to such objections and shall either make the modifications that may be necessary to meet the said objections or shall
confirm in writing to the Engineer/Inspector giving reasons therein, that no modifications are necessary to comply with the contract.

4.2.44.4 When the factory tests have been completed at the contractor’s or sub-contractor’s works, the Engineer/Inspector shall issue a certificate to this effect within fifteen (15) days after completion of tests but if the tests are not witnessed by the Engineer/inspector, the certificate shall be issued within fifteen (15) days of the receipt of the contractor’s test certificate by the Engineer/Inspector. Failure of the Engineer/Inspector to issue such a certificate shall not prevent the contractor from proceeding with the works. The completion of these tests or the issue of the certificate shall not bind the owner to accept the equipment should it on further tests after installation be found not to comply with the contract.

4.2.44.5 In all cases where the contract provides for tests whether at the premises or works of the contractor or of any sub-contractor, the contractor, except where otherwise specified, shall provide free of charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be reasonably demanded by the Engineer/inspector or his duly authorized representative to carry out effectively such tests of the equipment in accordance with the contract and shall give facilities to the Engineer/inspector or his duly authorized representative to accomplish testing.

4.2.44.6 The inspection by Engineer and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the contractor in respect of the agreed quality assurance programme forming a part of the contract.

4.2.45 TEST

4.2.45.1 Start-up

i) On completion of installation of the equipment and before start-up, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the Engineer and the contractor for correctness and completeness of
installation and acceptability of start-up, leading to initial pre-commissioning tests at site. The list of pre-commissioning tests to be performed shall be as mutually agreed and included in the contractor’s quality assurance programme. The contractor shall be responsible for carrying out all the pre-commissioning tests. Employer shall be given Notice of three (3) days, for witnessing of Pre-commissioning tests to be carried out by the contractor.

ii) The contractor shall be responsible for carrying out all the pre-commissioning tests. On completion of inspection, checking and after the pre-commissioning tests are satisfactorily over, the complete equipment shall be placed on initial operation during which period the complete equipment shall be operated integral with sub-systems and supporting equipment as a complete plant referred hereinafter as plant.

4.2.45.2 Trial Operation

i) The plant shall then be on trial operation during which period all necessary adjustments shall be made while operating over the full-load range enabling the plant to be made ready for performance and guarantee tests. Employer shall be given Notice of three (3) days, for witnessing of Trial Operation to be carried out by the contractor.

ii) The duration of trial operation of the complete equipment shall be fourteen (14) days out of which at least seventy two (72) hours shall be continuous operation on full load or any other duration as may be agreed to, between the engineer and the contractor. The trial operation shall be considered successful, provided that each item of the equipment can operate continuously at the specified operating characteristics, for the period of trial operation. For any failure, trial run should be repeated.

iii) For the period of trial operation, the time of operation with any load shall be counted. Minor interruption not exceeding one (1) hours at a time, caused during the continuous operation shall not affect the total duration of trial operation. However, if in the opinion of the engineer, the interruption is long, the trial operation shall be prolonged for the period of interruption.
iv) A trial operation report comprising of observations and recordings of various parameters to be measured in respect of the above trial operation shall be prepared by the contractor. This report, besides recording the details of the various observations during trial run, shall also include the dates of start and finish of the trial operation and shall be signed by the representatives of both the parties. The report shall have sheets, recording all the details of interruptions occurred, adjustments made and any minor repairs done during the trial operation. Based on the observations, necessary modifications/repairs to the plant shall be carried out by the contractor to the full satisfaction of the engineer to enable the later to accord permission to carry out performance and guarantee tests on the plant. However, minor defects which do not endanger the safe operation of the equipment, shall not be considered as reasons for with holding the aforesaid permission.

4.2.45.3 Performance and guarantee test

i) The final test as to the performance and guarantee shall be conducted at site, by the Contractor to be witnessed by the Employer. Such tests will be commenced within a period of two (2) months after successful completion of trial operations. Any extension of time beyond the above two (2) months shall be mutually agreed upon. Employer shall be given Notice of three (3) days, for witnessing of Trial Operation to be carried out by the contractor.

ii) These tests shall be binding on both the parties of the contract to determine compliance of the equipment with the performance guarantees.

iii) The available instrumentation and control equipment will be used during such tests and the engineer will calibrate all such measuring equipment and devices as far as practicable. However, un-measurable parameters shall be taken into account in a reasonable manner by the engineer, for the equipment of these tests. The tests will be conducted at the specified load points and as near the specified cycle condition as practicable. The engineer will apply proper corrections in calculation, to take into account conditions which do not correspond to the specified conditions.
iv) Any special equipment, tools and tackles required for the successful completion of the performance and guarantee tests shall be provided by the contractor, free of cost.

v) The guaranteed performance figures of the equipment shall be proved by the contractor during these performance and guarantee tests. Should the results of these tests show any adverse deviation from the guaranteed values, the contractor shall modify the equipment as required to enable it to meet the guarantees. In such case, performance and guarantee tests shall be repeated within one month, from the date the equipment is ready for re-tests and all cost for modifications including labour, materials and the cost of additional testing to prove that the equipment meets the guarantees, shall be borne by the contractor. Duration of performance guarantee tests will be of one month of which six(6) days continuous on load operation is the minimum requirement and in case it fails, the process of performance guarantee tests will be repeated. The contractor will be given five chances within a span of three months, to establish the performance of his deliverable P&M during performance test. In case the equipment fails to meet the test requirement in five chances, the owner shall have the right to reject such equipment.

vi) The specific tests to be conducted on equipment should include those given in the technical specifications.

vii) Performance and guarantee test shall make allowance for instrumentation errors, which shall be based on applicable internationally acceptable standards.

4.2.46 TEST CODES

The provisions outlined in the ASME performance test codes or other international and Indian approved equivalents shall generally be used as a guide for all the above test procedures.

4.2.47 PACKING

All the equipments shall be suitably protected, coated, covered or boxed and
crated to prevent damage or deterioration during transit, handling and storage at site till the time of installation. While packing all the materials, the limitations from the point of view of availability of railway wagon sizes in India should be taken into account. The contractor shall be fully responsible for any loss or damage during transportation, handling and storage due to improper packing.

4.2.48 PROTECTION

All coated surfaces shall be protected against abrasions, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all valves and piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get rusted, due to exposure to weather, should also be properly treated and protected in a suitable manner.

4.2.49 PRESERVATIVE SHOP COATING

4.2.49.1 All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces which will not be easily accessible after the shop assembly, shall before hand be treated and protected for the life of the equipment. All surfaces shall be thoroughly cleaned of all mill scale, oxide and other coatings and prepared in the shop. The surfaces that are to be finish painted after installation or require corrosion protection until installation, shall be shop painted with at least two-coats of primer. Electrical equipments shall be shop finished with one or more coats of primer and two coats of high grade resistance enamel. The finished colours shall be as per manufacturer’s standards to be selected by the engineer.

4.2.49.2 Shop primer for all steel surfaces which will be exposed to operating temperature below 95\(^{0}\)C shall be selected by the contractor, after obtaining specific approval of the engineer regarding the quality of primer proposed to be applied. Special high temperature primer shall be used on surfaces exposed to temperatures higher than 95\(^{0}\)C and such primers shall also be subject to the approval of the engineer.
4.2.49.3 All other steel surfaces which are not to be painted shall be coated with suitable dust preventive compound subject to the approval of the engineer.

4.2.50 PROTECTIVE GUARDS

Suitable guards shall be provided for protection of personnel on all exposed rotating and/or moving machine parts. All such guards with accessories shall be designed for easy installation and removal for maintenance purposes.

4.2.51 DESIGN CO-ORDINATION

The contractor shall be responsible for the selection and design of appropriate equipment to provide the best coordinated performance of the entire system. The design of various components, sub-assemblies and assemblies shall be so done so that it facilitates easy field assembly and maintenance. All the rotating components shall be so selected that the natural frequency of the complete unit is not critical or close to the operating range of the unit.

4.2.52 CO-ORDINATION MEETING

The contractor will be called upon to attend co-ordination meetings with the engineer, other contractors and the consultants of the owner during the period of contract. The contractor shall attend such meetings at his own cost at the office of the G.M (................ area) or at mutually agreed venue as and when required and fully co-operate with such persons and agencies involved during those discussions.

4.2.53 TOOLS AND TACKLES

The contractor shall supply with the equipment two (2) complete sets of all special tools and tackles for the installation, assembly, dis-assembly and maintenance of the equipment. However, these tools and tackles shall be separately packed and brought on to site.
4.2.54 NOISE LEVEL

The equivalent “A” weighted sound level measured at a distance of 1.5 meters above floor level in elevation and one meter horizontally from the base of any equipment furnished and installed under these specifications, expressed in decibels to a reference of 0.0002 microbar, shall not exceed 85 dBA.

4.2.55 TAKING OVER /CLEARANCE CERTIFICATE OF P&M

Upon successful completion of all the tests to be performed at site on equipment furnished and installed by the contractor, and after trial run and commissioning, the engineer shall issue to the contractor a clearance certificate of the P&M to facilitate the payment for the equipment. Such certificate shall not relieve the contractor of any of his obligations as per the terms and conditions of the contract to operate and maintain the P&M to produce guaranteed quantity of coal. The final takeover date will be on taking over the mine and associated infrastructure as well as P&M after successful completion of commercial production period of 9 years and a certificate to that effect will be issued by the Engineer.

4.2.56 INDIAN STANDARDS

Normally Indian Standards as published by BUREAU OF INDIAN STANDARDS shall be followed. Wherever relevant Indian Standard is not published by the BIS, International Standards or American Standard or German Standard or British Standard as decided by the Engineer in consultations with the consultants employed by the owner, shall be followed.

4.2.57 WELDING

If the manufacturer has special requirements relating to the welding procedures for welds at the terminals of the equipment to be procured by the
owner under separate specifications, the requirements shall be submitted to the engineer in advance of commencement of installation work.

4.2.58 LUBRICATION

Equipment shall be lubricated by systems designed for continuous operation. Lubricant level indicators shall be furnished and marked to indicate proper levels under both standstill and operating conditions.

4.2.59 EQUIPMENT BASES

A cast iron or welded steel base plate shall be provided for all rotating equipment which is to be installed on a concrete/structural steel base unless otherwise agreed to by the engineer. Each base plate shall be of proper design to support the unit and/or its drive. There should be provisions for proper anchoring and pads. Base plate shall have a raised lip all around and shall have proper drain connection.

4.2.60 RATING PLATES, NAME PLATES AND LABELS

4.2.60.1 Each main and auxiliary items of plant is to have permanently attached to it in a conspicuous position a rating plate of non-corrosive material upon which is to be engraved the manufacturer's name, equipment, type or serial number, together with details of the loading conditions etc. under which the item of plant in question have been designed to operate, and such diagram plates as may be required by the engineer.

4.2.60.2 Each item of plant is to be provided with a nameplate or label designating the service of the particular equipment. The inscriptions are to be approved by the engineer.

4.2.60.3 Such nameplates or labels are preferably to be of white non-hygroscopic material with engraved black lettering or, alternatively, in the case of indoor circuit breakers, starters etc. of transparent plastic material with suitably coloured lettering engraved on the back.
4.2.60.4 Items of plant, which are subject to handling, are to be provided preferably with an engraved chromium plated nameplate or level with engraving filled with enamel.

4.2.60.5 All such name plates, instruction plates, lubrication charts etc. shall be bilingual with Hindi inscription first, followed by English. Alternatively two separate plates one with Hindi and the other with English inscriptions may be provided.

4.2.61 COLOUR CODE FOR PIPE SERVICES

All pipe services wherever applicable are to be painted in accordance with the owner’s standard colour scheme, if any, by the contractor.

4.3 SPECIAL TERMS AND CONDITIONS

Mine/ Project specific information about status of exploration, available infrastructure, availability of land, status of available reports, location of coal delivery point, electricity point, water resources, etc. will be provided by the employer)

4.3.1 STATUS OF EXPLORATION

(a) Total Assessment Area 3.5 Sq. Km.
(b) Total No. of boreholes 34
(c) Total Meterage drilled 19851.82 m
(d) Borehole density 9.7 BHs /Km²

<table>
<thead>
<tr>
<th>MECL</th>
<th>28 BHs.</th>
<th>15280.20 m.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSI</td>
<td>6 BHs.</td>
<td>4571.62</td>
</tr>
<tr>
<td>Total</td>
<td>34 BHs.</td>
<td>19851.82 m.</td>
</tr>
</tbody>
</table>

The borehole density within the project area is about 9.7 BHs./Sq.Km

4.3.2 AVAILABLE INFRASTRUCTURE

Details of infrastructural facilities available at the project site have been given in Chapter-V
4.3.3 AVAILABILITY OF LAND

The existing leasehold boundary of Madhuband colliery has been shown on the Surface Plan (Plate No-II)/ Land status Plan (Plate No. XXVIII) / Mouza Plan (Plate No.-XXVII). The existing status of land in the leasehold area has been shown in Land status Plan (Plate No.-XXVIII) / Mouza Plan (Plate No. -XXVII). The area of land under the heads of Private Land / Tenancy Land, Railway Land, Government Land and BCCL Land within the Colliery leasehold area has been considered as per the records from the mine/BCCL.

The existing land status under the different heads in the leasehold area of the mine is as under:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars of Land</th>
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<tbody>
<tr>
<td>1</td>
<td>Private Land/ Tenancy Land</td>
<td>193.76</td>
</tr>
<tr>
<td>2</td>
<td>Railway Land</td>
<td>22.37</td>
</tr>
<tr>
<td>3</td>
<td>Government Land</td>
<td>78.03</td>
</tr>
<tr>
<td>4</td>
<td>BCCL Land</td>
<td>99.57</td>
</tr>
<tr>
<td></td>
<td>Total Land in the leasehold Area</td>
<td>393.74</td>
</tr>
</tbody>
</table>

4.3.4 STATUS OF AVAILABLE REPORTS

No project report has been prepared in the past for this mine.

4.3.5 LOCATION OF COAL DELIVERY POINTS, ELECTRICITY POINT, WATER RESOURCES ETC.

COAL DELIVERY POINT

On surface, at the existing discharge point

ELECTRICITY POINT

Madhuband colliery receives power at 11 kV through No 4 feeder and at 6.6 kV through B/H feeder from Madhuband D.G. Sub-station of BCCL which in turn receives power at 33 kV from Chandrapura Power Sub-station of DVC.

This Madhuband D.G. sub-station of BCCL has installed transformer capacity of 75 MVA and caters power to other adjacent collieries of BCCL also in addition to Madhuband colliery. The existing power demand of Madhuband D.G. Sub-station is around 25 - 28 MVA and the Contract Demand is 30 MVA.

Madhuband colliery has two power Sub-stations i.e. New Pit Sub-station & 2/15 Incline sub-station. Both of these Sub-stations receive power at 11 kV and 6.6 kV from the same No 4 feeder and B/H feeder.
WATER RESOURCES

A local Jores pass through the property. Water from this Jore may be utilized for the project after suitable treatment of the same. Additionally, mine water being pumped from the mine workings may also be utilized.
5. MINE PROFILE

5.1 GENERAL MINE INFORMATION

5.1.1 MINE / PROJECT

Madhuband UG Mine is located in the Barora Area of BCCL, a subsidiary of Coal India Ltd. The total area of Madhuband UG Mine is roughly divided into two parts, namely, Northern and Southern parts by Dhanbad-Chandrapura East Central Railway line passing through the property. The Northern part of this colliery falls under the command area of Opencast Block-II and southern part lies within Madhuband-Phularitand Underground Block-V as per the Master Plan of Jharia Coal Field. Madhuband UG Mine operates under southern part and its leasehold area is 3.5 sq. km.

The property of existing Madhuband UG Mine (southern part) is divided into three sectors by faults occurring almost along the strike. These parts have been named as Sector-A, B & C from North to South (Refer Plate No. XVI).

Sector-‘A’ of the mine is bounded by Dhanbad-Chandrapura line of EC Railway and fault F₁-F₁ on the north and faults F₃-F₃ & F₄/F₅ on the south. Seams XVIIA, XVII, XVID/DE, XVIC, XVIA/AB & XVI in Sector-A have been developed, partly depillared and the rest standing on pillars. XV seam is presently being developed through 1/15, 2/15 & 3/15 Inclines.

Sector-‘B’ of the mine, bounded by faults F₃-F₃ & F₄-F₄ on the north and faults F₂-F₂ & F₆-F₆ on the south is also devoid of any development reserves in upper seams. Uppermost seams (XVIIIIC, XVIIIIB & XVIIIA) have been developed and partly depillared in the area through a number of inclines. XVIII seam is virgin but it is burnt due to igneous intrusion. The next lower seam ,XVIIA is also developed to some extent in this Sector. All these workings are abandoned at present and waterlogged for a period over a decade. XVI group of seams in this Sector have been approached through New Pit and XV Seam is being worked at present.

In Sector-‘C’, the area on the south of faults F₂-F₂ & F₆-F₆ upto the leasehold boundary, all the seams are virgin.
5.1.2 MINE LOCATION

Madhuband UG mine operates under Barora Area of BCCL (Refer Plate No. I), a subsidiary of Coal India Ltd. (CIL). Madhuband UG mine is situated in Dhanbad district of Jharkhand. The mine is approachable from Dhanbad by all weather road. The nearest railway station is Dhanbad which is about 35 kms away from the mine.

Location
Latitude : 23°45′30″ N to 23°46′30″ N
Longitude : 86°12′00″ E to 86°13′30″ E

5.1.3 ACCESSIBILITY

Nearest Airport : Ranchi(180 Km.)
Nearest Railway Station : Dhanbad (35 Km)
Approach by Road : Katras-Mahuda More feeder road linking NH-32 runs east of the block
Nearest Seaport : Kolkata(270 Km.)

5.1.4 COMMUNICATION

The area is well connected both by rail and road. The Katras-Mohuda More feeder road linking NH-32 runs east of the block. The Katras-Chandrapura Branch line of E.C. Railway crossing along its western boundary.

5.1.5 MINING BLOCK

The existing mine falls under Madhuband-Phularitand Underground Block-V as per the Master Plan of Jharia Coal Field.

5.1.6 MINING LEASE

The Lease of the mine expired in 2001. The renewal of lease for the next 20 years w.e.f. 2002 is under process.
5.1.7 STATUS OF PROJECT APPROVAL

No approved Project Report exists for the mine. After EIA notification, 2006 application has been made to MoEF, Govt. of India for Environment Clearance (EC) of the mine.

5.1.8 LAND ACQUISITION/ STATUS

The existing leasehold boundary of Madhuband colliery has been shown on the Surface Plan (Plate No-II)/Land status Plan (Plate No. XXVIII) / Mouza Plan (Plate No.-XXVII). The existing status of land in the leasehold area has been shown in Land status Plan (Plate No.-XXVIII) / Mouza Plan (Plate No. -XXVII). The area of land under the heads of Private Land / Tenancy Land, Railway Land, Government Land and BCCL Land within the Colliery leasehold area has been considered as per the records from the mine/BCCL.

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<tr>
<td>4</td>
<td>BCCL Land</td>
<td>99.57</td>
</tr>
<tr>
<td>Total Land in the leasehold Area</td>
<td>393.74</td>
<td></td>
</tr>
</tbody>
</table>

Total requirement of land is 393.74 Ha, out of which, BCCL land is 99.57 Ha. Rest 294.17 Ha. is to be acquired by the bidder on behalf of BCCL. The payment in regard to the land acquired is to be made after the acquired land is registered in favour of BCCL and physical possession of unencumbered and vacated land is given to BCCL. Payment will be released phase wise as and when the land is acquired and registered in favour of BCCL and physical possession of unencumbered and vacated land is given to BCCL. The rate of land should be quoted separately. No depreciation on cost of land is to be loaded in the quoted rate.
5.1.9 CLIMATE

The area lies in the sub-humid belt of Jharkhand. The temperature rises to about 42°C during summer (April to June) & the minimum temperature falls to below 12°C during winter (December to January). The average annual precipitation is about 142 cms between June & September.

5.1.10 TOPOGRAPHY AND DRAINAGE

The area has an undulating topography with a gentle slope towards west. The maximum elevation of 227.66 m. has been observed in the eastern part, while the minimum elevation is 189.02 m. in the western part. The drainage of the area is controlled by Khudia Nala flowing south-westerly, which ultimately joins the Jamunia River further west (Refer Plate No. II) of the area.

5.2 GEOLOGY

5.2.1 SCOPE AND LIMITATION

i) The geological details given subsequently is confined to the assessment of XVIII C to VIII seams within the mine boundary.

ii) Assessment of geological reserves is confined only up to 600 m depth horizon or Chandrapura-Mohuda Rly. Line of SE Rly./colliery limit, which comes earlier.

iii) Only Standard Geological Nomenclature has been made use of in this report.

iv) This report is mainly based on the data available in the following reports:

a) GR on Exploration for Coal, Madhuband Underground Block, JCF, December 1982 prepared by MECL.

b) GR on Coal Exploration, Madhuband Block, JCF, December 1993 prepared by MECL.
c) Scheme for Augmentation of Production at Madhuband Colliery, December 2002 prepared by CMPDI, RI-II, Dhanbad.

v) The updated working plans of different seams supplied by the colliery authorities have been considered for preparing this report. An amount of approximation exists in the superimposition of the surface features on these plans.

vi) The extent of pyrolitisation of the coal seams is based on the data obtained from boreholes and mine workings and is interpretative. In view of the erratic behaviour of the burning pattern of the seams, there is possibility of changes in these zones (pyrolitised zone), if additional data is generated.

vii) Grade lines/iscohere lines in the pyrolitised zones have not been drawn and the reserves of coal in these zones have been assessed separately.

viii) Faults with less than 5 m throw have not been interpreted unless there is a positive evidence of their occurrence in mine workings / boreholes data. Existence of such faults in the virgin area of seam is not ruled out.

ix) In the absence of coordinated survey of underground workings with reference to surface features / boreholes, same extent of approximation exits in the superimposition of these workings with surface features on the plans of this report.

5.2.2 GEOLOGICAL BOUNDARY OF THE MINE / PROJECT

Geological boundary of the mine is as follows:

North : Fault $F_1F_1$

South : Faults $F_3F_3$ & $F_5F_5$
East : Madhuband Colliery Boundary


5.2.3 DRILLING DETAILS

(a) Total Assessment Area 3.5 Sq. Km.
(b) Total No. of boreholes 34
(c) Total Meterage drilled 19851.82 m
(d) Borehole density 9.7 BHs /Km^2.

MECL : 28 BHs. 15280.20 m.
GSI : 6 BHs. 4571.62
Total : 34 BHs. 19851.82 m.

The borehole density within the project area is about 9.7 BHs./Sq.Km.

5.2.4 GEOLOGY OF THE COAL FIELD

Madhuband colliery (Assessment Area 3.5 sq.km), which is a part of Jharia Coalfield, (453 sq.km) is one of the major coalfield of the Damodar Valley Coal belt. It is an “Outlier” of permo-carboniferous sediments in an Archean country. The coalfield is a roughly sickle shaped syncline with an E-W alignment. Rocks of Talchir Formation are exposed almost all along the northern, north-western and western boundaries of the basin and lie uncomfortably over the Archean basement. In the central part of the basin Barren Measure and Raniganj Formation are deposited.

5.2.5 GEOLOGY OF THE MINING BLOCK

The Madhuband UG mine is located in the western part of the JCF and is occupied mainly by the rocks of Barren Measure Formation. The area is mostly covered by a blanket of soil. The general geological succession of the block is given in Table 1.
TABLE – 1
GEOLOGICAL SUCCESSION OF MADHUBAND BLOCK
(Based on Boreholes Data)

<table>
<thead>
<tr>
<th>Age</th>
<th>Formation</th>
<th>Lithologs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent</td>
<td>-</td>
<td>Alluvium and sandy soil</td>
</tr>
<tr>
<td>Jurassic</td>
<td>Igneous Intrusive</td>
<td>Mica Peridotite &amp; Dolerite</td>
</tr>
<tr>
<td>Middle Permian</td>
<td>Barren Measure</td>
<td>Sandstone, Intercalated sandstone &amp; shale, shale, carb shale</td>
</tr>
<tr>
<td>Lower Permian</td>
<td>Barakar</td>
<td>Coarse to fine grained sandstone, Intercalation of sandstone and shale, shale, carb shale.</td>
</tr>
</tbody>
</table>

5.2.5.1 DIP AND STRIKE

The general strike of the Formation is NE-SW with dip towards SE. Due to occurrence of a number of faults the area is structurally disturbed and due to this at some places variation in the strike trend changes in isolate patches.

The range of dip varies from 10° to 15°.

5.2.5.2 INCROP/ OUTCROP OF COAL SEAMS

Only XVIII and XVII group of seams outcrop in the leasehold. The incrops are shown on the respective seam plans.

5.2.5.3 COAL SEAM(S)

The generalized sequence and thickness of coal seams and intervening parting up to V/VI/VII seams(Refer Plate No. III) is given below:

TABLE – 2

<table>
<thead>
<tr>
<th>Seam/Parting</th>
<th>Thickness Range (m)</th>
<th>Grade of the Seam</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-11</td>
<td>0.13</td>
<td>0.47</td>
</tr>
<tr>
<td>Seam/Parting</td>
<td>Thickness Range (m)</td>
<td>Grade of the Seam</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>P</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>L-10</td>
<td>0.09</td>
<td>0.49</td>
</tr>
<tr>
<td>P</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>XVIII D</td>
<td>0.08 (Jh)</td>
<td>1.43 (Jh+MP)</td>
</tr>
<tr>
<td>P</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>XVIII C</td>
<td>0.24</td>
<td>3.11 (Jh+MP)</td>
</tr>
<tr>
<td>P</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>XVIII B</td>
<td>0.26</td>
<td>2.13</td>
</tr>
<tr>
<td>P</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>XVIII A</td>
<td>0.22 (Jh)</td>
<td>2.24</td>
</tr>
<tr>
<td>P</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>XVIII</td>
<td>0.61</td>
<td>2.23</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>L-9</td>
<td>0.33 (Jh)</td>
<td>1.96</td>
</tr>
<tr>
<td>P</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>L-8</td>
<td>0.15</td>
<td>1.33</td>
</tr>
<tr>
<td>P</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>L-7</td>
<td>0.05</td>
<td>1.30</td>
</tr>
<tr>
<td>P</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>XVIII A</td>
<td>0.27</td>
<td>3.93</td>
</tr>
<tr>
<td>P</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>XVII</td>
<td>0.53</td>
<td>3.14</td>
</tr>
<tr>
<td>P</td>
<td>11</td>
<td>33</td>
</tr>
<tr>
<td>L-6</td>
<td>0.22</td>
<td>1.82 (C+Jh+MP)</td>
</tr>
<tr>
<td>P</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>L-5</td>
<td>0.16</td>
<td>1.35</td>
</tr>
<tr>
<td>Seam/Parting</td>
<td>Thickness Range (m)</td>
<td>Grade of the Seam</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>P</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>L-4</td>
<td>0.11</td>
<td>1.78 (Jh)</td>
</tr>
<tr>
<td>P</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>L-3</td>
<td>0.20</td>
<td>1.96 (Jh)</td>
</tr>
<tr>
<td>P</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>L-2</td>
<td>0.29</td>
<td>1.13</td>
</tr>
<tr>
<td>P</td>
<td>8 (With XVIE)</td>
<td>14 (With XVIE)</td>
</tr>
<tr>
<td></td>
<td>8 (With XVI D/E)</td>
<td>20 (With XVI D/E)</td>
</tr>
<tr>
<td>XVI</td>
<td>0.49</td>
<td>1.63</td>
</tr>
<tr>
<td>P</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>XVID</td>
<td>0.59</td>
<td>1.50</td>
</tr>
<tr>
<td>XVI D/E</td>
<td>0.15 (Jh)</td>
<td>2.98</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
<td>28</td>
</tr>
<tr>
<td>XVIC</td>
<td>0.60</td>
<td>4.15</td>
</tr>
<tr>
<td>P</td>
<td>4 (With XVIB)</td>
<td>10 (With XVIB)</td>
</tr>
<tr>
<td></td>
<td>4 (With XVI A/B)</td>
<td>10 (With XVI A/B)</td>
</tr>
<tr>
<td>XVIB</td>
<td>0.15</td>
<td>2.37</td>
</tr>
<tr>
<td>P</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>XVI A/B</td>
<td>0.43</td>
<td>2.76</td>
</tr>
<tr>
<td>P</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>XVI</td>
<td>0.18</td>
<td>4.63 (Jh+MP)</td>
</tr>
<tr>
<td>P</td>
<td>26</td>
<td>50</td>
</tr>
<tr>
<td>XV</td>
<td>1.73</td>
<td>5.41 (C+Jh)</td>
</tr>
<tr>
<td>P</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>XIV</td>
<td>0.46</td>
<td>3.77 (C+Jh)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>XIII</td>
<td>2.11 (C+Jh+MP)</td>
<td>6.94 (Jh+MP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seam/Parting</td>
<td>Thickness Range (m)</td>
<td>Grade of the Seam</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>P</td>
<td>Minimum: 10</td>
<td>Maximum: 24</td>
</tr>
<tr>
<td>XI/XII</td>
<td>Minimum: 3.83</td>
<td>Maximum: 8.58 (Jh+MP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coking – W-I – W-III</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Coking – B-D</td>
</tr>
<tr>
<td>P</td>
<td>32 (With IX/X)</td>
<td>38 (With IX/X)</td>
</tr>
<tr>
<td></td>
<td>20 (With VIII C IX/X)</td>
<td>52 (With VIII C IX/X)</td>
</tr>
<tr>
<td>IX/X</td>
<td>Minimum: 7.92</td>
<td>Maximum: 8.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>At Depth &gt; 600 m/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hence Not</td>
</tr>
<tr>
<td></td>
<td></td>
<td>considered</td>
</tr>
<tr>
<td>P</td>
<td>Minimum: 1</td>
<td>Maximum: 8</td>
</tr>
<tr>
<td>VIII C</td>
<td>Minimum: 2.59</td>
<td>Maximum: 2.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>At Depth &gt; 600 m/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hence Not</td>
</tr>
<tr>
<td></td>
<td></td>
<td>considered</td>
</tr>
<tr>
<td>VIII C/IX/X</td>
<td>Minimum: 1.05</td>
<td>Maximum: 12.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coking – W-II – W-III</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Coking – C-D</td>
</tr>
<tr>
<td>P</td>
<td>Minimum: 1</td>
<td>Maximum: 13</td>
</tr>
<tr>
<td>VIII B</td>
<td>Minimum: 0.61</td>
<td>Maximum: 2.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coking – W-IV –</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ungraded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Coking – C-F</td>
</tr>
<tr>
<td>P</td>
<td>Minimum: 15</td>
<td>Maximum: 33</td>
</tr>
<tr>
<td>VIII A</td>
<td>Minimum: 3.00</td>
<td>Maximum: 5.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coking – W-IV –</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ungraded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Coking – C-F</td>
</tr>
<tr>
<td>P</td>
<td>Minimum: 12</td>
<td>Maximum: 26</td>
</tr>
<tr>
<td>VIII</td>
<td>Minimum: 0.38</td>
<td>Maximum: 3.42 (C+J)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C – F</td>
</tr>
<tr>
<td>P</td>
<td>Minimum: 3</td>
<td>Maximum: 18</td>
</tr>
<tr>
<td>V/VI/VII</td>
<td>Minimum: 20.84</td>
<td>Maximum: 33.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not considered in this report because lying at depth &gt;600 m</td>
</tr>
</tbody>
</table>

N.B.:
1. In India the ash content forms the basis of grading of coking coal mentioned as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Ash % Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Grade-I</td>
<td>Upto 15</td>
</tr>
<tr>
<td>Steel Grade-II</td>
<td>&gt; 15 upto 18</td>
</tr>
<tr>
<td>Washery Grade-I</td>
<td>&gt; 18 upto 21</td>
</tr>
<tr>
<td>Washery Grade-II</td>
<td>&gt; 21 upto 24</td>
</tr>
<tr>
<td>Washery Grade-III</td>
<td>&gt; 24 upto 28</td>
</tr>
<tr>
<td>Washery Grade-IV</td>
<td>&gt; 28 upto 35</td>
</tr>
<tr>
<td>Ungraded</td>
<td>&gt; 35</td>
</tr>
</tbody>
</table>

5.2.5.4 FAULTS

Altogether ten faults with throw more than 5 m have been deciphered in the assessment area on the basis of boreholes and mine workings data. However, existence of faults with less than 5 m throw is not ruled out in the virgin area. The details of faults occurring within the area is given in Table-3.

**TABLE-3**

DETAILS OF FAULTS IN MADHUBAND UG MINE

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Fault No.</th>
<th>Location</th>
<th>Trend/ Dip Amount</th>
<th>Max. Throw (m)</th>
<th>Nature &amp; evidence of Fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F₁-F₁</td>
<td>Forms the North-Eastern boundary</td>
<td>WNW-ESE 60-65°</td>
<td>210 m</td>
<td>Curvilinear &amp; oblique fault</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>a) Omission of XIII to V/VI/VII seam in JM-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>b) Omission of XIVB to XI/XII seams in MD-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>c) Omission of seam XVII to VIIA in MD-22</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Fault No.</td>
<td>Location</td>
<td>Trend/Dip Amount</td>
<td>Max. Throw (m)</td>
<td>Nature &amp; evidence of Fault</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
<td>----------</td>
<td>------------------</td>
<td>----------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>2</td>
<td>F2-F2</td>
<td>Runs almost East- West in north-eastern part of the area.</td>
<td>E-W 60°-S</td>
<td>40 m</td>
<td>Curvilinear &amp; Oblique fault: a) Omission of seam XVII in MD-10 b) Omission of seam XVID/DE and parting reduction between seam XVIII &amp; XVIC in MD-21.</td>
</tr>
<tr>
<td>3</td>
<td>F3-F3</td>
<td>Runs in central part of the area</td>
<td>E-W 60°S</td>
<td>40 m</td>
<td>a) Omission of seam XVII in MB-1 b) Omission of seam XI/XII in JM-6 c) Omission of seam XIII &amp; XIV in MB-7</td>
</tr>
<tr>
<td>4</td>
<td>F4-F4</td>
<td>Occurs in western part of the area</td>
<td>NE-SW 60°SE</td>
<td>15 m</td>
<td>Curvilinear &amp; Oblique fault: a) Reduction of parting between XVID/DE &amp; XVI seams in MB-8 b) Omission of local seam between seams &amp; XVID/DE &amp; XVII in MB-8</td>
</tr>
<tr>
<td>5</td>
<td>F5-F5</td>
<td>Occurs in western part of the area</td>
<td>Almost E-W 60°S</td>
<td>10 m</td>
<td>Termination of workings of XVIA/AB, XVIC &amp; XVID/DE seams</td>
</tr>
<tr>
<td>6</td>
<td>F6-F6</td>
<td>Located in eastern/South eastern part of the area</td>
<td>E-W</td>
<td>65 m</td>
<td>a) Omission of seams XVIIIA to L-7 in MB-4 b) Omission of seams XVIB to XIV in MDN-4 c) Seam XVIB omitted in MDN-9.</td>
</tr>
<tr>
<td>7</td>
<td>F7-F7</td>
<td>Located in E-W &amp;</td>
<td>190 m</td>
<td>a) Omission of seam</td>
<td></td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Fault No.</td>
<td>Location</td>
<td>Trend/ Dip Amount</td>
<td>Max. Throw (m)</td>
<td>Nature &amp; evidence of Fault</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
<td>----------</td>
<td>-------------------</td>
<td>----------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>southern part of the area, extending from Maheshpur dyke side</td>
<td>swings to NW-SE 63°</td>
<td>XVIIA in MDN-9 b) Omission of seams L-6 to L-2 in MDN-4 c) Fault encountered 14 m above seam L-12 in MDN-1.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>F₈-F₈</td>
<td>Located in Southern part of the area and travels almost across the block</td>
<td>E-W 60°-S</td>
<td>40 m</td>
<td>a) Reduction in parting between seams XVI &amp; XV in MB-3 b) Seams XV &amp; XIV faulted in BH No. MB-5 c) Seam XV floor faulted in JM-14.</td>
</tr>
<tr>
<td>9</td>
<td>F₉-F₉</td>
<td>Located in South Western corner of the block</td>
<td>NE-SW 60°-SW</td>
<td>30 m</td>
<td>a) Omission of seams L-2. XVI D/E &amp; XVIC in MB-7 b) Roof of seam VIIIC/IX/X faulted in MDN-2 &amp; reduction in parting.</td>
</tr>
<tr>
<td>10</td>
<td>F₁₀-F₁₀</td>
<td>Located in South western portion of area.</td>
<td>WNW-ESE &amp; Swing to NW-SE 60°</td>
<td>90 m</td>
<td>a) Seams XVIIID to L-8 faulted in JM-11 b) Fault encountered in MDN-7, 17 m below weathered mantle.</td>
</tr>
</tbody>
</table>

5.2.5.5 OTHER GEOLOGICAL DISTURBANCES

Igneous Intrusion / Pyrolitisation
The igneous intrusives mainly in the form of dolerite and mica-peridotite sills are found to occur in the area. Two prominent NE-SW trending prominently exposed dolerite dykes commonly known as Madhuband dyke and Maheshpur dyke occur in and around the area. Maheshpur dyke (40 m thick) is located in the eastern part of the assessment area while Madhuband dyke about 5 to 6 m thick passes in the central part of the area in between BH No. JM-10, MB-1 & MB-3 and MB-5.

5.2.5.6 COAL SEAMS INFORMATION

5.2.5.6.1 Nomenclature

The standard geological nomenclature vis-à-vis colliery nomenclature is given below:

<table>
<thead>
<tr>
<th>Standard Geological Nomenclature</th>
<th>Colliery Nomenclature</th>
</tr>
</thead>
<tbody>
<tr>
<td>XVIIIIC</td>
<td>19 TOP</td>
</tr>
<tr>
<td>XVIIIIB</td>
<td>19 BOT</td>
</tr>
<tr>
<td>XVIII A</td>
<td>18A</td>
</tr>
<tr>
<td>XVIII</td>
<td>18</td>
</tr>
<tr>
<td>XVIIIA</td>
<td>17</td>
</tr>
<tr>
<td>XVII</td>
<td>16</td>
</tr>
<tr>
<td>XV IDE</td>
<td>15 NEW</td>
</tr>
<tr>
<td>XVI C</td>
<td>15 TOP</td>
</tr>
<tr>
<td>XVI AB</td>
<td>15 BOT</td>
</tr>
<tr>
<td>XVI</td>
<td>14</td>
</tr>
<tr>
<td>XV</td>
<td>13 SPL.</td>
</tr>
</tbody>
</table>
5.2.5.6.2 Description of Coal Seams

Seam XVIIID : The seam XVIIID overlies seam XVIIIIC with a parting 10 to 17 m. The seam is thin and pyrolitised in major part. Since the thickness of the seam is less than the minimum workable thickness, hence, not considered for reserve estimation.

Seam XVIIIIC : The seam XVIIIIC underlies seam XVIIID with an intervening parting of 10 to 17 m. The in-band thickness of the seam varies from 0.24 to 2.21 m. The seam is pyrolitised towards North-eastern corner in BH No. MD-10 and towards South-western corner in BH No. MDN-7. Unburnt section of seam contains coking coal with grade varying from W-I to ungraded (Refer Plate No. IV). The roof of the seam is characterized by shale or carbonaceous shale and the floor is generally shale and at places intercalation of shale and sandstone.

The seam is developed & goaved in part area.

Seam XVIIIB : The seam XVIIIB underlies seam XVIIIIC with a intervening parting of 2 to 8 m and the in-band thickness of the seam varies from 0.36 to 1.73 m. The seam has been pyrolitised towards South-western corner in BH No. MDN-7 where full Jhama has been intersected and partly pyrolitised in central portion in BH No. MB-4. Un-burnt section of seam contains coking coal and its grade varying from S-I to W-IV.

The seam has been worked towards outcrop region and in dip side it is virgin (Refer Plate No. V).

The roof and floor of the seam is generally shale or carbonaceous shale and at places intercalation of shale and sandstone and sandy shale.

Seam XVIIIA : The seam lies below XVIIIB at a parting of 4 to 12 m. The seam is fully pyrolitised in one borehole MDN-7 towards South-western corner and partially pyrolitised in central portion around BH No. MB-1. The in-band thickness of the
seam of un-burnt portion of seam varies from 0.90 to 2.06 m and grade varies from S-II to W-III.

The seam has been worked by colliery and in part area it is goaved and partly standing on pillar. The seam is virgin in dip side of the area (Refer Plate No. VI).

The roof is mainly shale / carbonaceous shale / intercalation of shale and sandstone while floor is mainly intercalation of shale and sandstone and carb. shale.

Seam XVIII : The seam lies below seam XVIIIA at a parting of 1 to 18 m. The seam has gone under pyrolitisation in patches in northern portion in B.H. No. MD-14 & 21, North-eastern in BH No. JM-2 and towards South-western corner in BH No. MDN-7. The in-band thickness of the seam varies from 0.61 to 2.23 m and its grade varies from W-I to W-IV. The seam is virgin in the entire area (Refer Plate No. VII)..

The immediate roof of the seam is either shale or carbonaceous shale in general and sandy shale at places and floor of the seam is generally intercalation of shale and sandstone, while at places it is medium grained sandstone.

Seam XVIIA : Seam XVIIA lies below a local seam L-7 which is a impersistent seam. Seam XVIIA lies below seam XVIII at a parting varying from 35 to 103 m. The seam is affected by mica-peridotite in three isolated patches around borehole MDN-1, JM-6 and MDN-7. Full Jhama has been intersec ted in these boreholes, forming full Jhama and part Jhama-Part coal zones around these boreholes. The in-band thickness of the seam varies from 0.27 to 3.93 m and its grade varies from S-II to Ungraded. The seam is developed in northern half of the area and out of which goaved out in part area and part area is standing on pillars (Refer Plate No. VIII)..

The roof of the seam is generally coarse grained sandstone, Intercalation of shale & sandstone and shale, while floor of the seam is mainly shale, but at places it is carbonaceous shale and intercalation of shale & sandstone.
Seam XVII : This seam lies below seam XVIIA at a parting of 4 to 33 m. The seam has been affected by pyrolitisation in four isolated patches around BH No. MDN-7, MDN-3, MD-5, MD-18 and MB-4. The seam displays a considerable variation in thickness from a minimum of 0.53 m to maximum 3.14 m. In most part of the block, the seam has attained the minimum mineable thickness. The coal portion of the seam shows grade variation from W-I to Ungraded.

The seam has been developed and goaved out in incrop region in North-western corner of the area (Refer Plate No. IX).

The roof of the seam is mostly carbonaceous shale but at places it is shale, intercalation of shale and sandstone and medium grained sandstone and the floor is generally intercalation of shale and sandstone and at places it is carbonaceous shale/shale also.

Seam XVIE : This seam lies below Seam L-2 at a parting of 8 to 14 m while, this lies below XVII Seam at a parting varying from 37 to 114m. This seam occurs as an individual seam in central part of Madhuband block. It is combined with XVID seam in south and north and forms the XVI DE seam. The coal seam XVIE occurs as a thin seam in the assessment area. Its thickness ranges from 0.49 to 1.63 m. The seam is not developed in western corner, in the region of borehole MDN-2. The grade of the seam ranges from S-II to W-IV(Refer Plate No. X).

The seam is pyrolitised in the central part of the area. Full Jhama has been intersected in BH No. MDN-1.

Seam XVID : Like seam XVIE, coal seam XVID also occurs as an individual seam in central part of the area. In the south and north, the seam merges with XVIE and thus formed seam XVIDE. Seam XVID occurs below XVIE at a parting of 1 to 3. The seam is fully pyrolitised in the region of B.H. No. MD-10 located in north-east corner, whereas it is partly pyrolitised in B.H. No. MDN-3. Though the coal seam occurs as a thin seam and its in-band thickness varies from 0.59 to 1.50 m and its grade varies from S-II to W-II(Refer Plate No. XI).
Seam XVIDE : Seam XVID merges with seam XVIE and thus formed seam XVIDE and occurs below Local seam L-2 at a parting ranges from 8 to 20 m. The seam is partly pyrolitised in the region of B.H. Nos. MD-4 & MD-15 located in North-eastern corner and also around B.H. Nos. MB-4. The seam is fully pyrolitised in B.H. Nos. MDN-4 and MB-5. The in-band thickness of the seam varies from 0.86 to 2.95 m and its grade ranges from W-I to Ungraded (Refer Plate No. XI).

The roof of the seam varies from shale, carbonaceous shale, intercalation of shale & sandstone to MG. sst. The floor of the seam is generally carbonaceous shale and at places intercalation of shale and sandstone and sandy shale.

Seam XVIC : This seam lies below XVID/XVIDE (Combined) seam at a parting of 6 to 28 m and occurs in well developed persistence coal horizon. The seam is partly or fully pyrolitised in major part of the area. The seam is fully pyrolitised in the region of B.H. No. MDN-7 & JM-11 in southern portion and around B.H. No. MDN-4 located in South-eastern corner and also around B.H. No. MD-10 in North-eastern portion, whereas it is partly pyrolitised in B.H. No. MD-5, MD-18, MB-1, MDN-1 & MB-4 in isolated patches. The in-band thickness of the seam varies from 0.60 to 3.54 m and its grade ranges from S-I to W-IV(Refer Plate No. XII).

The seam has been extensively worked by U/G method in major part of the area.

The roof of the seam consists predominantly of shale, carbonaceous shale and medium grained sandstone, while the floor is mostly of shale, intercalation shale & sandstone and fine grained sandstone.

Seam XVIB : Seam XVIB occurs as an individual coal horizon in the eastern part of the area. In the West, it merges with seam XVIA and thus formed seam XVIAB. Seam XVIB lies below seam XVIC at a parting of 4 to 10 m. The in-band thickness of the seam varies from 0.15 m to 2.37 m and its grade varies from W-III to Ungraded. In the eastern most part, seam thickness reduces. Seam is not developed in BH No. MDN-4 & 6. In major part of the area, seam is free from any
pyrolitisation, however, in one BH No. MD-5 the seam is partly pyrolitised (Refer Plate No. XIII).

Both the roof and floor of the seam are represented by carbonaceous shale and shale.

Seam XVI A: Seam XVI A occurs as a well developed persistent seam in the eastern part of the area. In the West, it merges with next younger seam XVI B. This seam lies below XVI B at a parting ranging from 2 to 25 m. The seam is free from any pyrolitisation. The in-band thickness of the seam varies from 0.43 to 2.76 m and its grade ranges from W-I to Ungraded (Refer Plate No. XIV).

The roof of the seam is characterized by carbonaceous shale or shale, while the floor is carbonaceous shale/shale and at places it is intercalation of shale & sandstone.

Seam XVI AB: Coal seam XVI AB is a combined seam and occurs in the western part of Madhuband block. This seam lies below XVI C at a parting ranging from 4 to 10 m. Its thickness widely varies from 0.36 to 5.52 m and grade range from S-I to Ungraded (Refer Plate No. XIV).

Coal seam XVI AB has been affected by pyrolitisation in the South-western corner around BH No. MDN-7 & JM-11, where Jhama has been intersected, while in the region of B.H. No. MD-12, 23 & MB-7 & 8, the seam is partly pyrolitised.

The roof of the seam is generally carbonaceous shale or shale and medium grained sandstone at places, while the floor of the seam is represented by either carbonaceous shale or shale. At places it is intercalation of shale & sandstone.

Seam XVI: Seam XVI lies below XVI A & XVI AB (Comb.) seams at a parting of 3m to 20 m. The in-band thickness of the seam varying from 0.18 to 2.33 m and its grade varies from W-I to Ungraded. The seam has been completely pyrolitised in an isolated patch in the region of BH No. MDN-3, located in southern part and also around BH No. MDN-7 (Refer Plate No. XV).
The roof of the seam is generally represented by medium to coarse grained sandstone, but at places it is shale / carb shale / intercalation of shale & sandstone while the floor is made up of either shale or carb shale with argillaceous sandstone.

Seam XV : This seam lies below XVI seam at a parting of 26 to 50 m. This is the best developed coal horizon occurring in the area. The in-band thickness of the seam varies from 1.44 m to 4.04 m and its grade ranges from S-I to W-IV. This seam has also undergone pyrolitisation in a number of patches in the area. In the region of BH No. MDN-7, MDN-8 and MDN-1, the seam is fully pyrolitised (Refer Plate No. XVI).

The roof and floor of the seam are characterized by shale or carbonaceous shale, but at places, it is represented by medium grained sandstone.

Seam XIV : Seam XIV lies below seam XV at a parting varying from 1 to 50 m. The in-band thickness of the seam ranges from 0.46 to 3.77 m and its grade varies from S-II to W-III in coking coal area, whereas B to E in Non-coking coal area. The seam is coking (UVM > 22 %) in western part of the area, whereas non-coking (UVM < 22 %) in eastern part of the area. The seam is fully / partly pyrolitised in patches. The seam is fully pyrolitised in south-western corner around BH No. MDN-7 and MB-8 (western part). The seam is partly pyrolitised in/around BH No. MD-12,15,23 & 28 in western part and around B.H. No. MD-14 & 22 towards north-eastern corner (Refer Plate No. XVII).

The roof of the seam is generally shale or carbonaceous shale and at places intercalation of shale and sandstone and sandstone also. The floor is usually made up of either by shale, sandy shale or argillaceous sandstone.

Seam XIII : This seam lies below XIV seam at a parting of 30 to 60 m. Its in-band thickness varies from 2.11 to 6.94 m. Except in the isolated patches towards western and north/north-eastern corner where the seam is non-coking (UVM is < 22 %), in the rest of the area the seam is considered to contain coking coal. Its
grade varies from B to D in non-coking coal zone, while it is W-II to W-IV in coking coal zone (Refer Plate No. XVIII).

The seam has gone under partial pyrolitisation in eastern and south-western part of the area.

The roof of the seam is shale and carb shale mainly. The floor of the seam is shale and carb shale with occasional intercalation of shale and sandstone.

Seam XI/XII : This seam lies below seam XIII at a parting of 10 to 24 m. The seam has gone under pyrolitisation in the southern part of the area where, the seam is fully pyrolitised, whereas towards western corner, around BH No. MD-12 & 28, the seam is partially pyrolitised. In major portion of the area under consideration having coking coal as UVM is >22% and in the remaining area seam is non-coking coal (Refer Plate No. XIX).

The in-band thickness of the seam varies from 4.18 m to 7.37 m and its grade varies from W-I to W-III in coking coal area and B to D in non-coking coal area.

The roof of the seam is either shale or carbonaceous shale while the floor contains of either shale, sandy shale, medium to fine grained sandstone or intercalation of shale & sandstone.

Seam VIIIC/IX/X : This seam lies below seam XI/XII at a parting of 20 to 52 m. Seam VIIIC/IX/X split in seams VIIIC & IX/X towards eastern side of the area near colliery boundary. In major part of the area, the seam is free from any pyrolitisation. In a isolated patches towards south around BH No. MDN-7 and in and around BH No. MD-10 in the eastern side the seam is fully pyrolitised (Refer Plate No. XX).

In the western side the seam is coking while in the rest of the area it is non-coking. The in-band thickness of the seam varies from 7.92 to 12.53 m and its grade varies from W-II to W-III in coking coal area, whereas its C to D in non-coking coal area.
Mainly shale or carb. shale forms the roof of the seam while the floor consists of either shale & sandstone or intercalation of shale & sandstone.

Sean VIIIB : Seam VIIIB occurs below seam VIIIC/IX/X and VIIIC. In the assessment area, seam VIIIB occurs below seam VIIIC/IX/X at a parting of 1 to 13 m. The seam is free from any pyrolysis in the assessment area. Seam is coking & non-coking also. Coking coal area is restricted to an isolated patch in western side, whereas, major area is non-coking coal. The in-band thickness of the seam varies from 0.61 to 2.42 m and its grade varies from W-IV to Ungraded in coking coal area, whereas grade C to F in non-coking coal area (Refer Plate No. XXI).

Both the roof and floor usually comprises of either shale or carbonaceous shale.

Seam VIIIA : The seam VIIIA occurs below seam VIIIA with a parting varying from 15 to 33 m. The seam is free from any pyrolysis in the assessment area. The seam is coking in a small area around BH Nos. MB-6, 7 & 1 in the central part of the area. However, in the major part of the area the seam is non-coking. The in-band thickness of the seam varies from 3.0 to 5.62 m and its grade varies from W-IV to Ungraded and C to F in coking and non-coking coal area respectively (Refer Plate No. XXII).

The roof of the seam is generally sandstone but at places shale/carb shale and floor is generally shale and at places sandstone.

Seam VIII : This seam lies below seam VIIIA at a parting of 12 to 26 m. The seam is free from pyrolysis excluding an isolated patch around B.H. No. MD-23 in the western corner, where seam is partially pyrolysed. The in-band thickness of the seam is 0.38 to 2.82 m in assessment area. The seam is non-coking in the entire area and its grade ranges from C to F (Refer Plate No. XXIII).

The roof of the seam is mainly carbonaceous shale and at places it is shale/sandstone, while the floor of the seam is generally carbonaceous shale but at places it is shale also.
5.2.5.7  **Depth:**

The depth range (Approx.) in which the seams occur at Madhuband mine are as follows:

<table>
<thead>
<tr>
<th>Seam</th>
<th>Depth Range (in Metre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XVIII C</td>
<td>Incrop – 460</td>
</tr>
<tr>
<td>XVIII B</td>
<td>Incrop – 480</td>
</tr>
<tr>
<td>XVIII A</td>
<td>Incrop – 480</td>
</tr>
<tr>
<td>XVIII</td>
<td>Incrop – 600</td>
</tr>
<tr>
<td>XVII A</td>
<td>Incrop – 580</td>
</tr>
<tr>
<td>XVII</td>
<td>Incrop – 600</td>
</tr>
<tr>
<td>XVIE</td>
<td>160 – 520</td>
</tr>
<tr>
<td>XVID/DE</td>
<td>30 - 600</td>
</tr>
<tr>
<td>XVIC</td>
<td>60 - 600</td>
</tr>
<tr>
<td>XVIB</td>
<td>180 - 600</td>
</tr>
<tr>
<td>XVIA/AB</td>
<td>180 - 600</td>
</tr>
<tr>
<td>XVI</td>
<td>100 – 600</td>
</tr>
<tr>
<td>XV</td>
<td>120 – 600</td>
</tr>
<tr>
<td>XIV</td>
<td>160 - 600</td>
</tr>
<tr>
<td>XIII</td>
<td>200 - 600</td>
</tr>
<tr>
<td>XI/XII</td>
<td>240 – 600</td>
</tr>
<tr>
<td>VIIIIC/IX/X</td>
<td>280 – 600</td>
</tr>
<tr>
<td>VIIIIB</td>
<td>280 – 600</td>
</tr>
<tr>
<td>VIII A</td>
<td>300 – 600</td>
</tr>
<tr>
<td>VIII</td>
<td>340 – 600</td>
</tr>
</tbody>
</table>

5.2.5.8  **IMMEDIATE ROOF AND FLOOR OF COAL SEAMS**

Immediate Roof & floor of Coal Seams :

The nature of rocks of immediate roof and floor of different seams are as follows:
<table>
<thead>
<tr>
<th>Seam</th>
<th>Roof Rock</th>
<th>Floor Rock</th>
</tr>
</thead>
<tbody>
<tr>
<td>XVIII C</td>
<td>The roof of the seam is characterized by shale or carbonaceous shale.</td>
<td>The floor is generally shale and at places intercalation of shale and sandstone.</td>
</tr>
<tr>
<td>XVIII B</td>
<td>The roof of the seam is generally shale or carbonaceous shale and at places intercalation of shale and sandstone and sandy shale.</td>
<td>Floor of the seam is generally shale or carbonaceous shale and at places intercalation of shale and sandstone and sandy shale.</td>
</tr>
<tr>
<td>XVIII A</td>
<td>The roof is mainly shale / carbonaceous shale / intercalation of shale and sandstone.</td>
<td>Floor is mainly intercalation of shale and sandstone and carb. shale.</td>
</tr>
<tr>
<td>XVIII</td>
<td>The immediate roof of the seam is either shale or carbonaceous shale in general and sandy shale at places.</td>
<td>Floor of the seam is generally intercalation of shale and sandstone, while at places it is medium grained sandstone</td>
</tr>
<tr>
<td>XVII A.</td>
<td>The roof of the seam is generally coarse grained sandstone, Intercalation of shale and sandstone and shale,</td>
<td>Floor of the seam is mainly shale, but at places it is carbonaceous shale and intercalation of shale &amp; sandstone.</td>
</tr>
<tr>
<td>XVII</td>
<td>The roof of the seam is mostly carbonaceous shale but at places it is shale, intercalation of shale and sandstone and medium grained sandstone and the</td>
<td>Floor is generally intercalation of shale and sandstone and at places it is carbonaceous shale/shale also.</td>
</tr>
<tr>
<td>XVI D/DE</td>
<td>The roof of the seam varies from shale, carbonaceous shale, intercalation of shale &amp; sandstone to medium grained sandstone.</td>
<td>The floor of the seam is generally carbonaceous shale and at places intercalation of shale and sandstone and sandy shale.</td>
</tr>
<tr>
<td>Seam</td>
<td>Roof Rock</td>
<td>Floor Rock</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>XVI C</td>
<td>The roof of the seam consists predominantly of shale, carbonaceous shale and medium grained sandstone.</td>
<td>The floor is mostly of shale, intercalation of shale &amp; sandstone and fine grained sandstone.</td>
</tr>
<tr>
<td>XVI  A/AB</td>
<td>The roof of the seam is generally carbonaceous shale or shale and medium grained sandstone at places.</td>
<td>The floor of the seam is represented either by carbonaceous shale or shale. At places it is intercalation of shale &amp; sandstone</td>
</tr>
<tr>
<td>XVI</td>
<td>The roof of the seam is generally represented by medium grained sandstone, but at places it is shale/ carb shale/ intercalation of shale &amp; sandstone.</td>
<td>The floor is usually made up of either shale or carb shale with argillaceous sandstone.</td>
</tr>
<tr>
<td>XV</td>
<td>The roof of the seam is characterized by shale or carbonaceous shale, but at places, it is represented by medium grained sandstone.</td>
<td>The floor of the seam is characterized by shale or carbonaceous shale, but at places, it is represented by medium grained sandstone.</td>
</tr>
<tr>
<td>XIV</td>
<td>The roof of the seam is generally shale or carbonaceous shale and at places intercalation of shale and sandstone and sandstone also.</td>
<td>The floor is usually made up of either by shale, sandy shale or argillaceous sandstone.</td>
</tr>
<tr>
<td>XIII</td>
<td>The roof of the seam is shale and carb shale mainly.</td>
<td>The floor of the seam is shale and carb shale with occasional intercalation of shale and sandstone.</td>
</tr>
<tr>
<td>XI/XII</td>
<td>The roof of the seam is either shale or carbonaceous shale</td>
<td>The floor contains of either shale, sandy shale, medium to fine grained sandstone or intercalation of shale &amp; sandstone.</td>
</tr>
</tbody>
</table>
Seam | Roof Rock | Floor Rock
--- | --- | ---
VIIIC/IX/X | Mainly shale or carb. Shale forms the roof of the seam | The floor consists of either shale & sandstone or intercalation of shale & sandstone.
VIII B | Roof usually comprises of either shale or carbonaceous shale. | Floor usually comprises of either shale or carbonaceous shale.
VIII A | The roof of the seam is generally sandstone but at places shale/carb shale | The floor is generally shale and at places sandstone.
VIII | The roof of the seam is mainly carbonaceous shale and at places it is shale/sandstone. | The floor of the seam is generally carbonaceous shale but at places it is shale also.

Seams below VIII are virgin and not considered for Global Bid

### 5.2.5.9 PHYSICO-MECHANICAL PROPERTIES

No data on physico-mechanical tests of samples of roof and floor rocks for any of the boreholes is available for the block.

### 5.2.5.10 GASSINESS OF COAL SEAMS

The gassiness of the seams proposed to be worked at Madhuband Underground Mine (XVIII to XV) are as follows:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Seam</th>
<th>Degree of Gassiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>XVIII C</td>
<td>Degree - III</td>
</tr>
<tr>
<td>2</td>
<td>XVIII B</td>
<td>Degree - III</td>
</tr>
<tr>
<td>3</td>
<td>XVIII A</td>
<td>Degree - III</td>
</tr>
<tr>
<td>4</td>
<td>XVII A</td>
<td>Degree - I</td>
</tr>
<tr>
<td>5</td>
<td>XVII</td>
<td>Degree - I</td>
</tr>
<tr>
<td>6</td>
<td>XVID/DE</td>
<td>Degree - II</td>
</tr>
<tr>
<td>7</td>
<td>XVI C</td>
<td>Degree - II</td>
</tr>
<tr>
<td>8</td>
<td>XVI A/AB</td>
<td>Degree - II</td>
</tr>
</tbody>
</table>
Methane gas blowers have been encountered at various places while working XVIII, XVII Top, XVII Bot., XVI Top and XVI Comb. Seam at Madhuband Underground Project.

Gassiness of Seams as per CMR 1957:

# “Gassy seam of the first degree” means a coal seam or part thereof lying within the precincts of a mine not being an open cast working whether or not inflammable gas is actually detected in the general body of the air at any place in its working below ground, or when the percentage of the inflammable gas if and when detected, in such general body of air does not exceed 0.1 and the rate of emission of such gas does not exceed one cubic meter per tonne of coal produced.

# “Gassy seam of the second degree” means coal seam or part thereof lying within the precincts of a mine not being an opencast working in which the percentage of inflammable gas in the general body of air at any place in the workings of the seam is more then 0.1 or the rate of emission of inflammable gas per tonne of coal produced exceeds one cubic metre but does not exceed ten cubic metres.

# “Gassy seam of Third degree “ means a coal seam or part thereof lying within the precincts of a mine not being an opencast working in which the rate of emission of inflammable gas per tonne of coal produced exceeds ten cubic metres.

5.2.5.11 INCUBATION PERIOD OF COAL SEAMS

The incubation period for coal seams at Madhuband Underground Mine is not exactly known. However, in Jharia Coalfield it varies from 12 to 16 months as per past experience. The ignition point and crossing point temperatures of some of the coal seams are as follows:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Seam</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>XVI</td>
</tr>
<tr>
<td>10</td>
<td>XV</td>
</tr>
</tbody>
</table>
### 5.2.6 RESERVES OF COAL

#### 5.2.6.1 IN-SITU COAL QUALITY

The quality of coal seams in this Geological Note is primarily based on GR on Exploration for Coal, Madhuband Underground Block (Dec.’1982), JCF and Geological Report on Coal Exploration “Madhuband Block” (Dec.1993) prepared by MECL.

Following norm has been followed for identifying the coking & non-coking coal seams in this report (As per above report).

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Seam</th>
<th>Ignition Point Temp.(°C)</th>
<th>Crossing Point Temp.(°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>XVI D/DE</td>
<td>202</td>
<td>167</td>
</tr>
<tr>
<td>2</td>
<td>XVI C</td>
<td>198</td>
<td>167</td>
</tr>
<tr>
<td>3</td>
<td>XVI A/AB</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>XVI</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>XV</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Seams XV and above : Coking coal

Seams VIII to seam XIV : Coking coal in the area where the UVM is 22% and above and non-coking coal in the rest area.

In case of coking coal, Iso-ash lines have been drawn, while in non-coking coal area, UHV / grade lines have been drawn.

Baked coal/Jhama, irrespective of their thickness has been excluded from the seam thickness.
Faulted, part faulted, & worked seam/part worked seam thickness encountered in the boreholes have not been considered for the purpose of quality assessment.

In case of seams, which are pyrolitised in part of the area, the “Full Jhama”, “Part coal-part Jhama” areas have been delineated seam wise tentatively.

5.2.6.2 RESERVES ESTIMATION CRITERIA

a) The seam wise status of developed, depillared and quarried out areas in addition to virgin patches have been identified on the basis of seam working plans supplied by the concerned Area/Colliery officials. These have been clearly marked on the seam folio plans and floor contour plans of all the seams under consideration, if worked.

b) Goaf & Quarries : These areas have been considered as devoid of coal reserves.

c) Developed Areas : In developed areas, where reserves are standing on pillars & stooks, seam wise dimension of extraction have been decided on the basis of seam working plan made available by Area/Colliery authorities and after detailed discussion with them. The percentage of extraction has been taken as 30 % in standing on pillar and 70 % in stooks.

In case of part coal/part Jhama zone which is a demarcated zone, reserves in this zone may change, if additional data is generated.

The Reserves of Jhama in pyrolitisation zone have not been assessed separately.

The Gross Geological Reserves of coal have been calculated as follows :

\[
\text{Gross Geological Reserves} = \text{Area (Sq.Km) x Thickness (m) x Sp.Gr. (in million tones)}
\]
The specific gravity of coal has been arrived at by adding 1% of average ash% to 1.28.

5.2.6.3 GEOLOGICAL RESERVES

Net geological reserves have been estimated up to mine limit defined and/or 600 m depth horizon which comes earlier.

A total of 137.08 mt of coal reserves in coal and in Coal + Jhama Zone have been assessed as Net Geological Reserves.

Seam wise/Grade wise Net Geological Reserves is given in Table-5.

<table>
<thead>
<tr>
<th>SEAM</th>
<th>COKING</th>
<th>NON-COKING</th>
<th>COAL IN COAL + JH ZONE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>XVIIIC</td>
<td>3.44</td>
<td>0.33</td>
<td></td>
<td>3.77</td>
</tr>
<tr>
<td>XVIII B</td>
<td>3.97</td>
<td>0.09</td>
<td></td>
<td>4.06</td>
</tr>
<tr>
<td>XVIII A</td>
<td>3.75</td>
<td>0.26</td>
<td></td>
<td>4.01</td>
</tr>
<tr>
<td>XVIII</td>
<td>4.03</td>
<td>0.78</td>
<td></td>
<td>4.81</td>
</tr>
<tr>
<td>XVIIIA</td>
<td>4.36</td>
<td>1.32</td>
<td></td>
<td>5.68</td>
</tr>
<tr>
<td>XVII</td>
<td>6.27</td>
<td>0.39</td>
<td></td>
<td>6.66</td>
</tr>
<tr>
<td>XVIE</td>
<td>1.12</td>
<td>0.05</td>
<td></td>
<td>1.17</td>
</tr>
<tr>
<td>XVI D/E</td>
<td>1.66</td>
<td>0.32</td>
<td></td>
<td>1.98</td>
</tr>
<tr>
<td>XVID</td>
<td>1.36</td>
<td>0.1</td>
<td></td>
<td>1.46</td>
</tr>
<tr>
<td>XVIC</td>
<td>4.82</td>
<td>2.86</td>
<td></td>
<td>7.68</td>
</tr>
</tbody>
</table>
### 5.2.6.4 MINEABLE RESERVES

Mine-able reserves will depend on the method of mining selected by the bidder. However, the bidder shall ensure a reasonable percentage of extraction with due regard to conservation.

### 5.2.6.5 WATER REGIME

No data on hydrology and hydrogeology is available for the mine.

### 5.3.0 PRESENT MINING STATUS

#### 5.3.1 MINE ENTRIES

The particulars of outlets at Madhuband UG Mine are as given below:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Outlet</th>
<th>Depth/Length (m)</th>
<th>Landing</th>
<th>Gradient</th>
<th>Conveyance</th>
<th>Usage/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTOR A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6/18 Inc.</td>
<td>40</td>
<td>XVIII A</td>
<td>1 in 5</td>
<td>-</td>
<td>Temporarily</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Outlet</td>
<td>Depth/ Length (m)</td>
<td>Landing</td>
<td>Gradient</td>
<td>Conveyance</td>
<td>Usage/Status</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------</td>
<td>-------------------</td>
<td>---------</td>
<td>----------</td>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td>2</td>
<td>7/18 Inc. (XVIII A)</td>
<td>34</td>
<td>XVIII A</td>
<td>1 in 5</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Air Shaft(XVIII A)</td>
<td>12</td>
<td>XVIII A</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>8/18 Inc. (XVIII B)</td>
<td>-</td>
<td>XVIII B</td>
<td>-</td>
<td>-</td>
<td>Incline mouths dozed</td>
</tr>
<tr>
<td>5</td>
<td>9/18 Inc. (XVIII B)</td>
<td>-</td>
<td>XVIII B</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3/19 Inc. (XVIII C)</td>
<td>-</td>
<td>XVIII C</td>
<td>-</td>
<td>-</td>
<td>Incline mouths dozed</td>
</tr>
<tr>
<td>7</td>
<td>4/19 Inc. (XVIII C)</td>
<td>-</td>
<td>XVIII C</td>
<td>-</td>
<td>-</td>
<td>Incline mouth dozed</td>
</tr>
<tr>
<td>8</td>
<td>5/19 Inc. (XVIII C)</td>
<td>-</td>
<td>XVIII C</td>
<td>-</td>
<td>-</td>
<td>Incline mouth dozed</td>
</tr>
<tr>
<td>9</td>
<td>6/19 Inc. (XVIII C)</td>
<td>-</td>
<td>XVIII C</td>
<td>-</td>
<td>-</td>
<td>Incline mouth dozed</td>
</tr>
<tr>
<td>10</td>
<td>7 no. outlets of Sudraidh Colly. (XVIII A)</td>
<td>All incline mouths dozed Before Nationalisation (BN).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>3 no. outlets of Kessurgarh Colly(XVIII A)</td>
<td>All incline mouths dozed(BN).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>7/17 Inc. (XVIII A)</td>
<td></td>
<td></td>
<td></td>
<td>Sealed and filled up BN</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>8/17 Inc. (XVIII A)</td>
<td></td>
<td></td>
<td></td>
<td>Sealed and filled up BN</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>6/17 Inc. (XVIII A)</td>
<td>30</td>
<td>XVIII A</td>
<td>1 in 4</td>
<td>-</td>
<td>Sealed</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Outlet</td>
<td>Depth/Length (m)</td>
<td>Landing</td>
<td>Gradient</td>
<td>Conveyance</td>
<td>Usage/Status</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>------------------</td>
<td>---------</td>
<td>----------</td>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td>15</td>
<td>4/17 Inc. (XVIII A)</td>
<td>42</td>
<td>XVIIIA</td>
<td>1 in 3.5</td>
<td>-</td>
<td>Pumping for Domestic use.</td>
</tr>
<tr>
<td>16</td>
<td>AirShaft 3 nos. (XVIII A)</td>
<td>-</td>
<td>XVIIIA</td>
<td>-</td>
<td>-</td>
<td>Sealed.</td>
</tr>
<tr>
<td>17</td>
<td>AirShaft 1 no. (XVIII A)</td>
<td>42</td>
<td>XVIIIA</td>
<td>-</td>
<td>-</td>
<td>Open. Waterlogged upto mouth.</td>
</tr>
<tr>
<td>18</td>
<td>2 no. outlets of Sudraidih Colly. (XVII)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>All incline mouths dozed(BN).</td>
</tr>
<tr>
<td>19</td>
<td>3 no. outlets of Kessurgarh Colly(XVII)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>All incline mouths dozed(BN).</td>
</tr>
<tr>
<td>20</td>
<td>3/16 &amp; 4/16 Incls. (XVII)</td>
<td>40</td>
<td>XVII</td>
<td>1 in 3.90</td>
<td>-</td>
<td>Sealed and filled up.</td>
</tr>
<tr>
<td>21</td>
<td>1/16 &amp; 2/16 Incls. (XVII)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Incline mouths sealed.</td>
</tr>
<tr>
<td>23</td>
<td>1/15 Incline</td>
<td>20</td>
<td>XVIC</td>
<td>1 in 2.50</td>
<td>-</td>
<td>Intake</td>
</tr>
<tr>
<td>24</td>
<td>2/15 Incline</td>
<td>120</td>
<td>XVIC</td>
<td>1 in 3.0</td>
<td>Direct Haulage 150 hp</td>
<td>Man &amp; Material, Intake, Coal.</td>
</tr>
<tr>
<td>25</td>
<td>3/15 Incline</td>
<td>150</td>
<td>XVID/D</td>
<td>1 in 3.5/1 in 8</td>
<td>-</td>
<td>Man &amp; Material, Intake, Stowing</td>
</tr>
</tbody>
</table>

**SECTOR B**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Outlet</th>
<th>Usage/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/19 Inc. (XVIII C/B)</td>
<td>Sealed and Filled up.</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Outlet</td>
<td>Depth/Length (m)</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>2</td>
<td>2/19 Inc. (XVIII C/B)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Air Shaft (XVIII C/B)</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>1/18, 2/18 &amp; 3/18(XVIII A)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4/18 &amp; 5/18 (XVIII A)</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Airshaft 3 Nos. (Seam XVIII A)</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>New Pit 232.56 m (226m)</td>
<td></td>
</tr>
</tbody>
</table>

3.2 MINING METHOD

The mine is being worked on Bord and Pillar Method of mining.

5.3.3 STATUS OF MINING (SEAM WISE)

The seams have been worked by B&P method.

The status of exploitation of different seams at Madhuband Colliery is as follows:

XVIII C:

The seam has been approached through 1/19, 2/19, 3/19, 4/19, 6/18 & 7/18 Inclines. Except 6/18 & 7/18 inclines all inclines are abandoned. The seam has been developed on Bord and Pillar method (B & P) on the east side of
jore in Sector B of the mine and in the area upto dyke (Madhuband Dyke) it is caved. The rest of the workings are Standing on Pillars (SOP), abandoned and waterlogged upto incline mouth and are inaccessible. The 6/18 & 7/18 Inclines are not fully sealed and can be reopened, if required.

XVIII B:

The seam has been approached through 4/18, 5/18, 6/18 and 7/18 Inclines. The seam has been developed on Bord and Pillar method (B & P) on the east side of jore in Sector B and in the area upto dyke (Madhuband Dyke) it is caved. The rest of the workings are Standing on Pillars (SOP), abandoned and waterlogged upto incline mouth and are inaccessible. The 6/18 & 7/18 Inclines are temporarily sealed and can be reopened, if required. The 4/18 and 5/18 Inclines are abandoned. The seam has been developed and partly caved through 6/18, 7/18, 4/18 and 5/18 Incline. The workings are standing on pillars, inaccessible and waterlogged upto the mouth.

XVIII A:

The seam has been approached through 4/18 and 5/18, 6/18 and 7/18 Inclines. The seam has been developed on Bord and Pillar method (B & P) on the east side of jore in Sector B and in the area upto dyke (Madhuband Dyke) it is caved. The rest of the workings are Standing on Pillars (SOP), abandoned and waterlogged upto incline mouth and are inaccessible. The 6/18 & 7/18 Inclines are temporarily sealed and can be reopened, if required. The 4/18 and 5/18 Inclines are abandoned. The seam has been developed and partly caved through 6/18, 7/18, 4/18 and 5/18 Incline. The workings are standing on pillars, inaccessible and waterlogged upto the mouth.

The workings of the above three seams are interconnected through caved goaves and as per the estimates of colliery officials, the total volume of
stagnant water in these seams is 165 million gallons. No fire has been reported in these three seams.

XVIIA:

The seam has been worked through 4/17, 6/17 and 4/17 Inclines in the past and developed in Sectors A and B of the mine. In the Sector A (area on the west of the jore), the seam has been mostly caved, rest split and waterlogged. On further west the seam has been worked in patches by independent outlets by erstwhile Kessurgarh colliery which is now merged with Madhuband UG mine. All these workings are exhausted and fully waterlogged. These workings are interconnected with workings done by Madhuband mine. This area is also connected to the old caved and waterlogged Kessurgarh workings of XVI group of seams. The total quantity of water as estimated by colliery officials is 262 million gallons including Kessurgarh water. One submersible pump has been installed in the airshaft (4/17 Incl.) which caters to the need of domestic consumption. 6/17 Incline is temporarily sealed and can be reopened, if required.

In the area on the east of the jore (Sector B), the rise side workings are splitted and standing on stooks while the dipside workings are standing on pillars. The workings are fully waterlogged upto Incline mouth. There is restriction by DGMS on dewatering of XVIIA seam workings due to surface built-up.

XVII:

The seam was developed before nationalisation through 2/16 and 3/16 Inclines in Sector A only. Due to very bad roof, the seam could be developed in a limited area only and is abandoned and fully waterlogged. The total quantity of water as estimated by colliery officials is 12 million gallons. The entries have also been sealed. Some attempts were made in the past to dewater and recover the area and start production from this seam but these had to be abandoned later due to the difficulties encountered.
On further west the seam has been worked in patches by independent outlets by erstwhile Kessurgarh colliery which is now merged with Madhuband UG mine. All these workings are exhausted and fully waterlogged. These workings are interconnected with workings of XVII A Seam done by Kessurgarh mine.

**XVID/DE:**

The seam has been approached in Sector-‘A’ through drifts from XVIC seam (worked through 1/15 and 2/15 Inclines). The seam has also been independently approached through 3/15 Incline in Sector-‘A’. The seam has been developed on B&P in Sector-‘A’ and one panel(sub panel A-1) has been depillared with stowing on the west side. The rest of the area is SOP. In part of the area on the rise side, the developed pillars have been split. The split pillars beneath the jore are required to be stabilised where an estimated void of 25000 m$^3$ exists. An estimated void of 17000 m$^3$ exists in the depillared panel A-1. The water in the overlying seam necessitates the depillaring by stowing. Old workings of Kessargarh Colliery are waterlogged in the same seam at a horizontal parting of less than 60 m.

The seam has been approached in Sector-‘B’ through drifts from XVIC seam. A small area has been developed in Sector-‘B’. In remaining area, the seam is split into two sections which are unworkable.

No work is being done at present in this seam. The workings are standing on pillars.

**XVIC:**

The seam has been approached through 1/15 and 2/15 Inclines in Sector-‘A’ and through New Pit in Sector-‘B’.

In Sector-‘A’, the seam has been developed through 2/15 Incline on B&P method and partly depillared with stowing. The rest is standing on pillars. The seam has been developed in Sector-‘B’ upto the 5 m thick dyke. As the workings have approached the dyke, high emission of gas (CH$_4$ > 5%) were encountered. Abrupt
change in strike has also been observed on the east side in Sector-‘B’. Numerous geological disturbances like slip planes, fracture etc. have also been encountered.

XVIA/AB:

The seam has been approached by drifts from XVIC seam workings (worked through 1/15 & 2/15 Inclines). The seam is developed in the combined part of the seam in Sector-‘A’. In the area where the seam is splitted is virgin. The seam has been worked by Kessurgarh Colliery by caving and is fully waterlogged. The parting with the waterlogged workings of Kessurgarh colliery is about 20 m. No work is being done at present in the seam in Sector-‘A’.

In Sector-‘B’, the seam has been developed in a limited area through drifts from XVIC seam (worked through New Pit) and is standing on pillars. Friable shale is met in the roof which has resulted in massive falls at almost all the junction. On further east, high gas emission (>5%) has been encountered. No work is being done in this seam at present.

XVIA/AB & XVIC seams are contiguous in major part.

XVI:

The seam has been approached in Sector-A from XVIA/AB seam through drifts. The seam has been developed on B & P in a limited area in Sector-‘A’ and is standing on pillars.

The seam is virgin in Sector-‘B’. No production is being obtained from this seam.

XV:

The seam has been approached by a pair of reverse drifts, one from XVIC seam and the other from XVID/DE seam in Sector-‘A’. The seam is being developed on B&P system.
Seams below XV are virgin in Madhuband.

5.3.4 VENTILATION

The existing inclines, namely, 1/15, 2/15 and 3/15 and the New Pit serve as main intake roadways for the entire Madhuband mine. The air shaft sunk upto XVIC seam in vicinity of inclines serves as the only return airway for all the seams being worked through inclines & the Pit. The air shaft is fitted with two PV-160 fans, which are in parallel operation. The particulars of fans are as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Fan 1</th>
<th>Fan 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q m³/sec.</td>
<td>40</td>
<td>36</td>
</tr>
<tr>
<td>WG mm</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>Motor Power</td>
<td>105.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Air Power, KW</td>
<td>12.6</td>
<td>16</td>
</tr>
<tr>
<td>Fan efficiency</td>
<td>16</td>
<td>14</td>
</tr>
</tbody>
</table>

5.3.5 STOWING INSTALLATION

There are two stowing installations existing at Madhuband Colliery. In Sector-A, 1/15 Incline is used for stowing. The capacity is as follows:

Sand Bunker : 745 m³
Water Reservoir : 4 lakh gallons

Stowing range is laid through 3/15 Incline roadway. Due to the upthrow fault near the inclines, the stowing range has to overcome a hump which reduces its capacity.

In the area on the east, there is an R&D Borehole which catered to the stowing requirement of Sector-B. The borehole is drilled upto XVI C Seam and the stowing range in it is damaged. The capacity of the sand bunker is 150 m³ and that of water reservoir is
300 m$^3$. In addition to the production needs, this installation has to cater to the stabilisation work in Sector-A.

An R&D scheme for High Capacity Sand Flushing at Madhuband Colliery was approved. The boreholes have been drilled as a part of the scheme.

The sources of sand for the mine are Lohapatti Ghat(10-12 Km.) and Dugdha Ghat(19-20 Km.). The sand stock at the mine as on 22.08.08 stands at 19000 m$^3$.

5.3.6 MAGAZINE

There is no operational magazine at Madhuband. But a licensed magazine exists at the mine. The capacity of the magazine is as follows:

- Detonator : 20000 Nos.
- Explosive : 1000 Kg.
- Fuse : 10000m.

The requirements of explosive at present are met from nearby Phularitand Mine Magazine

5.3.7 TRANSPORT

5.3.7.1 VERTICAL TRANSPORT

The New Pit (Dia.5.4 m, 232 M depth) is equipped with electrical winder. The New Pit is sunk upto XVIA/AB seam. The pit has landing level at 226 m in XVIC seam. The operating parameters of winder are as follows:

- Motor Power : 315 kW, 3.3 kV
- Speed : 3.5 m/s
- Hoisting Depth : 226 m
Drum diameter : 3.2 m
Winder Rope : 32mm dia., FLC
Pay Load per Trip : 2 tonne (2 x 1 t coal tub)

This winder was installed at the present site in the year 1991, after shifting it from Bhurungia colliery of BCCL. Presently, no production is being raised from this pit, and is being used for dewatering installations only. In the pit bottom, provision of manually pulling out and pushing in of tubs from cages exists. At the pit top the entry of empty tub and exit of loaded tubs is also done manually from the same side of the cage.

5.3.7.2 UNDERGROUND TRANSPORT

There are 3 inclines namely 1/15, 2/15 and 3/15 whose particulars are as follows:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Outlet</th>
<th>Landing</th>
<th>Gradient</th>
<th>Conveyance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1/15 Incline</td>
<td>XVIC</td>
<td>1 in 3.9</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>2/15 Incline</td>
<td>XVIC</td>
<td>1 in 3.9</td>
<td>Direct Haulage 150 kW</td>
</tr>
<tr>
<td>3.</td>
<td>3/15 Incline</td>
<td>XVID/DE</td>
<td>1 in 3.9</td>
<td>-</td>
</tr>
</tbody>
</table>

2/15 Incline is used to transport coal from 13 Spl seam and is equipped with a 110 kW, 1000 m length direct haulage for transport of coal as well material. Underground transport of coal consists of tugger and direct haulages. A set of drifts connect the different seams for transportation coal and material. The existing transport arrangement is given in Plate-

2/15 Incline does not have a smooth gradient. Initially, for a distance of 150 m, the gradient of incline from incline top to deep down is 1 in 2.8, followed by 1 in 3.5 for a length of 250 m. The last remaining length of 600 m has a gradient of 1 in 4. This uneven gradient poses a limiting effect on the evacuation capacity of the incline.
List of available existing haulages is as shown below:

2/15 Incline :

(All the haulages listed below are used for coal and material transport)

1. 2/15 Incline Direct Haulage, 110 kW, Haul length 1000 m, 25 mm rope dia.
2. XV seam Tugger Haulage, 37 kW, Haul length 350 m, 22 mm rope dia.
3. XV seam Tugger Haulage, 37 kW, Haul length 300 m, 22 mm rope dia.
4. XV seam Tugger Haulage, 40 kW, Haul length 350 m, 22 mm rope dia. (Stand by Spare Haulage)

New Pit :

(All the haulages listed below are essentially maintained for maintenance of dewatering installations and for material transport)

1. L-2 seam, Direct Haulage, 110 kW, Haul length 300 m, 25 mm rope dia.
2. XVID/DE seam Direct Haulage, 75 kW, Haul length 500 m, 22 mm rope dia.

5.3.7 COAL TUBS

The mine has 45 nos. of coal tubs, size: 6'-0" x 3'-0" x 2'-6" which cater the needs of coal production and material transport of the mine.

The Schematic Transport layout is shown in Plate No. XXIV.

5.3.8 PUMPING & DRAINAGE

5.3.8.1 EXISTING PUMPING SYSTEM

The present pumping operation in the mine can be broadly divided into 2 sections, viz. (i) 2/15 Incline section, and (ii) New pit section. Each of the above two sections are having Main and Stage Pumping installations.
### 5.3.8.1.1 2/15 Incline Section

At 2/15 Incline, the main pumping station is at 14L, XV Top. It has the provision to receive water from two no. of Stage pumping stations located in XVI A/AB and XVI C Seams.

These two auxiliary pumping stations have provision to either discharge directly to the 2/15 Incline main sump, or to discharge at a length of 350 m enabling the water to trickle down to Auxiliary pumping station in New Pit section.

There exists a Stage pump in XV Seam, which discharges water to the Stage pump located at 30L, 15 Top seam.

There exist four no. of face pumps as well in this mine.

Pump specifications in this section is as follows:

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>Location</th>
<th>Discharge (GPM)</th>
<th>Head (m)</th>
<th>Power (kW)</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>14L, XVI C</td>
<td>600</td>
<td>180</td>
<td>130</td>
<td>Surface</td>
</tr>
<tr>
<td>Stage</td>
<td>30L, XVI C</td>
<td>600</td>
<td>180</td>
<td>130</td>
<td>14L, XVI C Main Sump OR 38L, XVI C (New Pit Section)</td>
</tr>
<tr>
<td>Stage</td>
<td>30L, XVI C</td>
<td>400</td>
<td>60</td>
<td>45</td>
<td>14L, XVI C Main Sump OR 38L, XVI C (New Pit Section)</td>
</tr>
<tr>
<td>Stage</td>
<td>31L, XVI A/AB</td>
<td>600</td>
<td>180</td>
<td>130</td>
<td>Surface OR 38L, XVI C (New Pit Section)</td>
</tr>
<tr>
<td>Stage</td>
<td>XV</td>
<td>400</td>
<td>60</td>
<td>60</td>
<td>30L, XVI C</td>
</tr>
<tr>
<td>Face</td>
<td>XV</td>
<td>300</td>
<td>30</td>
<td>13</td>
<td>Stage Pumps</td>
</tr>
<tr>
<td>Face</td>
<td>XV</td>
<td>300</td>
<td>30</td>
<td>13</td>
<td>Stage Pumps</td>
</tr>
<tr>
<td>Face</td>
<td>XV</td>
<td>300</td>
<td>30</td>
<td>13</td>
<td>Stage Pumps</td>
</tr>
</tbody>
</table>
### NEW PIT SECTION

At New pit section, the main pumping station is at 32L, XVI C. It has the provision to receive water from Stage pumping station located in 38L, XVI C.

There exists a Stage pump at 38L, 15 Top, which discharges water to the above Main pump located at 32L, XVI C. This pump also handles any additional overflow water coming from the 2/15 Incline Stage pumping installations as described earlier.

Pump specifications in this section is as follows:

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>Location</th>
<th>Discharge (GPM)</th>
<th>Head (m)</th>
<th>Power (kW)</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>32L, XVI C</td>
<td>1000</td>
<td>300</td>
<td>680</td>
<td>Surface thro’ New Pit</td>
</tr>
<tr>
<td>Main (Spare)</td>
<td>32L, XVI C</td>
<td>1000</td>
<td>300</td>
<td>680</td>
<td>Surface thro’ New Pit</td>
</tr>
<tr>
<td>Stage</td>
<td>38L, XVI C</td>
<td>600</td>
<td>180</td>
<td>130</td>
<td>32L, XVI C Main Sump</td>
</tr>
</tbody>
</table>

The Schematic Pumping layout is shown in Plate No. XXV.

### POWER SUPPLY AND DISTRIBUTION

#### SOURCE OF SUPPLY

Madhuband colliery receives power at 11 kV through No 4 feeder and at 6.6 KV through B/H feeder from Madhuband D.G. Sub-station of BCCL which in turn receives power at 33 kV from Chandrapura Power Sub-station of DVC.
This Madhuband D.G. sub-station of BCCL has installed transformer capacity of 75 MVA and caters power to other adjacent collieries of BCCL also in addition to Madhuband colliery.

The average power factor of this sub-station may be assumed to remain at 0.95.

The existing power demand of Madhuband D.G. Sub-station is around 25 - 28 MVA and the Contract Demand is 30 MVA.

Madhuband colliery has two power Sub-stations i.e. New Pit Sub-station & 2/15 Incline sub-station. Both of these Sub-stations receive power at 11 KV and 6.6 KV from the same No 4 feeder and B/H feeder. Necessary p.f correction for both these Sub-stations is done at 33 KV Madhuband D.G Sub-station.

5.3.9.2 MADHUBAND NEW PIT SUB-STATION

5.3.9.2.1 SOURCE OF SUPPLY:

Madhuband New Pit Sub-station receives power through B/H feeder at 6.6 KV and No 4 feeder at 11 KV from the existing 33 kV Madhuband D.G. sub-station of BCCL situated around 1 Km away.

A Schematic single line electrical layout of this colliery is enclosed in drawing Pate No – XXVI

5.3.9.2.2 SURFACE AND UNDERGROUND POWER DISTRIBUTION:

A separate sub-station has also been built up in the project site exclusively for the Madhuband new pit mine itself to cater both the surface and underground loads of New Pit area.

The installed transformer capacity of this sub-station is as follows:

(A) 1000 kVA, 6.6 / 3.3 kV - 1 No.
A) 1 no., 1000 kVA, 6.6/3.3 kV Transformer – feeds power to the winder of 315 kW and also feeds to surface lighting through one 50 kVA, 3.3/0.415 kV transformer. One No. 240 sq mm 3.3 kV PILSDWA cable feeder is taken to the underground through shaft to cater the loads of u/g working districts in XV Seam. Winder of 175 kW is receiving power at 3.3 kV. Two nos. of 315 kVA, 3.3/0.55 kV FLP Tran switch units are being used in the underground for feeding power to the face equipment, transport equipment and pumps at 550 volts. Presently there is no production through this new pit mine.

B) 1 no., 750 kVA, 11/0.415 kV Transformer – feeds power to the surface lighting including Banglow, Dhawra & Palasbania Quarters.

C) 1 no. 500 kVA, 6.6/0.415 kV Transformer - feeds power to surface lighting including office and colony.

Two numbers underground main pump of 680 kW is being fed power at 6.6 kV, directly from the surface main sub-station by a separate 240 Sq mm,6.6 kV cable feeder laid through the mine shaft.

5.3.9.3 2/15 INCLINE SUB-STATION:

5.3.9.3.1 SOURCE OF SUPPLY:

Madhuband 2/15 Incline Sub-station receives power through B/H feeder at 6.6 KV and No 4 feeder at 11 KV from the existing 33 kV Madhuband D.G. sub-station of BCCL situated around 3 Km away.

A Schematic single line electrical layout of this colliery is enclosed in drawing Plate No – XXVI.
5.3.9.3.2 SURFACE AND UNDERGROUND POWER DISTRIBUTION:

A separate sub-station has also been built up in the project site exclusively for the Madhuband 2/15 Incline and related surface area.

The installed transformer capacity of this sub-station is as follows:

(A) 500 kVA, 6.6 / 0.55 kV - 1 No.
(B) 750 kVA, 11 / 0.55 kV - 1 No.

In this Sub-station arrangement exists to switch over some electrical loads of one transformer to the other and vice versa in case of necessity.

A) 1 no. 500 kVA, 6.6/0.55 kV Transformer - feeds power to 2 nos. of Ventilation fans of 120 HP and 100 HP through 550 Volts overhead line at surface.

B) 1 no. 750 kVA, 11/0.55kV Transformer - feeds power to cap lamp charger, surface haulage of 100 HP. Two nos of main underground pumps each of 160 kW receives power through 120 Sq mm PILSDWA cable at 550V. Face equipments and district transports are also getting power at 550V through separate120/90 sq mm PILSDWA/PVC cables laid through incline. Under ground working equipments such as haulage, pump, drill machines etc. working in XV seam, receives power at 550V from this transformer.

5.3.9.4 EARTHING:

Solidly earthed neutral system is being used for different voltages in this colliery.

5.3.9.5 ILLUMINATION:

On the surface HPSV lamps, Fluorescent lamps, ordinary incandescent lamps are being used for lighting open area, pit top area, coal dump area, office building, workshop etc.
In the underground FLP light fittings are being used at pit bottom, transfer points, pump house and other strategic points. 5 kVA 550 / 110 volts FLP lighting transformers are being used in the underground for feeding power to the FLP light fittings.

.53.9.6 COMMUNICATION:

Underground communication is being done through sound powered telephones and surface communication is done through P&T and RAX phones.

5.3.10 WORKSHOP

5.3.10.1 EXISTING STATUS

There exists a very small Workshop near the colliery office. Moreover minor repair works are also done at the 2/15 Incline mouth site. Major equipment available in the Workshop near colliery office is as follows:

1. Medium duty centre lathe CH-260mm DBC-1500mm, 10 KW (Approx.) with accessories. – 1 No.
2. Pillar drill cap-25 mm 2.5 KW - 1 No
3. Threading Machine, 3.7 kW - 1 No.
5. Welding Machine with Gas cylinders - 1 set

5.3.11 STORE FACILITIES:

Near the Madhuband , a well constructed store facility is available.

5.3.12 COAL HANDLING PLANT

The loaded tubs raised from 2/15 Incline are directly fed into a gravity tippler. The tippler in turn dumps the coal on the ground. The coal is loaded onto tippers by pay loader for onward transport to washery.
5.3.13 CIVIL AMENITIES FOR MINING

The Madhuband Colliery is a running underground mine and this colliery has adequate civil infrastructures to facilitate the present mining activities. However, these civil infrastructures are very old so proper maintenance shall be required for their further use. These structures shall be modified for the desired purpose as per the proposed production from the underground mine.

The location of the different civil structures/buildings has been shown in Surface Plan of the colliery (Plate No.-II).

The details of estimated cost/value of the different civil structures/buildings under the head of Residential building have been shown in Annexure - I.

The existing Residential buildings are as under:

<table>
<thead>
<tr>
<th>Sl. NO.</th>
<th>Type of Building</th>
<th>Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Banglow</td>
<td>17</td>
</tr>
<tr>
<td>2</td>
<td>NHS</td>
<td>410</td>
</tr>
<tr>
<td>3</td>
<td>Bangla Dowrah /Hutment /Non-standard/others</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>571</strong></td>
</tr>
</tbody>
</table>

The details of estimated cost of the different civil structures/buildings under the head of Non-residential building have been shown in Annexure - II.

The existing Non-residential Buildings/structures are as under:

1. Office
   - Colliery Office Building
   - Pit Office/ACM Office (New Pit Office)
   - Incline Office/ACM Office (at 2/15 Incline)
2. Colliery Store

3. Dispensary

4. Workshop

5. Electric Sub-station
   - Electric Sub-station at New Pit
   - Electric Sub-station at 4/17 Incline
   - Electric Sub-station at 2/15 Incline

6. Cap Lamp Room
   - Cap Lamp Room at 2/15 Incline
   - Cap Lamp Room at New Pit

7. Haulage Room
   - Haulage Room at 2/15 Incline
   - Haulage Room at New Pit

8. Winding Engine Room

9. Incline Mouth Structure
   - Incline Mouth structure at 2/15 Incline
   - Incline Mouth structure at 3/15 Incline

10. Fan House (2 Nos.)

11. Evasee structure (2 Nos.)

12. Canteen

13. Water Treatment Plant

14. Trammer’s Shed
• Trammer’s shed at 2/15 Incline
• Trammer’s shed at new Pit

15. Cement Capsule Room at New Pit

16. Magazine

17. Weigh bridge House

18. Cycle Shed
  • Cycle Shed at 2/15 Incline
  • Cycle Shed at New Pit

Present Cost/value of Buildings/structure has been estimated on the basis of rate of unit area of plinth/floor on prevailing Cost Index in JCF (C.I.-1720) based on C.I. -100 in 1976 of CPWD- SOR New Delhi. The remaining present value of existing old structure has been arrived by depreciating the amount @ 1% per year from the present value of new such structure and salvage value considered 20 % after 80 years of life, however the actual present value/cost of the structure will depend on the condition and location.
5.4 Formula for Calculation of escalation for (a)spares and (b)consumables

Price Variation on Indigenous Materials:

The amount to be paid to Bidder for the work done shall be adjusted for increase or decrease in the cost of materials and the cost shall be calculated quarterly in accordance with the following formula:

\[ V_m = \frac{W \times (M - M_0)}{M_0} \]

Where:
- \( V_m \) = Variation in material cost i.e. increase or decrease in the amount in rupees to be paid or recovered
- \( W \) = Per tonne Charges towards spares & consumables in respect of Operation & maintenance during the period under reckoning to which the price variation relates
- \( M_0 \) = All India Wholesale Price Index for the applicable items as published by the RBI Bulletin, Ministry of Industry & Commerce, Govt. of India, prevailing on the date of opening of price offer.
- \( M \) = Revised average All India Wholesale Price Index for the applicable items for the period to which price variation relates as published by the RBI Bulletin, Ministry of Industry & Commerce, Govt. of India.

Note:
(a) In case of overseas supplies/services the methodology for calculation will remain same as of indigenous components except the changes in their respective indices.
(b) For the purpose of calculating escalation the reference base date for the applicable Price Index will be date of submission of tender. Bidder may like to note that the timing of execution will be considered as escalable event for such calculation irrespective of their actual date of monthly billing.
(c) All the necessary payments will be made in USD / EURO / INR as quoted by bidder for the respective items in this offer. However, in case such payments are made in a convertible foreign currency other than USD / EURO, the Bidder may be ensured
of the protection for their likely risk of loss due to foreign exchange fluctuation rate as compared to the base rate prevailing on the day of opening Price offer.

(d) Escalation shall be payable within the time schedule fixed by the bidder for use of spares and consumables in their bid document / time schedule as fixed in the contract agreement. No escalation shall be payable to the contractor beyond the schedule period as mentioned in the contract agreement. However, in case of extension of period of completion is required due to failure on the part of owner or the delay is due to any such reasons which the management may consider to be beyond the control of the bidder, escalation shall be payable to the contractor.


5.5 ESCALATION FORMULAE FOR LABOUR

Price Variation for Labour (Indigenous)

The amount paid to Bidder for the work done shall be adjusted for increase or decrease in the cost of labour and the cost shall be calculated in accordance with the formula given hereafter.

\[ V_L = \frac{W \times (L - L_0)}{L_0} \]

Where:

- \( V_L \) = Variation in labour cost i.e. increase or decrease in the amount in rupees to be paid or recovered.
- \( W \) = Per tonne Charges quoted in the price bid for the corresponding years towards manpower cost in respect of Operation & maintenance.
- \( L_0 \) = Minimum wages for unskilled workers payable as per the Minimum Wages Act / Rules of the State or Central Government, whichever is more, prevailing on the date of opening of price offer.
- \( L \) = Revised minimum wages of unskilled workers corresponding to \( L_0 \) during the period to which the escalation relates.

Note:

(a) In case of overseas services the methodology for calculation will remain same as of indigenous components except the changes in their respective indices.

(b) For the purpose of calculating escalation the reference base date for the applicable Price Index will be date of submission of tender. BIDDER may like to note that the timing of execution will be considered as escalable event for such calculation irrespective of their actual date of monthly billing.

(c) All the necessary payments will be made in USD / EURO / INR as quoted by bidder for the respective items in this offer. However, in case such payments are made in
a convertible foreign currency other than USD / EURO, the Bidder may be ensured of the protection for their likely risk of loss due to foreign exchange fluctuation rate as compared to the base rate prevailing on the day of opening Price offer.

(d) Escalation shall be payable within the time schedule fixed by the bidder for use of spares and consumables in their bid document / time schedule as fixed in the contract agreement. No escalation shall be payable to the contractor beyond the schedule period as mentioned in the contract agreement. However, in case of extension of period of completion is required due to failure on the part of owner or the delay is due to any such reasons which the management may consider to be beyond the control of the bidder, escalation shall be payable to the contractor.
6. LIST OF TENDER DRAWINGS

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Plate No.</th>
<th>Description</th>
<th>Scale/RF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I</td>
<td>Location Plan</td>
<td>NTS</td>
</tr>
<tr>
<td>2</td>
<td>II</td>
<td>Surface Plan</td>
<td>1:4000</td>
</tr>
<tr>
<td>3</td>
<td>III</td>
<td>Lithologs of Borehole Nos. MDN-2, SD-5, MB-1, MD-5, MD-21</td>
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<tr>
<td>4</td>
<td>IV</td>
<td>Seam Folio with Floor Contour Plan of XVIIIC Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>5</td>
<td>V</td>
<td>Seam Folio with Floor Contour Plan of XVIIIB Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>6</td>
<td>VI</td>
<td>Seam Folio with Floor Contour Plan of XVIIIA Seam</td>
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<td>7</td>
<td>VII</td>
<td>Seam Folio with Floor Contour Plan of XVIII Seam</td>
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<tr>
<td>8</td>
<td>VIII</td>
<td>Seam Folio with Floor Contour Plan of XVIIA Seam</td>
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<tr>
<td>9</td>
<td>IX</td>
<td>Seam Folio with Floor Contour Plan of XVII Seam</td>
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</tr>
<tr>
<td>10</td>
<td>X</td>
<td>Seam Folio with Floor Contour Plan of XVIE Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>11</td>
<td>XI</td>
<td>Seam Folio with Floor Contour Plan of XVID/DE Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>12</td>
<td>XII</td>
<td>Seam Folio with Floor Contour Plan of XVIC Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>13</td>
<td>XIII</td>
<td>Seam Folio with Floor Contour Plan of XVIB Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>14</td>
<td>XIV</td>
<td>Seam Folio with Floor Contour Plan of XVIIA/AB Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>15</td>
<td>XV</td>
<td>Seam Folio with Floor Contour Plan of XVI Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>16</td>
<td>XVI</td>
<td>Seam Folio with Floor Contour Plan of XV Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>17</td>
<td>XVII</td>
<td>Seam Folio with Floor Contour Plan of XIV Seam</td>
<td>1:4000</td>
</tr>
<tr>
<td>18</td>
<td>XVIII</td>
<td>Seam Folio with Floor Contour Plan of XIII Seam</td>
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<td>19</td>
<td>IX</td>
<td>Seam Folio with Floor Contour Plan of XI/XII Seam</td>
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<td>XX</td>
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<td>21</td>
<td>XXI</td>
<td>Seam Folio with Floor Contour Plan of VIIIB Seam</td>
<td>1:4000</td>
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<tr>
<td>22</td>
<td>XXII</td>
<td>Seam Folio with Floor Contour Plan of VIIIA Seam</td>
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<td>23</td>
<td>XXIII</td>
<td>Seam Folio with Floor Contour Plan of VIII Seam</td>
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<td>24</td>
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<td>Schematic Transport Layout</td>
<td>NTS</td>
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<td>25</td>
<td>XXV</td>
<td>Schematic Pumping Layout</td>
<td>NTS</td>
</tr>
<tr>
<td>26</td>
<td>XXVI</td>
<td>Schematic Electrical Layout</td>
<td>NTS</td>
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<td>27</td>
<td>XXVII</td>
<td>Mouza Plan</td>
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<tr>
<td>28</td>
<td>XXVIII</td>
<td>Land Status Plan</td>
<td>1:4000</td>
</tr>
</tbody>
</table>
8. FORMATS & ANNEXURES

8.1 BANK GUARANTEE PROFORMA FOR

EARNEST MONEY DEPOSIT/ BID SECURITY

(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT)

(TO BE ISSUED BY ANY SCHEDULED BANK
AUTHORISED BY RBI TO ISSUE A BANK GUARANTEE)

To:
<…………………………….> Limited,
…………………………………….
…………………………………….
…………………………………….

WHEREAS __________________ [name and address of Bidder] (hereinafter
called “the Bidder”) shall be submitting its Bid dated ________ [date of the
Bid] for the work. __________ [name of the work] (hereinafter called “the
Bid”).

KNOW ALL MEN by these present that we, ___________ __ 
[name of the bank] of __________ [name of the country] __________________ having our
registered office at . . . . . . . . . . [address of the bank] (hereinafter called “the
bank”), are bound unto the <…………………………….. Limited>, <……..address
……………………………………..> (hereinafter called “the Employer”) for the sum of . . . .
. . . . . . [amount of the Guarantee in words and figures] for which payment
well and truly to be made to the said Employer the Bank binds itself, his
successors and assigns by these presents.

SEALED with the Common Seal of the said bank this ______ day of
________ 20__.
We, _____________ [name of the bank] undertake to pay to the Employer up to the above amount upon receipt of its first written demand, without the Employer having to substantiate its demand. The employer has to only mention that the amount claimed by it is due to the occurrence of any one or both the conditions mentioned in 1 and 2, given hereafter, specifying the occurred condition or conditions.

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws its Bid during the period of Bid Validity specified by the Employer on the bid form.

2. If the Bidder withdraws, having been notified of the acceptance of its bid by the Employer during the period of Bid Validity,
   a) by failing or refusing to execute the Contract Agreement when required or
   b) by failing or refusing to furnish the Performance Security in accordance with the Bid conditions.

This guarantee will remain in full force up to and including the date _____________ and any demand in respect thereof should reach the Bank not later than the date of expiry of this guarantee.

For and on behalf of the Bank.

Signature _________________________

Name ______________________________

Designation _________________________

Common Seal of Bank _________________________
8.2 BANK GUARANTEE PROFORMA FOR

SECURITY DEPOSIT / PERFORMANCE GUARANTEE

(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT)

(TO BE ISSUED BY ANY NATIONALISED / SCHEDULED BANK
AUTHORISED BY RBI TO ISSUE A BANK GUARANTEE)

To:
<…………………………….> Limited,
…………………………………………

In consideration of the <……………. Limited>, having its Registered office at <…………… …………….> (hereinafter called to as the “Employer” which expression shall unless repugnant to the context or meaning thereof, include all successors, administrators and assigns) having awarded to ________________ [Name & Address of the Contractor] (hereinafter called to as “Contractor” which expression shall unless repugnant to the context of meaning thereof include its successors, administrators, executors and assigns) the work ________________ [Name of the Work] by issue of Letter of Award No. ________ [Work Order/Letter of Intent No.] and the same having been unequivocally accepted by the Contractor resulting into a Contract Agreement dated __________ valued ________________ [value of Work Order] (hereinafter called ‘the Contract’) and the Employer having agreed to accept Performance Bank Guarantee of ___ [indicate figure]% of the Contract Value ________________ [amount in figures and words) from a Nationalised/Scheduled Bank for due performance of the work executed by the Contractor as per the terms & conditions contained in the said Contract.

We, ________________ [name of the Bank], of ________________ [address of the Bank] (hereinafter called to as “Bank” which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Employer immediately on demand and or, all money payable by the
Contractor to the extent of ________________ [amount of guarantee in figures and words], at any time from ______ to ______ without any demur, reservation, recourse, contest or protest and/or without any reference to the Contractor. Any such demand made by the Employer on the Bank shall be conclusive and binding notwithstanding any difference between the Employer and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. We agree that the Guarantee herein contained shall be irrecoverable and shall continue to be enforceable as per the terms & conditions contained in the said Contract.

The Employer shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee, from time to time, to extend the validity of time of Performance of the Contract by the Contractor. The Employer shall have the fullest liberty without affecting this Guarantee, to postpone, from time to time, the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forebear or to enforce any covenants contained or implied in the Contract, between the Employer and the Contractor or any other course or remedy or security available to the Employer. The Bank shall not be released of its obligations under these presents by any exercise by the Employer of its liberty with reference to matter aforesaid or any of them or by reason of any other act of forbearance or other acts of omission or commission on the part of the Employer or any other indulgence shown by the Employer or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the Bank. The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a Principal Debtor in first instance, without proceeding against the Contractor and notwithstanding any security or other Guarantee that the Employer may have in relation to the Contractor’s liabilities.

Dated this ________________day of ________________, 20____ at __________________
For and on behalf of the Bank.

Signature
____________________________

Name
____________________________

Designation
____________________________

Common Seal of Bank
____________________________
8.3 PROFORMA FOR INTEGRITY PACT

(To be submitted along with Part -II: Techno-Commercial Bid)

INTEGRITY PACT
Between
<…………………….Limited> hereinafter referred to as “The Principal”
and
<………………………..> hereinafter referred to as “The Bidder / Contractor”

Preamble

The Principal intends to award, under laid down organizational procedures, contracts for…………………………………… . The Principal values full compliance with all relevant laws and regulation, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder/s and Contractor/s.

In order to achieve these goals, the Principal cooperates with the international Non Governmental Organisation Transparency International” (TI). Following TI’s national and international experience, the Principal will appoint an external independent Monitor who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1. No employee of the Principal, personally or through family members or any other person acting on his/her behalf, with in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for him/herself or third person, any material or immaterial benefit which he/she is not legally entitled to.

2. The Principal will, during the tender process, treat all Bidders with equity and reason, The Principal will in particular, before and during the tender process, provide to all Bidders the same information and will not provide to
any Bidder confidential/ additional information through which the Bidder could obtain an advantage in relation to the tender process or the contract execution.

3. The Principal will exclude from the process all known prejudiced persons.

(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the relevant Anti-Corruption Laws of India, or if there be a substantive suspicion in this regard, the Principal will inform its Chief Vigilance Office and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder/Contractor

(1) The Bidder/Contractor commits itself to take all measures necessary to prevent corruption. He/she commits himself/herself to observe the following principles during his/her participation in the tender process and during the contract execution.

1. The Bidder/Contractor will not, directly or through any other persons or firm, offer, promise or give to any of the Principal’s employees involved in the tender process or the execution of the contract or to any third person any material or immaterial benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2. The Bidder/Contractor will not enter with other Bidders into any agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission in the bidding process.

3. The Bidder/Contractor will not commit any offence under the relevant Anti-Corruption Laws of India; further the Bidder/Contractor will not use improperly, for purposes of competition or personal gain, or pass on to others, any
information or document provided by the Principal as part of the business relationship regarding plans, technical proposals and business details including information contained or transmitted electronically.

4. The Bidder/Contractor will, when presenting his/her bid, disclose any and all payments he/she has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

5. The Bidder/Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts.

If the Bidder, before contract award has committed a transgression through a violation of Section 2 or in any other form such as to put his/her reliability or credibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

1. If the Bidder/Contractor has committed a transgression through a violation of Section 2 such as to put his/her reliability or credibility into question, the Principal is entitled also to exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression. The severity will be determined by the facts and circumstances of the case, in particular the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.

2. The Bidder accepts and undertakes to respect and uphold the Principal’s absolute right to resort to and impose such exclusion and further accepts and
undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.

3. If the Bidder/Contractor can prove that he/she has restored/recouped the damage caused by him/her and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely.

4. A transgression is considered to have occurred if in light of available evidence no reasonable doubt is possible.

Section 4 – Compensation for Damages

1. If the Principal has disqualified the Bidder from the tender process prior to the award according to section 3, the Principal is entitled to demand and recover from the Bidder liquidated damages equivalent to 3% of the value of the offer or the amount equivalent to Earnest Money Deposit/Bid Security, whichever is higher.

2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

3. The bidder agrees and undertakes to pay the said amounts without protest or demur subject only to condition that if the Bidder/Contractor can prove and establish that the exclusion of the Bidder from the tender process or the termination of the contract after the contract award has caused no damage or less damage than the amount of the liquidated damages, the Bidder/Contractor shall compensate the Principal only to the extent of the damage in the amount proved.
Section 5 – Previous transgression

1. The Bidder declares that no previous transgression occurred in the last 3 years with any other Company in any country conforming to the T1 approach or with any other Public Sector Enterprise in India that could justify his/her exclusion from the tender process.

2. If the Bidder makes incorrect statement on this subject, he/she can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders/Contractors/Subcontractors

1. The Bidder/Contractor undertakes to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.

2. The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Subcontractors.

3. The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 – Criminal charges against violating Bidders/Contractors/Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform its Chief Vigilance Office.
Section 8 – External Independent Monitor/ Monitors (three in number depending on the size of the contract) (to be decided by the Chairperson of the Principal)

1. The Principal will appoint competent and credible external independent Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligation under this agreement.

2. The Monitor is not subject to instruction by the representatives of the parties and performs his/her function neutrally and independently. He/she reports to the chairperson of the Board of the Principal.

3. The Contractor accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his/her project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder/Contractor/Subcontractor with confidentiality.

4. The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual-relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he/she will so inform the Management of the Principal and request the Management to discontinue or heal the violation, or to take other suitable relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
6. The Monitor will submit a written report to the Chairperson of the Board of the Principal within 8 to 10 weeks from the date of reference or intimation to him/her by the ‘Principal’ and, should the occasion arise, submit proposals for correcting problematic situations.

7. Monitor shall be entitled to compensation on the same terms as being extended to/provided to independent directors/Chairman as prevailing with Principal.

8. If the Monitor has reported to the Chairperson of the Board a substantiated suspicion of an offence under relevant Anti-Corruption Laws of India, and the Chairperson has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Chief Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

9. The word ‘Monitor’ would include both singular and plural.

Section 9 – Pact Duration
This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by Chairperson of the Principal.

Section 10 – Other provisions

1. This agreement is subject to Indian Law, Place of performance and jurisdiction is the Registered Office of the Principal, i.e. <……….>.

2. Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
3. If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

For the Principal Employer For the Bidder / Contractor

Place

Witness 1

Date............. Witness 2
Agreement No. Dated:

THIS AGREEMENT made on this ___________ day of __________ 20__ between <………………………….. Limited>, a Subsidiary of Coal India Limited, Govt. of India Undertaking, an Employer registered under the Indian Companies Act. 1956 with its registered office at <……………………………> and (hereinafter referred to as the Employer which expression where the context so admit shall include its successors in interest and assign) of the one Part and ___________________ ______________ (hereinafter referred to as “the Contractor” which expression where the context so admit shall include its heirs, executors, administrators legal representatives, successors in business and assign) of the other part.

WHEREAS, the Employer invited bid for the Work “________________________” and the bid of the Contractor has been accepted by the Employer vide their Letter No ___________________ dt. ______ for a Contract value of ________________ [Contract value in figure & words]

WHEREAS the Contractor has agreed to execute the works on the terms & conditions as stipulated in the Bid and subsequent amendments thereto for a Contract value of _________________ [Contract value in figure & words] for successful completion of the work.

NOW THIS AGREEMENT WITNESSETH AND IT IS HEREBY AGREED AS FOLLOWS:

1. In pursuance of the Agreement aforesaid and in consideration for the payment of the Contract value of _________________ [Contract value in figure & words] in accordance with the terms & conditions of this contract and/or such sum as may be payable to the contractor, the Contractor shall
upon and subject to the said terms & conditions execute and complete the
work as described in the ‘Scope of work’.

2. The time shall be considered as one of the essence of the contract. The
duration of the contract and the time schedule for completion of various
activities shall be as per the agreed scheme / approved DPR.

3. The parties hereto shall respectively and faithfully abide by and submit
themselves to the terms & conditions and stipulations contained in this
agreement and perform and discharge their part of contract accordingly.

4. This final agreement has been arrived at between the parties after due
consideration of the correspondences, documents, meetings and negotiations
held from time to time. The following documents shall constitute the Contract
between the Employer and the Contractor. And each shall be read and
construed as an integral part of the Contract

<table>
<thead>
<tr>
<th>Part</th>
<th>Description of Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>Article of Agreement.</td>
</tr>
<tr>
<td>02.</td>
<td>Notice Inviting Tender:</td>
</tr>
<tr>
<td>03.</td>
<td>Instructions to Bidders</td>
</tr>
<tr>
<td>04.</td>
<td>Forms of Bid and Qualification Information</td>
</tr>
<tr>
<td>05.</td>
<td>Conditions of Contract</td>
</tr>
<tr>
<td>06.</td>
<td>Scope of work</td>
</tr>
<tr>
<td>07.</td>
<td>Mine profile</td>
</tr>
<tr>
<td>09.</td>
<td>Any other relevant Documents</td>
</tr>
</tbody>
</table>

5. The Contract shall be executed within the purview of the Indian Laws.
In witness whereof the parties hereto have hereunder affixed their signatures
at <……………..> on the day, month and year written as above.
SIGNED, SEALED AND DELIVERED

Signed on behalf of the Contractor Signed on behalf of the Employer

Designation Designation

In the presence of:

WITNESS - 1 WITNESS - 2
(Signature)                (Signature)
(Name in Project Letters)        (Name in Project Letters)
Official Address:                Official Address:
ANNEXURE-I

SAMPLE LIST OF PLANT & MACHINERY
(Other than face equipment)

A. Sample List of Ventilation and Safety Equipment
1. Main mechanical ventilators
2. Auxiliary fans
3. Ventilation ducting
4. Ventilation survey equipment
5. Fire fighting and other safety equipment
6. Cap lamps and battery charger
7. Self rescuers with rack
8. Survey equipment
9. UG safety boring machine
10. Anchorage testing machine
...

B. Sample List of Underground Transport Equipment

**Gate Transport**
1. Gate-belt conveyors with drive-head, tail-end, structures, rollers, idlers, etc.
2. Direct, endless and/or tugger haulage with electrical and required accessories
3. Rails
4. Sleepers, dog-nails, fish-plates, etc.
5. Haulage ropes
6. Transfer points, chutes, etc.
...

**Trunk Transport**
1. Trunk-belt conveyors with drive-head, tail-end, structures, rollers, idlers, etc.
2. Direct, endless and/or tugger haulage with electrical and required accessories
3. Rails
4. Sleepers, dog-nails, fish-plates, etc.
5. Haulage ropes
6. Transfer points, chutes, etc.
...

C. Sample List of Electrical and Communication Equipment

1. Equipment at main sub-station
2. Equipment for UG power distribution
3. Equipment and fittings for illumination
4. Testing and maintenance equipment
5. Overhead lines and cables
6. Township electrification
7. Communication and EDP System
8. Other miscellaneous electrical items

… … … …

D. Sample List of Workshop Equipment

1. Lathe
2. Shaper
3. Grinder
4. Drill machine
5. Welding machine
6. Hydraulic press
7. Hydraulic test bench set
8. Electric hoist
9. Tools and tackles

… … … …

E. Sample List of Equipment for Pumping System

1. Pump-sets with drive, discharge and head
2. Pipes of various types, sizes, etc.
3. Pump and pipe fittings

… … … …

F. Sample List of Equipment for Coal Handling Plant

1. Belt conveyors with drive-head, tail-end, structures, rollers, idlers, etc.
2. Feeders
3. Vibratory screens
4. Suppression system
5. Road weighbridge
6. Fire fighting system
7. Transfer, truck/ rack loading system

… … … …
ANNEXURE – II

INFORMATION REQUIRED FROM BIDDER
FOR ELECTRICAL WINDING ENGINE

The information required from the bidder is shown below which the bidders have to submit. This information will form part of documents for technical evaluation of bids submitted.

1

A. GENERAL:

1. Type of winding :

2. Depth of wind :

3. Normal hoisting time :

4. Duty :

5. Maximum unbalanced load to be hoisted :

6. Hoisting time during which maximum unbalanced load is to be handled :

7. Conveyance to be used :

8. Winding speed:
   i) Maximum Speed :
   ii) Normal hoisting speed :
   iii) Speed during hoisting of heavy material :
   iii) Inspection speed :

9. Other hoisting situation :

B. WINDING ROPE

   i) Type :
   ii) Diameter :
   iii) Weight of rope per m. :
   iv) Minimum breaking strength :
   v) Suspended portion of rope when the conveyance is at its lowest point :
C. **WINDER DRUM**:

1. Type of winder

2. Type of drum & No. of drums

3. Diameter of the drum (s)

4. Width of Drum(s)

5. Drum Axle

D. **OTHER COMPONENTS**:

1. Gear Box

2. Couplings

3. Bearings

E. **ELECTRICALS**:

1. Winder drive motor

2. Supply Voltage & frequency:

3. Motor Circuit

4. Winder Control Unit:
   - Speed Control:
   - Constant Starting Current:
   - Torque Signal Inversion:
   - Drive/Brake Selection:
   - Dynamic Braking:
   - Protection:

5. Signalling & Communication:

6. Control Desk:

8. HT Switch Board and outgoing Control panel
9. Tests:

F. **SAFETY FEATURES**:

1. Speed indicators
   - Speed recorder
   - Automatic contrivance
   - Limit switches
     - Protective arrangements to prevent the winder from being started in a wrong direction.
   - Audible signal
   - Inter-locks:

2. **Brakes**:
   i) Service Brakes and safety brakes
   ii) Emergency Brake:

3. **Other safety features**
ANNEXURE – III

INFORMATION REQUIRED FROM BIDDER FOR MAN-RIDING SYSTEM

1. Type of man-riding
2. Length of road way
3. Maximum gradient of roadway
4. Range of speed
5. Distance between stations
6. System track gauge
7. Distance between two chairs, in case of chair lift
8. Maximum man riding capacity in one direction
9. Sheave diameter
10. Rope
11. Rope safety factor
12. Number of boarding/alighting stations required
13. Drive power (kW)
14. Electrical
15. Safety features
16. Lighting, Signaling & Telecommunication Arrangement
17. Other information
# Annexure – IV

## Information Required from Bidder for Haulage

1. Type of Haulage
2. Haul length
3. Maximum gradient
4. Range of speed
5. Maximum load carrying capacity
6. Rail size & gauge
7. Drum diameter & width
8. Rope
9. Rope safety factor
10. Drive power (kW)
11. Electrical
12. Safety features
13. Lighting, Signaling & Telecommunication Arrangement
14. Other information
ANNEXURE - V

INFORMATION REQUIRED FROM BIDDER FOR MASS PRODUCTION TECHNOLOGY PACKAGE

The information required from the bidder is shown below which the bidders have to submit. This information will form part of documents for technical evaluation of bids submitted.

1. Furnish list of equipment/ machinery offered with ‘Mass production technology package’
   (a) Make and Model No. of equipment/ machinery;
   (b) Dimensional drawings;
   (c) Detailed specifications;
   (d) Leaflets and literatures;
   (e) Name of country where manufactured;
   (f) Standards followed during manufacturing of electrical and mechanical parts of equipment/ machinery;
   (g) Certificates of inspections/ tests;
   (h) Item-wise list of initial as well as maintenance spares and consumables, their quantities, and whether imported or procured indigenously; and
   (i) Status of DGMS approval for use in Indian underground coal mines.

2. Furnish details of the proposed technology substantiated with plans, sketches, drawings, etc.

3. Furnish details of scheme for strata management for face as well as for gate-roads showing detailed calculations.

4. Furnish the following requirements for deployment of ‘mass production technology package’:
   (a) Minimum size of the mine entries and/ or roadways for transporting the equipment/ machinery to the designated location;
   (b) Maximum electrical power demand, with voltage and frequency of supply desired, at the position of the load centre in the panel;
   (c) Requirement of minimum air quantity at the last ventilation connection of the active panel;
(d) Quantity, quality, and pressure of water required at the tail-end of gate-belt conveyor;
(e) Minimum capacity of gate-belt conveyor in terms of tonnes per hour required for out-bye transport of coal;
(f) Indicate whether surface stores provided/proposed to be provided by <Name of mine> is adequate? If not, additional space required should be indicated;
(g) Indicate whether the workshop facility and equipment provided/proposed to be provided therein is sufficient? If not, indicate details of additional facility and equipment required; and
(h) Any other item with details.

5. Indicate whether
(a) the size and capacity of gate-belt conveyor and trunk belt conveyor provided/proposed to be provided by <Name of company> would be compatible with the equipment/machinery package of the bidder? If no, give reasons and suggest desired modifications.
(b) The material transport system provided/proposed to be provided from surface to active workings in the mine is adequate? If no, give reasons and suggest desired modifications.

6. Indicate whether the surface communication system provided/proposed to be provided by <Name of company> for the mine is adequate for safe and efficient functioning of the system proposed to be offered by the bidder. If no, give reasons and suggest desired modifications.

7. Indicate potential hazards, if any, associated with the proposed technology and the proposed measures in order to mitigate them for ensuring safety to men, equipment, and the project.

8. Furnish details for the following.
(a) Details of supply of similar equipment made, if any, during the last five years with the corresponding production performance and safety records of the same;
(b) Details of any accident and/or equipment failure with precise cause(s) as experienced by the bidder during the last five years in executing similar contract and corresponding corrective measures taken with respect to each of them;
(c) Brief details of cases, if any, in respect of the clause (b) above pending sub-judice in any International/ Indian Court of Law;
(d) Brief details of past legal cases, if any, in respect of the clause (b) above; and
(e) Attested copies of the certificate from the appropriate authority to the effect that there is no embargo upon using the proposed equipment/technology proposed to be supplied by the bidder under this contract.
ANNEXURE-VI
BUILDING TYPES AND PROVISIONS FOR UNDERGROUND COAL MINE PROJECT

Manager’s Office (Big) and/or Manager’s Office (Small)- depending on project size

Workshop:
Machine Shop, Electrical repair Shop
U.G Equipment repair shop, Height
(i) 4.5m
   Carpentry shop (open on sides) Height 3m
(ii) Height 3m
   Smithy shop (open on sides) Height 3m
(iii) 3m
(iv) Washing platform
Bituminous pavement
Compound wall with gate (in m)
Lavatories & Urinals
Light vehicle shop, 4.5 m height
Washing ramp for light vehicles
Office / Store
Security Room
Unit Stores
Store shed, 6 m height
Hard stand
Boundary wall with gate
Sub-station (Height 4 m)
For Project
Barbed wire fencing
First Aid centre
Cap lamp Room (600 Lamps with 500 self Rescuer)
Lavatories & Urinals (10 Seater)
Rest Shelter
Security Room
CDS Control Room
Haulage Engineer House (110 kW x 2)
Fan House 300 kW
Boundary wall with gate (for mine)
Soil investigation, land development, Drainage etc.
## ANNEXURE – VII

### STANDARDS FOR DIFFERENT CATEGORIES OF ROADS IN TOWNSHIPS OF PUBLIC UNDERTAKINGS

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Category of Road</th>
<th>Function</th>
<th>Width of road land (Right of Way)</th>
<th>Carriage-way Width</th>
<th>Brief Specification</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Footpath Access</td>
<td>Made for use by pedestrians &amp; include the footpaths serving as access to</td>
<td>6-8 ft (1.83 – 2.44 m)</td>
<td>6-8 ft (1.83 – 2.44 m)</td>
<td>(a) 3&quot; (7.6cm) over burnt brick/stone aggregates (1 ½&quot; or 3.8cm in size) rolled and blinded with earth/moorum with 1 ½&quot; (3.8cm) premix bituminous surfacing for all subgrade types (sandy, silty and clayey). (b) Alternatively, the top course could consist of 1/4&quot; (0.63cm) red bajari spread, watered &amp; rolled.</td>
<td>(a) In shopping areas the width of the footpath should not be less than 10 ft. (b) A capacity of 10-15 pedestrians for 12&quot; (30.5cm) width of foot-way per minute should be considered as reasonable.</td>
</tr>
<tr>
<td>2</td>
<td>Residential Streets) (a) Minor</td>
<td>These include all minor streets primarily meant to provide access to building as well as cul-de-sac and loop roads.</td>
<td>Generally 30 ft. (9.14m) which could be reduced to 20 ft. (6.1m) when access to property is on one side only.</td>
<td>Single carriage-way having single lane 12 ft. (3.66m) wide.</td>
<td>(a) (i) Sandy &amp; Silty Subgrades. 9&quot; (22.8cm) crust composed of 6&quot; subbase (stone soling or other alternative) and 3&quot; (7.6 cm) water bound macadam covered with 3/4&quot; (1.9cm) thick premix surfacing. (ii) Clayey Subgrades. 12&quot; (30.5cm) crust composed of 9&quot; (22.8cm) subbase (blanket course consisting of 4&quot; (10.16cm) sand, cinder or gritty moorum and stone soling or other alternative) &amp; 3&quot; (7.6cm) water bound macadam covered with 3/4&quot; (1.9cm) thick premix surfacing.</td>
<td>(a) to start with, only 8” (2.4m) width of carriage-way need to be constructed. In case of a cul-de-sac the distance end should not exceed 600ft. (183m), from a street open at both ends.</td>
</tr>
<tr>
<td></td>
<td>Main</td>
<td>These include the principal roads in a residential area giving access to a large number of dwellings &amp; are open at both ends.</td>
<td>40ft. (12.19m)</td>
<td>Single carriage-way having two lanes (24ft. or 7.3m wide).</td>
<td>(b)(i) Sandy &amp; Silty Subgrades. 9&quot; (22.8cm) crust composed of 6&quot; (15.24cm) sub-base (Stone soling or other alternatives) and 3&quot; (7.6cm) water bound macadam covered with 3/4&quot; (1.9cm) thick premix surfacing. (ii) Clayey Subgrades 12” (30.5cm) thick crust composed of 9” (22.8cm) sub-base (blanket course consisting of 4” (10.16cm) sand, cinder or gritty moorum and stone soling or other alternatives) 3” (7.6cm) water bound macadam covered with 3/4” (1.9cm) thick premix surfacing.</td>
<td>(b) In the initial stages only 12 ft. (3.66m) width of carriage-way need to be constructed.</td>
</tr>
<tr>
<td>Sl. No</td>
<td>Category of Road</td>
<td>Function</td>
<td>Width of road land (Right of Way)</td>
<td>Carriage-way Width</td>
<td>Brief Specification</td>
<td>Remarks</td>
</tr>
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</tbody>
</table>
| 3.     | Sector Roads     | These are roads which link up various sectors and join up with major roads. | 60 ft. (18.3m) | Single carriage-way having two lanes (24 ft. or 7.3m wide). | (i) Sandy Subgrades. 9" (22.8cm) crust composed of 4½" (11.4cm) subbase (stone soling or other alternatives) and 4½" (11.4cm) water bound macadam (in two layers) covered with 1" (2.5cm) thick premix bituminous surfacing with seal coat. 
(ii) Silty Subgrades, 12" (30.5cm) crust composed of 6" (15.2cm) subbase (stone soling or other alternatives) and 6" (15.2cm) water bound macadam (in two layers) with 1" (2.5cm) premix surfacing with seal coat. 
(iii) Clayey Subgrades. 15" (38cm) crust composed of 9" (22.8cm) subbase (blanket course consisting of 4" (10.16 cm) sand, cinder, gritty moisum and stone soling or other alternatives) 6" (15.2cm) water bound macadam (in two layers) covered with 1½" (3.8cm) premix bituminous surfacing with seal coat. | In the initial stages only 16' (4.88m) width of the carriage-way need to be constructed. |
| 4.     | Major Roads      | These include all principal traffic routes within the town and to which the sector roads are also connected. | 80ft-100ft. (24.4 – 30.5m) | (a) Single carriage-way consisting of four lanes (44 ft. or 13.4m wide). 
(b) In special cases where appreciable volume of fast & commercial traffic is anticipated, a dual carriage-way road could be adopted. | (i) Sandy Subgrades. 12" (30.5cm) crush composed of 6" (15.2cm) subbase (stone soling or other alternatives) & 6" (15.2cm) water-bound macadam in 2 layers covered with 1½" (3.8cm) premix bituminous surfacing with seal coat. 
(ii) Silty Subgrades. 15" (38cm) crust composed of 9" (22.8cm) subbase (stone soling or other alternatives) & 6" (15.2cm) water bound macadam in 2 layers covered with 1½" (3.8cm) premix bituminous surfacing with seal coat. 
(iii) Clayey Subgrades. 20" (50.8cm) crust composed of 10" (25.4cm) subgrade (blanket course consisting of 4" (10.16cm) sand, cinder or gritty moisum and stone soling or other alternatives) plus 4" (10.16cm) over size metalling & 6" (15.2cm) water bound macadam (in 2 layers) and 1½" (3.8cm) premix bituminous surfacing with seal coat. | In the initial stages only two lanes ie. 24 ft. (7.3m) width of the carriage-way need to be constructed. |
<p>| 5.     | Arterial         | These | 200 ft. | Dual- | (i) Sandy Subgrades. 12&quot; When the Arterial |</p>
<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Category of Road</th>
<th>Function</th>
<th>Width of road land (Right of Way)</th>
<th>Carriage-way Width</th>
<th>Brief Specification</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Roads</td>
<td>include National &amp; State Highways and important regional roads which connect the township.</td>
<td>(61m) carriage-way each having two lanes (24 ft. or 7.3m width) on either side of the central verge.</td>
<td>(30.5cm) crust composed of 6&quot; (15.2cm) subbase (stone soling or other alternatives) and 6&quot; (15.2cm) water bound macadam (in 2 layers) covered with 1½&quot; (3.8cm) premix bituminous surfacing with seal coat.</td>
<td>Road form part of National or State Highways, specifications to be adopted would be as laid down for them.</td>
<td></td>
</tr>
</tbody>
</table>

**Foot Note :-**

(a) The thickness of various layers indicated in column 6 are compacted thickness. For details of materials required for a given compacted thickness of Water Bound Macadam course, reference may be made to the I.R.C. specification and Code of Practice for Water Bound Macadam and surface treated Water Bound Macadam.

(b) The specifications indicated in column 6 are purely indicative. The specifications to be adopted in each case would depend upon the soil, the type and intensity of traffic and road materials available in the locality. For large scale construction, it would be advisable to consult Highways Research Organisation such as CFRI, Delhi and Highways Research Station, Madras.

(c) In the initial stages of construction of township, the roads would be subjected to numerous cuttings due to laying of various engineering services such as water supply, sewerage, power, telephone etc. It would, therefore be economical and desirable to defer the premix surfacing course indicated in column 6 to a later stage, particularly in respect of footpaths, residential streets and sector roads and adopt either bituminous painting with sand binding or surface dressing whichever is cheaper.
Development of Madhuband Underground Mine and extraction of coal from Madhuband Underground Mine, Barora Area by mass production technology package for a minimum guaranteed production of 1.0 Mty of coking coal on turnkey basis. Work includes additional exploration (if desired so by the contractor); preparation of mining plan, detailed Project Report & EMP including acquisition of land & rehabilitation (if so required); obtaining approvals from concerned authorities.

BID NO. BCCL/ GM(CMC)/ F- GL/ GLOBAL BID-MB / 2010/ 571
Dated 06/04/2010

(Commercial Volume)

BID DOCUMENT
Part – II (PRICE BID)
7.0 SCOPE OF WORK, TIME SCHEDULE AND PROFORMA FOR PRICE BID

7.1 SCOPE OF WORK

The mine/seams is to be explored (if felt necessary by the Contractor), planned, developed and operated by the Contractor for production of guaranteed quantity of coal per annum for a minimum NINE production years of commercial production period on turnkey basis.

The elaborated scope of work of the Contractor shall be as detailed hereunder.

7.1.1 Preparation and approval of mining plan

Mining plan is to be prepared as per the guidelines of Indian Bureau of Mines (IBM) and approval for it is to be taken from Ministry of Coal, Govt. of India.

7.1.2 Geological exploration (if necessary)

The Contractor shall do the additional exploration work (if felt necessary by him) including drilling of bore holes, geophysical logging, testing of samples etc. and preparation of a report based on the data created.

7.1.3 Preparation and approval of Environmental Management Plan (EMP)

The contractor shall prepare Environmental Management Plan (EMP) considering the guidelines of Ministry of Environment & Forests, Government of India in this regard and obtain necessary clearances for it.

Note: The successful bidder shall prepare EMP considering the guidelines of Ministry of Environment and Forests, Govt. of India in this regard and BCCL would extend all necessary help towards obtaining necessary clearance as required under statutory obligation.
The collection of sample, data, etc. for preparation of EMP is to be done by the Contractor.

7.1.4 Preparation of detailed project report:

a) Detailed project report shall be prepared for

   i. Planning & design for development of seams

   ii. Planning & design for means of access and egress to seams

   iii. Designing method of extraction of coal of guaranteed quantity from seams along with selection of equipment in accordance with the method of work.

   iv. Planning and design for the method of development and extraction, system of coal-material-man transportation, ventilation, pumping, drainage, power supplies, communication, coal handling etc.

b) The proposals made under Detailed Project Report (DPR) should be well within the precincts of Mines Act, Mines Rules, Coal Mine Regulations and other statutory obligations as applicable in India.

c) In addition to the safety, the DPR should take into consideration that conservation of coal and the methods suggested must take into consideration the maximum extraction of coal under the prevailing geo-mining conditions. It is desirable that the mining method to be adopted should be able to recover in-situ coal to the maximum extent possible.

d) It is construed that during the preparation of DPR discussion with DGMS about the method of work as well as requirement of machinery has been held and possible objection, if any, have already been taken care of / rectified in the draft DPR.

e) The draft DPR so prepared may be sent to the consultant of the Company for scrutiny and suggestions of consultant related to safety are binding on the contractor. However, the vetting of DPR by the consultant of the Company does not relieve, in any way whatsoever, the contractor of bids obligations under the contract.
7.1.5 Scientific studies and approvals

The Contractor shall be responsible for scientific study required for various activities for development and extraction coal seam, obtaining Directorate General of Mines Safety (DGMS) and other statutory approval both for application of mass production technology package as well as for proposed mining method and fulfilling other statutory obligations including statutory approval of the equipment to be deployed. Obtaining approval of DGMS at all stages, in the matters of use of all equipment, all mining operations, preparation of reports, conducting scientific studies and instrumentations as are required under Indian mining legislation and as may be advised by DGMS from time to time will be responsibility of the Contractor.

The Contractor shall carry out Subsidence prediction studies and the remedial measures.

7.1.6 Mine Development and construction

a) In accordance with approved detailed project report, the Contractor shall make development of the mine upto the seams and he will be responsible for preparation of all designs, drawings of the development of work and supply & installation of equipment therein.

b) The mine in its entirety is to be developed scientifically so that coal can be extracted from seams in compliance with the provisions under Mines Act, Mines Rule, Coal Mine Regulation and other statutory obligations as applicable in India.

c) Development and construction of all infrastructures including mine shafts/inclines/drifts; coal, man and material transport network; ventilation network; power supply network; water drainage network; and any other infrastructures or requirement as envisaged in the approved DPR shall be the Contractor’s responsibility. This part will include procurement, supply, erection/installation and commissioning of all equipments/items from Indian or overseas sources.

d) The Contractor shall be responsible for maintenance of all development and construction works including maintenance of all installed equipments during entire contract period.
e) The Contractor shall be responsible for carrying out dismantling / demolition of necessary existing buildings and structures including foundations, covered works and plant & equipment and stacking and expeditious removal of the debris to the dumping ground to be specified by the Employer for the purpose of mining activities.

7.1.7 Installation of Mass production technology package

The Contractor shall be responsible for supply, installation and commissioning of the mass production technology package in the panel and the equipments for transportation, communication, lighting, pumping and other safety devices in mine & seams in accordance with the approved Detailed Project report.

The Contractor shall deploy only a new set of mass production technology package.

Use of refurbished or overhauled equipment is not permitted. The Contractor shall have to produce documentary evidence that the mass production technology package deployed by him is new.

7.1.8 Extraction of coal seams

The Contractor shall be responsible for extraction of target coal seams in accordance with the approved DPR during the commercial production period of minimum NINE production years to ensure the annual guaranteed production of coal. Panelling of coal deposits in each target seam in a scientific manner and carrying out mining operations for achieving target rate of production are the sole responsibility of the Contractor.

Development of panels and shifting of equipment accordingly for new panels shall be the responsibility of the Contractors. All allied works within the mine such as communication, pumping, ventilation, maintenance of the mass production technology package etc. shall be responsibility of the Contractor during contract period. The Contractor shall be responsible for transportation of coal produced from the face up to the designated transfer point at surface.
The Bidders are free to quote the quantity of annual guaranteed production of coal according to their capacity but not less than ‘Minimum guaranteed production’ as given below (subject to the maximum production per annum as per approved EMP).

Minimum guaranteed production during the Commercial production period:

The bidder has to achieve the targeted production of 9… million tonne in 9 years. The bidder has to make the phasing of production in such a way that total production of coal is 9…. million tonne at the end of 9th APP. The bidder shall indicate phasing of production of coal for each year of the contract period of 9 years.

7.1.9 Construction and operation of CHP - The Contractor shall supply coal of -50mm size on the surface at the designated transfer point. For smooth & continuous supply of coal of required size, the Contractor shall, as applicable, construct and operate the ‘Coal Handling Plant’ including coal bunkerage and high speed loading system, etc. suitable for the quantity of coal to be handled (taking into account the potential of existing infrastructure, if any). Construction and operation of CHP will include procurement, supply, erection / installation & commissioning of all equipments & accessories and maintenance of the CHP during entire Contract period.

7.1.10 Deputation of foreign experts

The Contractor may depute at site its Foreign Experts from various disciplines for Installation, Commissioning, operation & maintenance of mass production technology package. The Contractor may also depute Experts, if required, for proper and safe handling of cargo at the time of unloading of Mass production technology package at the port of clearance and storage, conservation and re-conservation.

Bio-data of the Foreign Engineers / Experts shall be furnished by the Contractor to the Employer / Engineer for information sufficiently in advance before their deputation. The Contractor shall obtain at its own cost, necessary work permits, passports, visas, police permits and expenses for customs duty
related to personal and other effects of any Experts / personnel who are non-
residents of India, employed or engaged by him for work

7.1.11 Training of Employer's personnel

In the last production year of commercial production period, the Contractor
shall give adequate training to the sufficient numbers of Employer's personnel
in India or abroad for running the mine after expiry of the commercial
production period. The traveling, boarding & lodging expenses of the
Employer's trainees shall be borne by the Employer. The Employer shall also
arrange necessary travel documents for its trainees. The Contractor shall,
however, assist in arranging visa and medical insurance for such trainees,
wherever necessary. Other arrangements and expenses are to be done by
the Contractor.

7.1.12 GENERAL RESPONSIBILITY:

i) The Contractor shall carryout above works which includes supply of equipment;
customs & port clearances; inland transportation; intermediate storage;
insurance & handling; erection / construction work; testing; start-up &
commissioning and preparation of PR & EMP, development of the mine and
production of coal for commercial production period of minimum NINE
production years with due care and diligence in accordance with the Contract.

ii) The contractor shall furnish all, but not limited to, equipment, materials and
accessories and services to complete this work. The work shall have to be
completed and operative in all details. Any item of work or material or
equipment which may not have been specifically mentioned but incidental to or
necessary for completing the works shall be provided by the contractor. The
contractor shall also supply and/ or erect the addition or modification as will be
agreed upon in writing after mutual discussions with Company's
representatives.

iii) The provision of all labour, materials, temporary works, surface constructional
infrastructures (such as office, buildings, storage area, labour / staff colony,
fabrication area etc.) whether of a temporary or permanent nature, and
everything required for the completion of works, shall be deemed to be included in the Scope of Work.

iv) All excavated materials shall remain the property of the Employer. In case the Contractor wishes to utilise the boulders excavated by the Contractor during the excavation work at the site, the same may be issued to the Contractor at prevailing rates on cost recovery basis. Percentage of voids on stack measurement shall be mutually agreed. Contractor shall have to account for all excavated hard rock.

v) “All fossils, coins, articles of value of antiquity and structure and other remains or things of geological and archaeological interest discovered on the site of works shall be the absolute property of the Company and the Contractor shall take all precautions to prevent his workmen or any other person removing or damaging any such article or thing and shall immediately upon discovery thereof and before removal inform the Company of such discovery and carry out the removal under the supervision of the Employer of the same and hand it over to the Employer”.

vi) The Contractor shall intimate the Employer in writing well in advance about the requirement of shut down of any of the existing units / facilities for interconnection / incorporation of additional facilities. The shutdown period shall be mutually discussed and finalised. The work to be undertaken during the shut down period shall be planned meticulously by the Contractor to reduce the shut down period to the minimum.

vii) The Contractor shall be responsible for delays and losses consequent there upon, in case the mine is stopped or conditions imposed by DGMS.

viii) The Contractor must adhere to all relevant codes and practices, safety regulations, statutory laws, environmental protection acts, electricity rules etc. The Contractor shall be responsible for all the statutory obligations during development and extraction of coal seams.

ix) Statutory man power required for the project shall be provided by the Company.

x) The Contractor shall be responsible for carrying all mining and progressive mine closure activities as per approved mine plan.

7.2 MINE HAND OVER

After successful completion of commercial production period of minimum NINE production years, the mine / seams and entire infrastructure including
transportation system for man, material & coal; ventilation system; pumping system; power & communication system; coal handling plant, surface buildings / constructions, deliverable P&M including mass production technology package and every things will be handed over to the Company in good working condition after due consideration for allowable wear and tear.

All documents, drawings, reports, photographs, statistical data etc. in hard and/ or soft versions will be properly indexed, maintained and handed over to the Employer on conclusion of the contract or intervening period as may be required by the Employer.

7.3 **TIME SCHEDULE**

The different activities of works should be completed within the scheduled time as per the approved scheme or the detailed project report as applicable.
### 7.4 PROFORMA FOR PRICE BID

#### 7.4.1. Format for Price for preparation and approval of reports (Mining Plan, EMP, DPR, etc.)
(For each report separate Performa should be used)

Total price for preparation and approval of reports:
Scheduled date of submission of approved reports:

<table>
<thead>
<tr>
<th>Price Components</th>
<th>INR</th>
<th></th>
<th></th>
<th>USD</th>
<th></th>
<th></th>
<th>Euro</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price</td>
<td>Taxes</td>
<td>Base index</td>
<td>Price+Taxes</td>
<td>Price</td>
<td>Taxes</td>
<td>Base index</td>
<td>Price+Taxes</td>
<td>Price</td>
</tr>
<tr>
<td>Fixed Comp.</td>
<td>100%</td>
<td></td>
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</tr>
</tbody>
</table>

(In words): INR .............................................................. and Euro ........................................
and USD ........................................

Note: 1. Price for preparation of reports will be firm. No escalation will be admissible for preparation and approval of the reports.
7.4.2. Format for Price for shaft sinking (As applicable)

(For each shaft separate Performa should be used)

Shaft dia
Estimated depth
Total price of shaft sinking and furnishing
Scheduled Starting date:   Scheduled Completion date :

<table>
<thead>
<tr>
<th>Price Components</th>
<th>INR</th>
<th>USD</th>
<th>Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Comp.</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable Comp.</td>
<td>80%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sinking schedule
First Year :
Second Year :
Third Year :
Fourth Year :
Fifth Year :

Notes :

1. Price of shaft sinking is firm except the case as per point no.2 below.
2. In case there is any delay in completion of mine infrastructure activities due to the fault on the part of the Company, escalation will be given as the escalation clause no. 4.1.39
3. Per meter rate of shaft sinking and furnishing will be calculated on the basis of total price quoted for shaft sinking & furnishing and the shaft depth. The contractor will be paid on the basis of physical progress per month and at the calculated rate of shaft sinking. However, in case of change in shaft depth, no additional payment on the basis of sinking & furnishing cost per meter will be admissible.
7.4.3. FORMAT FOR PRICE FOR INCLINE/ DRIFT-DRIVAGE (AS APPLICABLE)
(For each incline/ drift separate Performa should be used)

Cross-section
Estimated length
Gradient
Total price of incline drivage and furnishing

Scheduled Starting date:   Scheduled Completion date:

<table>
<thead>
<tr>
<th>Price Components</th>
<th>INR</th>
<th>USD</th>
<th>Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price</td>
<td>Taxes</td>
<td>Base index</td>
</tr>
<tr>
<td>Fixed Comp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable Comp.</td>
<td></td>
<td>%</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1. Price of incline/ drift drivage is firm except the case as per point no.2 below.

2. In case there is any delay in completion of mine infrastructure activities due to the fault on the part of the Company, escalation will be given as per escalation clause no. 4.1.39

3. Per meter rate of incline drivage and support will be calculated on the basis of total price quoted for incline drivage & support and the incline length. The contractor will be paid on the basis of physical progress per month and at the calculated rate of drivage. However, in case of change in incline length, no additional payment on the basis of incline drivage & support cost per meter will be admissible.
### 7.4.4 Price Format for Civil & Structural Works

1. Base indices
   - i) AICPI
   - ii) WPI

2. Applicable taxes
   - i) Service tax
   - ii) Cess
   - iii) Others, if any

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Type of structure/building</th>
<th>No. of units</th>
<th>Price/ unit</th>
<th>Total Amount</th>
<th>Scheduled month &amp; year of completion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Area (sq.m)</td>
<td>Rate (Rs./sq.m)</td>
<td>Amount/Unit</td>
</tr>
<tr>
<td>1</td>
<td>Service buildings</td>
<td>a. Workshop &amp; Stores</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Industrial buildings</td>
<td>a. Electrical Sub-station</td>
<td></td>
<td></td>
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<tr>
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</tbody>
</table>

**Notes:**

1. The price quoted for the civil work is firm except in case there is delay in completion of construction activity due to the fault on part of the employer. In that case the escalation will be paid as per the escalation clause no. 4.1.39.
### 7.4.5 Price Format for Roads & Culverts

1. **Base indices**
   - i) AICPI
   - ii) WPI

2. **Applicable taxes**
   - i) Service tax
   - ii) Cess
   - iii) Others, if any

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Type of road/ culvert</th>
<th>Length (km)</th>
<th>Width (m)</th>
<th>Rate (Rs./km)</th>
<th>Total Amount</th>
<th>Scheduled month &amp; year of completion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Note:**

1. The contractor will give details of the roads/ culverts to be constructed by him. Specifications for various types of roads are given in Annexure-VIII and specific classification of these roads/ culverts as per these specifications are to be included in the above format. In case, some roads/ culverts do not fall under any of the category given in the Annexure-VIII, full detailed specifications for such roads/ culverts are to be provided separately.

2. The price quoted for the civil work is firm except in case there is delay in completion of construction activity due to the fault on part of the employer. In that case the escalation will be paid as per the escalation clause no. 4.1.39.
7.4.5 a Price Format for Acquisition of Land

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Type of land to be acquired</th>
<th>Qty.(Ha)</th>
<th>Rate/Ha</th>
<th>Amount(Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Private land/Tenancy land</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Government land</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Forest land</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rail land</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 7.4.6. Price Format for supply of deliverable P&M

**A. For imported supplies**
(For each item/ item set separate Performa should be used)
Name and description of item/ set -
Nos. -
Currency (Please select from Euro or USD) -  (Amount in …………)
Applicable base index -

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Description</th>
<th>Taxes</th>
<th>Amount</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Item/ item set description&gt;</td>
<td>FOB / FCA Price</td>
<td>Firm Price</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Freight, insurance, handling charges@10% on FOB / FCA Price</td>
<td></td>
<td>Firm Price</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>CIF (1+2)</td>
<td></td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Basic custom duty@ 7.5% on CIF</td>
<td>7.5%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>CIF+BCD (3+4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>CVD @ 8% on (5)</td>
<td>8%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Education cess @3% on (6)</td>
<td>3%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Sub-total (5+6+7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Custom education cess @3% on (8)</td>
<td>3%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Sub-total (8+9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Special countervailing Duty@4% on (10)</td>
<td>4%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Misc. expenses @ 5% of FOB/ FCA</td>
<td></td>
<td>Firm Price</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Total landed price(10+11+12)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*12% if the origin of the country is USA, Canada or Japan

**Note:** The price quoted for the items of indigenous supplies is firm except in case there is delay due to the fault on part of the employer. In that case the escalation will be paid as per the escalation clause no. 4.1.39.
B. For indigenous supplies

For each item/ item set separate Performa should be used

Name and description of item/ set

Nos.

Base indices

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Description</th>
<th>Rate</th>
<th>Amount</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>&lt;Item/ item set description&gt;</td>
<td>Ex-works Price</td>
<td>Firm Price</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Excise Duty@14% on Ex-works Price</td>
<td>14%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Education cess @3% on Excise Duty</td>
<td>3%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Sub total (1+2+3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Sales Tax against form &quot;C&quot; @ 2% on (4)</td>
<td>2%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Sub total (4+5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Octroi# @ 3% on (6)</td>
<td>3%</td>
<td>On actual basis</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Misc. (Packing, Loading charges, Inland Insurance, Inland Transportation, Unloading Charges) 3% on (6)</td>
<td>3%</td>
<td>Firm Price</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Total (6+7+8)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# if applicable

Note: The price quoted for the items of imported supplies is firm except in case there is delay due to the fault on part of the employer. In that case the escalation will be paid as per the escalation clause no. 4.1.39
Price Format for supply of deliverable P&M

C. Total price \((A+B)\) of major P&M

<table>
<thead>
<tr>
<th>Item</th>
<th>INR</th>
<th>EURO</th>
<th>USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost towards indigenous and overseas supplies of major P&amp;M</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(In words): INR ................................................................. and Euro ......................................................... and USD ........................................

Note:
1. Price for all P&M items given in Annexure-I is to be quoted in the format given above.
2. Supply, installation and commissioning schedule for each item is to be provided.
### 7.4.7 Format for Price of coal production for the first commercial production year

*(Bidder must indicate the cost towards spares, consumables and manpower on per tonne of committed coal production)*

Scheduled Starting date of commercial production period

<table>
<thead>
<tr>
<th>Price Components</th>
<th>INR</th>
<th>USD</th>
<th>Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price</td>
<td>Taxes</td>
<td>Base index</td>
</tr>
<tr>
<td>Fixed Comp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable Comp.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minimum guaranteed production

Mt.

First Year
Second Year
Third Year
Fourth Year
Fifth Year
Sixth year
Seventh year
Eight year
Ninth year

**Notes:**

1. Price of coal production in the first production year of commercial production period is firm.
2. In case there is any delay in completion of mine infrastructure activities due to the fault on the part of the employer, the cost per tonne of coal for the first production year will be escalated as per the escalation clause no. 4.1.39.