वेस्टर्न कोलफील्ड्स लिमिटेड
Western Coalfields Limited
बोर्ड सचिवालय
BOARD SECRETARIAT

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2851 9/8/16

OFFICE OF THE GENERAL MANAGER
08 AUG 2016
Pench-Area, Parasia

Planning Dept., Pench Area
Inward No. 1522
Dt. 10/8/16

BOARD MATTER
CONFIDENTIAL

WCL/BD/SECTT/BM-279/2016/**450** DATE : 04.08.2016

Reproduced below is the relevant excerpt from the minutes of 279th meeting of the Board of Directors of WCL held on 18th July, 2016 :

ITEM NO.279/ C-9

SUB Recast Project Report (Including Mining Plan) of Jamunia UG Mine

i) In consideration of the proposal as brought out in the agenda note and explained, the Board, after deliberation approved the following:

   a) Recasted Project Report of (including Mining Plan) of Jamunia UG Mine (Sept. 2015) for a capacity of 0.84 Mty with estimated capital requirement of Rs.409.8748 crores on Departmental Option, yielding an IRR of 12.17% at 85% capacity for Power Sector at Notified Selling Price.

   b) To obtain Environmental Clearance up to 1.05 Mty (Peak Capacity).

ii) GM (P&P) to take necessary action in the matter.

5/8/16
COMPANY SECRETARY

GENERAL MANAGER (P&P)

cc : DIRECTOR (TECHNICAL) OP
DIRECTOR (PERSONNEL)
DIRECTOR (FINANCE)
DIRECTOR (TECHNICAL) P&P

cc – AGM, Pench Area

AFO
for undpl

C-112

Board Note for 279th Meeting of the Board of Directors

Western Coalfields Limited

ITEM NO. 279/C-9 DEFERRED ITEM No: 278/C-8

SUB : Recast Project Report (Including Mining Plan) of Jamunia UG Mine

1.0 INTRODUCTION

The proposed Jamunia U/G Mine, under administrative control of Pench Area of Western Coalfields Limited, has been planned in a virgin Jamunia Geological Block, having total area of 5.30 km^2 involving 62 boreholes. The perennial Gunor River forms the southern and eastern boundary of Jamunia Block and separates Naheriya and Dhankasa Blocks. Naheriya U/G Mine and Urdahan O/C Mine are the nearest operating mines.

2.0 SALIENT FEATURES OF APPROVED PROJECT REPORT

The Project Report for Jamunia U/G Mine prepared in November 2008 proposed to work by Bord and Pillar method and extraction by caving. The target capacity of the mine was envisaged as 0.72 Mty or 2400 tpd to be generated from 2 continuous cutting technology panels.

During formulation of this Project Report both the options i.e. Departmental and Partial Hiring Options were considered. In Departmental Option, the total capital investment was estimated as Rs. 305.6049 Crores and the project was yielding a Financial IRR of 7.45% and 2.40% at 100% and 85% target capacity respectively. In Partial Hiring Option, where the production related activities would be outsourced by hiring of continuous cutting technology equipment, the total capital investment was estimated as Rs. 127.5223 Crores and the project was yielding an IRR of 12.00% at 85% target capacity if the outsourcing cost of the production districts capped at Rs. 368.42/t.

The outsourcing cost of Rs. 368.42/t in Partial Hiring Option appeared to be on a lower side, where no contractor would have been available to operate his machines. In view of the above, the project was recommended for approval, subject to a viable Fuel Supply Agreement with a customer on cost plus basis.

The Project Report for Jamunia U/G Mine was deliberated by WCL Board in its 216th meeting held on 04.02.2009 and was approved on Partial Hiring of Equipment with a Total Capital Investment Rs. 127.5223 Crores for a capacity of 0.72 Mty, subject to availability of a consumer agreeing to pay a price which yields 12% IRR at 85% capacity utilization.

Area Planning Officer
WCL, Pench Area

C-113

3.0 UPDATION OF PROJECT REPORT & PREPARATION OF RFQ DOCUMENT

P.R. for Jamunia U/G Mine was updated as on October 2013 on Partial Hiring Option and the Model RFQ Document customized for Jamunia U/G Mine prepared in January 2014 was placed before the Technical Sub-Committee of WCL Board on 16-01-2014.

During the deliberations, the Committee directed CMPDIL, RI-IV to Recast the P.R. after consultation with CMPDIL (HQ), Ranchi so that the provisions in the P.R. are commensurate with stipulation in the MDO document prepared by CMPDIL (HQ). It was decided to update the Project Report for Jamunia U/G Mine on Departmental Option (as on January 2014) and accordingly customize the Model RFQ Document for Development and Operation of Jamunia U/G Mine through MDO. Accordingly, the Project Report for Jamunia U/G Mine was updated on Departmental Option only for the purpose of putting the Indicated Project Cost in Model RFQ Document for Jamunia U/G Mine.

4.0 APPROVAL OF UPDATED PROJECT REPORT BY COMPETENT AUTHORITY

The Updated Project Report for Jamunia U/G Mine prepared on Departmental Option in January 2014 and the Customized Model RFQ Document for Development and Operation of Jamunia U/G Mine through MDO was presented by CMPDIL, RI-IV before the Technical Sub Committee of WCL Board on 05.02.2014.

After detailed deliberations, the Technical Sub Committee recommended the Updated Project Report for Jamunia U/G Mine (Departmental Option) and Model RFQ Document for Development and Operation of Jamunia U/G Mine to be placed before WCL Board for approval.

WCL Board in its 253rd meeting held on 22.02.2014 while according approval, advised CMPDI, RI-IV to explore the possibility of increasing the capacity of Jamunia U/G Mine based on the technical consideration so as to improve the economics of the mine before inviting RFQ.

WCL Board further observed that a provision should be made in the RFQ documents to take into account the expenditure already incurred by WCL for mine development activities etc., if any.

The Board after detailed deliberations, in order to facilitate early opening of Jamunia U/G Project, accorded approval for the following:

a) Project Report of Jamunia U/G Mine at an estimated capital of Rs. 401.6701 Crores on Departmental Option only for the purpose of arriving at the indicated capital requirement for inviting RFQ/RFP.

b) Inviting RFQ for development and operation of Jamunia U/G Mine under MDO route through Global Tender by CMC Department.

Area Planning Officer
WCL Pench Area

c) Acquisition of Land and extending R&R benefits etc, as an advance action at updated estimated cost of Rs. 72.9446 crores (maximum) for Jamunia U/G Mine.

5.0 POSSIBILITY OF INCREASING PRODUCTION FROM JAMUNIA U/G MINE

5.1 A Conceptual Note on exploring the possibility of increasing production from Jamunia U/G Mine was prepared and discussed on 14.04.2014 at CMPDI (HQ). During the discussions in CMPDI (HQ), Ranchi, the following suggestions were given:

A) Techno-economic feasibility of operating an opencast mining project comprising of Urdhan Block, Magrahi Block and a portion of Jamunia Block may be examined with a view to extract more coal reserves at higher production capacity than underground mining.

B) If Jamunia Project is to be taken up for underground mining, then:

1. Simultaneous working in the contiguous seams may be avoided since maintaining vertical alignment of the line of extraction in the 2 contiguous seams may not be practical, especially in view of the need of induced caving of the overlying Deccan Trap.

2. The number of Continuous Miners to be deployed is to be decided keeping in view at least 5 years time be made available for goaf settlement in the panels of overlying seam before the corresponding panels are worked in the underlying seam.

3. The productivity of each Continuous Miner may be considered as 1400 tonnes per day instead of 1200 tonnes per day as was considered in the earlier Approved Project Report.

5.2 As per the suggestions given by CMPDI (HQ), Ranchi, a Conceptual Note for Jamunia Opencast Mine was prepared in April 2014. The economics in Jamunia Opencast Mine was not better as compared to the economics of Jamunia Underground Mine in the proposed Jamunia Geological Block mainly due to very high initial depth and very high stripping ratio. Therefore, Opencast Potentiality in whole of Jamunia Block was ruled out in the prepared Conceptual Note.

The Conceptual Note for Jamunia Opencast Mine was again discussed on 21.04.2014 at CMPDI (HQ) and during the discussions the following suggestions were given:

A) The Eastern Portion of Jamunia Block, which is enclosed by Gunor River on three sides, may be planned for underground mining for a life of around 25 years. Western Portion of the Jamunia Block may be taken up as the dip side extension of Urdhan Magrahi Opencast Project which has already been planned on the rise side of Jamunia Block. This will ensure that more coal

Area Planning Officer
WCL, Pench Area

reserves can be mined out from the western part of the Jamunia Block. The same may be discussed with WCL before finalization.

B) In the underground option where caving of the overlying basalt layer is proposed, the cost of induced caving of the Deccan Trap (Basalt layer) should be included in the cost of production of the proposed project.

6.0 PREPARATION OF RECAST PROJECT REPORT & CUSTOMISED RFQ DOCUMENT FOR JAMUNIA U/G MINE

6.1 The above conceptual note prepared for underground and opencast options were discussed in WCL and finally it was decided to prepare Recast Project Report by considering coal production capacity @ 1400 tonnes per day instead of 1200 tonnes per day per Continuous Miner (as considered in the Approved Project Report). Thus with the introduction of Two Continuous Miner Packages, there will be an increase in annual production capacity from 0.72 Mty to 0.84 Mty.

The Recast Project Report for Jamunia U/G Mine was prepared on Departmental and Partial Hiring Option as on June 2014 along with Customized Model RFQ Document for Development and Operation of Jamunia U/G Mine through MDO. The Cost Parameters of Departmental Option were considered for the purpose of arriving at the Indicated Project Cost in Model RFQ Document for Jamunia U/G.

6.2 Planning Committee Meeting for the Recast Project Report for Jamunia U/G Mine was held at WCL (HQ) on 04.08.2014. The following main decisions were taken by WCL in the Planning Committee Meeting:

1. Hiring of Continuous Miner Packages was recently approved in mines of SECL and therefore the Hiring Rate of these contracts may be obtained from SECL. If the Approved Hiring Rate to operate C.M. Package (keeping the variables at par) is found to be less than what has been considered in Recast P.R. for Jamunia U/G Mine, then the same may be considered in estimating the economics of the mine.

2. To consider the weighted average sale value of coal with (-) 100mm size coal for dispatch.

3. WCL opined that the coal produced from Jamunia U/G Mine would not be suitable for Power Sector and the same may be linked to industries of Non Power Sector (fetching higher sale price). Therefore, it was suggested by WCL to explore possibility to improve the economics of the project so that it can be economically viable with Notified Sale Price for Non-Power Sector.

6.3 Considering the decisions taken in the Planning Committee Meeting, the Final Recast Project Report for Jamunia U/G Mine (December 2014) was prepared and presented in the Technical Sub Committee Meeting of WCL held on 23.01.2015.

After detailed deliberations, the Committee directed to obtain confirmation from G.M. (S&M), WCL for availability of Non Power Sector Consumers for Jamunia U/G

Area Planning Officer
WCL, Pench Area

Project. The Committee also directed CMPDIL, RI-IV to incorporate financial provision for Manriding Chair Lift System in place of Manriding Haulage Cart System in the incline.

6.4 Incorporating the above changes as directed by Technical Sub Committee of WCL Board, the Recast Project Report for Jamunia U/G Mine prepared in January 2015 was submitted to WCL on 02.02.2015 for its approval from competent authority.

7.0 PREPARATION OF RECAST P.R. FOR JAMUNIA U/G MINE (SEPTEMBER 2015)

A meeting was held at WCL (HQ) on 18.09.2015, in which it was decided to work out economics of Recast Project Report for Jamunia U/G Mine on Departmental Option considering operation and maintenance of C.M. Package by WCL on its own as this technology is no longer new for WCL/CIL.

Accordingly, economics of Recast P.R. for Jamunia U/G Mine has been worked out with latest revised norms of CIL and Repair & Maintenance Cost of all P&M including C.M. Package as per CMPDI norms.

The EMS has been re-estimated considering Initial Basic plus 7.97% as per the decision of 317th CIL Board meeting held on 13.07.2015.

Taking the above latest revised norms and decisions taken in the chamber of Director (Tech) (P&P), WCL on 18.09.2015, the Recast Project Report for Jamunia U/G Mine (Departmental Option) has been updated for the month of September 2015 and put up to WCL for deliberation by Technical Sub Committee of WCL Board.

8.0 PROJECT SITE INFORMATION

Jamunia Geological Block is covered in the survey of India Toposheet No. 55 J/15 (RF 1:50,000) and is defined by Latitudes N 22° 16' 49" and N 22° 18' 07" and Longitudes E 78° 57' 00" and E 78° 59' 00". The approach to the block is through an all-weather road from Khirsadoh/ Parasia upto Urdhan via Shivpuri and Thesgora mines. Jamunia Block is approximately 40 km north-east of Parasia, the main mining town in Pench Valley. Chhindwara Town is located 27 kms south-east of Parasia. The state highway No. 19 connects Chhindwara with Parasia. Chhindwara is connected to Amla (120 km) through a broad gauge line of Central Railway.

9.0 GEOLOGY

9.1 The geology of the area under consideration is based on "Geological Report on Exploration for Coal, Jamunia Block, MECL, December 1998". The total area of the geological block is 5.30 km^2. The present geological assessment of the proposed mine area is based on the data of 32 boreholes involving a total meterage of 6626.70m in an area of 2.92 km^2. The borehole density works out to be 11 per km^2.

Area Planning Officer
WCL, Pench Area

C-117

9.2 Coal Seams

The sequence of coal seams along with their thickness, parting and grade of all the seams as per the G.R. of Jamunia Block are shown in the following table:

Sl. No	Seams / Seam Sections with Parting	Thickness (m)			Grade
		Minimum	Maximum	Mean	
1	Seam Section – IA	0.41	0.74	0.59	-
2	Seam Section - IB (Top)	0.54	1.00	0.73	-
3	Parting	0.36	0.46	0.42	-
4	Seam Section - IB (Bottom)	0.23	1.33	0.78	-
5	Seam Section - IB (Comb)	0.20	4.08	1.62	G-C
6	Parting	0.30	9.69	3.56	-
7	Seam Section – IC	0.00	3.40	1.47	G-B
8	Parting	0.55	8.32	1.65	-
9	**Seam – II**	**1.25**	**4.15**	**2.77**	**E-A**
10	Parting	0.53	6.13	3.61	-
11	Seam – III	0.26	4.54	1.84	E-B
12	Parting	0.30	7.73	1.59	-
13	Seam – IV	2.75	6.37	4.44	C-A
14	**Seam - III + IV (Combined)**	**3.86**	**7.55**	**6.10**	**D-B**
15	Parting	3.07	12.64	7.90	-
16	**Seam – V**	**1.36**	**5.92**	**3.17**	**E-B**

Out of 10 coal seams/seam sections, only three coal seams/sections namely Seam-II, Seam-III+IV/IV and Seam-V have been considered for exploitation.

9.3 Strike and Dip

The strike of the coal seams in general is east-west in the central part swerving to NNE – SSW in eastern and western parts. The dip of the coal seam in general is towards north-west and varies from 3° to 8°. The corresponding gradient is 1 in 7 to 1 in 18.

9.4 Faults & Intrusives

Based on the sub-surface data obtained from boreholes, 6 faults are present in the mine area with a throw ranging from 5m to 30m. The thickness of Deccan trap ranges

Area Planning Officer
WCL, Pench Area

from about 16m to 91m. The Barakar formation in boreholes MPJ-32 & PU-76 is intruded by a dolerite dyke.

9.5 Depth of Coal Seams

The depth range of all coal seams / seam sections is 87m to 284m.

9.6 Overall Quality

The overall quality parameters of the workable seams / seam sections are given in the following table :

Coal Seam	Quality Parameters			
	Moisture %	Ash %	UHV with grade (k. Cal/kg)	GCV with Grade (k. Cal/kg) (calculated)
II	7.65	20.59	5003, 'C'	5504, 'G6'
III+IV/IV	7.83	16.89	5489, 'C'	5827, 'G5'
V	7.28	20.82	5022, 'C'	5537, 'G6'
Overall	**7.61**	**19.12**	**5210, 'C'**	**5649, 'G6'**

10.0 SALIENT PARAMETERS OF RECAST PROJECT REPORT (Sept 2015)

Sl. No.	Particulars	Recast P.R. Dept. Option (September 2015)
(A)	**General Parameters:**	
1	Total Geological Reserves (Mt)	96.921
2	Extractable Reserves (Mt)	17.50
	Overall Quality	**'G6' (5649 k.Cal/kg)**
3	Target Production of Coal (Mty)	0.84
4	Manpower Requirement (Nos.)	530
5	Overall O.M.S. (t)	6.056
(B)	**Financial Parameters:**	
1	Capital Requirement (Rs. Crores)	409.8748
2	Cost of Production (Rs./t)	
	a) At 100% of Target Capacity	1684.24
	b) At 85% of Target Capacity	**1926.94**
3	Estimated Average Selling Price for Power Sector Coal (Rs./t)	2263.62
4	Profit / Loss for Power Sector (Rs./t)	
	a) At 100% of Target Capacity	(+) 579.38
	b) At 85% of Target Capacity	**(+) 336.68**
5	Financial IRR for Power Sector (%)	
	a) At 100% of Target Capacity	(+) 17.08%
	b) At 85% of Target Capacity	**(+) 12.17%**

Area Planning Officer
WCL, Pench Area

C-119

11.0 MINE BOUNDARY, RESERVES, TARGET OUTPUT & MINE LIFE

Out of 10 coal seams/seam sections, only three coal seams/sections namely Seam-II, Seam-III+IV/IV and Seam-V have been considered for exploitation in this report. Out of a total of 8 sectors in the workable seams, it is proposed to leave 3 sectors and mine coal from 5 sectors only.

11.1 Based on the workable seams & sectors, disposition of faults and the position of dyke etc, the proposed mine boundary of Jamunia U/G Mine is as follows:

North - Arbitrary line 200m north of Boreholes MPJ - 32, 31, 27, 24 & 28

East - Gunor River

South - Gunor River, Fault $F_{1(U)}$ - $F_{1(U)}$, Gunor River and Fault F_2 - F_2

West - Dolerite Dyke

11.2 Following table shows workable seam wise Geological reserves, Geological losses, Mineable reserves, Mining losses and Extractable reserves (> 1.5m thickness) of Jamunia U/G Mine:

Seam	Geological Reserves (Mt)	Geological Losses (Mt)	Mineable Reserves (Mt)	Mining Losses (Mt)	Extractable Reserves (Mt)
II	11.086	4.434	6.652	1.612	5.040
III+IV/IV	18.565	7.426	11.139	3.879	7.260
V	12.380	4.952	7.428	2.228	5.200
TOTAL	**42.031**	**16.812**	**25.219**	**7.719**	**17.500**

11.3 It has been proposed to work 2 panels at a time by continuous cutting technology giving a production target of 1400 tpd per panel making it to a total production target of 2800 tpd or 0.84 Mty. The extractable reserves in the proposed mine area have been estimated as 17.50 Mt. With a target capacity of 0.84 Mty, the total and revenue life of the mine works out to 26 years and 23 years respectively.

12.0 DETAILS OF PROPOSED MINE ENTRIES

The dimensions and purpose of proposed mine outlets is tabulated below:

Sl. No.	Mine Entry	X-Section (Dia/WxH) (m/mxm)	Length/ Depth (m)	Gradient	Approach	Remarks/ Purpose
1.	Incline No. 1	4.8 x 3.0	890	1 in 4.5	Surface to Seam-V	Belt Conveyor route & main intake route
2.	Incline No. 2	4.8 x 3.0	876	1 in 4.5	Surface to Seam-V	Haulage route for material transport, traveling route & main intake route
3.	Airshaft	4.5	196	Vertical	Surface to Seam-V	Return air route

Area Planning Officer
WCL, Peach Area

C-120

12.0 METHOD OF MINING

Jamunia U/G Mine is proposed to be developed on B & P method. The main trunk headings and the panels will generally consist of 5 headings as this is the standard and most productive width for a Continuous Cutting M/c District.

The pillar sizes in the panels will vary as per depth in each sector for a gallery width of 4.8m. The pillars in panels will be square shaped. In the Continuous Cutting Machine district, the height will be restricted to 4.5m or seam thickness whichever is less. Since the maximum cutting height of Continuous Cutting Machine is about 4.5m, it is proposed to develop and support in one phase where no further heightening will be involved.

The development in panels will be done using the Continuous Cutting Machine package equipment. The machine operates on a "place changing" system.

The cut-out distance is assumed to be around 6.0 m based on the likely strata behavior. The work force at all times operates under supported roof. Once a "place' is complete, the machine is trammed to an adjacent face in the same heading or in the adjacent heading to commence the cutting cycle again. Once the machine has been trammed out of a particular heading, the roof bolting machine is trammed in to support the area mined by the machine.

The 'straight line' method is proposed in pillar extraction as this method reduces both tramming distances and cable lengths to a minimum while optimizing tramming routes.

Pillar extraction will be by splitting and slicing of pillars. The pillars will be split into two/three parts depending upon the pillar size, by driving level splits and the slices will be driven from the splits/original galleries at 60° as against 90° to the split direction. Splitting of pillar will be restricted to a distance of one pillar from the pillar under extraction.

During development stage, 4 nos. resin encapsulated bolts of 2.4 m length with W-Strap of length 4.4m are proposed in a row at 1.2 m spacing for a gallery width of 4.8 m in the freshly exposed area. The spacing between the adjacent rows will be 1.2 m. The geologically disturbed zones will be additionally supported.

During extraction stage, the splits will be supported by 4 nos. resin encapsulated roof bolts, 2.4 m long with W-Strap of length 4.4m, in a row at 1.2 m spacing. The spacing between the rows will also be 1.2 m. At the goaf edges, the bolting density will be increased with additional number of rows of bolts. The increased density at the goaf edges will serve as breaker-line support.

13.0 PRODUCTION PARAMETERS

The average daily production for the workable seams has been considered as 1400 tonnes per C.M. Panel. With 2 C.M. panels, the proposed target capacity works out to 2800 tpd or 0.84 Mty and would be achieved in 6th year.

Area Planning Officer
WCL, Pench Area

14.0 VENTILATION

Exhaust ventilation system has been proposed for this mine with two inclines (both of them will act as downcast airways) and one return airshaft (as up cast airway). The main mechanical ventilator will be installed at the fan drift of airshaft with properly constructed airlock arrangement at the top of the shaft. The report has proposed a fan, capable of delivering 100 m^3/sec at 74 - 87 mm WG. A fan motor of about 200 kW power is proposed.

15.0 UNDERGROUND TRANSPORT & COAL HANDLING ARRANGEMENT

In each district C.M. will cut coal at coal faces and load into shuttle cars by inbuilt gathering arms and chain conveyor. The shuttle cars will carry coal and feed to the hopper of a feeder breaker installed in the central gate road and the crushed coal will be loaded onto a gate belt conveyor.

The trunk belts receive coal from gate belts and will discharge coal in a strata bunker, which will be discharged onto trunk belt conveyor installed in the belt incline. Trunk Belt TB1 will be installed partly in incline No. 1 and rest on surface and will be used to transport coal from underground to surface. Trunk belt conveyor TB1 will discharge coal onto an overhead twin hopper of 2 x 100t capacity (on surface) for storage of coal.

A man riding chair lift system of 75 kW and a direct haulage of 75 kW are proposed on surface in Incline No. 2 for men and material transport respectively. A man riding chair lift system of 75 kW is proposed for further movement of workmen in main trunk roadways.

A coal handling plant / arrangement has been proposed near Belt Incline to handle the entire production of coal of (-) 100mm size from the mine. The CHP will have facilities like storage, weighment of coal etc. The mode of despatch will be by road with the help of trucks to miscellaneous consumers.

16.0 POWER SUPPLY AND ILLUMINATION

The nearest HT substation is Amarwada which is approximately at a distance of 25 km from where power can be drawn at 132 kV/33 kV, 40 MVA grid substation. It is proposed to draw 25 km long 33 kV overhead line from Amarwada 132 kV/33 kV, 40 MVA substation for feeding power to Jamunia U/G Mine.

The salient features of electrical parameters for Departmental Option are given below:

Sl. No.	Particulars	Departmental Option
1	Specific Energy Consumption	24.70 kWh / t
2	Specific Power Cost	Rs. 247.16/t
3	Specific Demand	5.639 MVA/Mt.
4	Capacitor Bank Provided (Including Township)	3150 kVAR
5	Average Cost of Purchased Power	Rs. 9.64 / kWh

Area Planning Officer
WCL, Pench Area

C-122

17.0 CIVIL CONSTRUCTION WORK

The Building Cost Index for the M. P. Region has been worked out to 479 in 2015 (2nd half) taking the prevalent rates of materials and labour. This Building Cost Index is with reference to base 100 in Nagpur as on 1.1.1992. Keeping in view the needs and requirements of the mine, provision for service buildings such as Project office / Manager office, Unit workshop, Unit Stores, Sub-station, statutory buildings, community buildings and other welfare buildings, residential buildings, roads & culverts and water supply & sewerage have been kept in this report.

18.0 MANPOWER & PRODUCTIVITY

The proposed manpower, production and productivity for a target capacity of 0.84 Mty in Departmental Option for Continuous Cutting Machine panels in Jamunia U/G Mine are tabulated as below:

Sl.No.	Group Name	Departmental Option			
		Including Welfare		Excluding Welfare	
		Strength (Nos.)	OMS (t)	Strength (Nos.)	OMS (t)
1	Underground	420	7.659	420	7.659
2	Surface	110	28.926	97	32.802
	Total	530	6.056	517	6.209

19.0 LAND ACQUISITION

The Project Report for Jamunia U/G Mine was approved by WCL Board on 22.02.2014 in which the total land provision was 376.94 hectares. Accordingly the acquisition of 376.94 hectares land is in final stage.

Though the Total Land involved as per this Recast Project Report for Jamunia U/G Mine is 299 hectares, the land provision of 376.94 hectares given by WCL has been retained in this Recast Project Report. Out of 376.94 ha land, 299 ha land is actually required for Recast Project Report for Jamunia U/G Mine prepared in September 2015. The remaining 77.94 ha land to be acquired under Jamunia U/G Mine will be utilised in Expansion Project Report for Urdhan-Magrahi O/C Mine. The cost of 77.94 ha land will have to be transferred from Jamunia U/G to Urdhan-Magrahi O/C Report later on. The breakup of land requirement as per 376.94 ha is summarized below:

Type of Rights	Govt. Land (ha)	Tenancy Land (ha)	Forest Land (ha)	Total land Requirement (ha)
All Rights	9.053	301.585	-	310.638
Surface Rights	-	7.000	-	7.000
Mining Rights	-	-	59.302	59.302
Total	**9.053**	**308.585**	**59.302**	**376.940**

Area Planning Officer
WCL, Pench Area

One time Monetary Compensation @ Rs. 5 Lakh per Acre for the 50% of Tenancy Land Losers in lieu of employment as per recent CIL R & R Policy has been considered in this report. For rest land losers, employment in lieu of Monetary Compensation may be considered by WCL as per Approved CIL R&R Policy

50% NPV payment for 59.302 hectares of forest land has been considered @ Rs. 10.43 lakhs per hectare under Mining Rights. A lumpsum amount of Rs. 20.00 lakhs has been considered under the head of charges imposed by State Government for diversion of Forest Land.

In this Recast Project Report, the rehabilitation of Jamunia bastis / village are not proposed as only development has been considered beneath these villages taking angle of draw into consideration. However, In the Expansion Project Report for Urdhan-Magrahi O/C Mine submitted to WCL (yet to be approved), the rehabilitation of Jamunia bastis / village have been proposed, as overburden dumping has been proposed on the above land.

20.0 FINANCIAL EVALUATION

In Recast Project Report for Jamunia U/G Mine (September 2015), the economics has been worked out on only Departmental Option.

20.1 Capital Investment

The following table shows the Total Capital Investment under the major heads in Departmental Option in Recast Project Report for Jamunia U/G Mine:

A/C Head	Particulars	Total Capital Investment (Rs. Lakhs)
01	Land	4321.19
02	Buildings:	
	a) Service Buildings	447.24
	b) Residential Buildings	1717.87
03	Plant & Machinery	27588.92
04	Furniture & Fittings	30.00
05	Railway Siding	0.00
06	Vehicles	6.55
07	Prospecting & Boring	298.62
08.1	Capital outlay in mines	3893.52
08.2	Roads & Culverts	564.16
08.3	Water Supply & Sewerage	458.89
08.4	EMP & PR Preparation Cost	202.30
08.4 (A)	Environment Pollution Control Measures	57.73
08.5	Scientific Research Costs	75.00
09	Net Revenue Expenditure Capitalized during development period	1325.49
	Total Capital Investment	**40987.48**

Area Planning Officer
WCL, Pench Area

C-124

20.2 Foreign Capital

The total foreign exchange requirement including customs duty, port handling cost, inland transportation, etc. for the imported equipment of two nos. Continuous Miner packages in Departmental Option works out to Rs. 189.8256 crores considering exchange rate of 1 US $ = Rs. 65.7531, which was the ruling rate on 21.09.2015.

20.3 Grade of Coal & Weighted Average Sale Price

The annual grade of coal despatch during its total life of the mine varies from grade 'G5' to 'G6' as per GCV depending upon the year wise location of working panels and seams. The weighted average sale value considering 98.5% of the year-wise grade of coal and Rs. 79/t as processing charge for dispatching (–) 100 mm size coal works out to Rs. 2263.62/t for Power Sector.

20.4 Opening of Revenue Account

Jamunia U/G Mine will have cash surplus in the first year of touching coal, i.e., IV year of mine operation and the mine is proposed to come into Revenue from IV Year.

20.5 E.M.S.

The EMS has been re-estimated considering Initial Basic plus 7.97% as per the decision of 317th CIL Board meeting held on 13.07.2015. As per the above decision, E.M.S. in Departmental Option for Jamunia U/G Mine works out to Rs. 2073.73 in September 2015 and is considered for determining economics in this report.

20.6 Unit Cost of Production

The following table shows the Cost of Production in Departmental Option as on September 2015 in Jamunia U/G Mine:

Sl. No.	Particulars	CPT at 100%	CPT at 85%
1	Salaries and Wages	348.37	409.85
2	Stores	284.95	315.12
3	Power	247.16	267.23
4	Environment Pollution Control	6.00	7.06
5	Miscellaneous Expenses (incl. W/D)	78.42	85.06
6	Mine Closure Cost	4.47	5.26
7	Induced Caving Cost	6.52	6.52
8	Administrative Overhead	187.22	220.26
9	Depreciation	414.09	487.17
10	Interest on Working Capital @ 14.50%	48.04	54.00
11	Interest on Loan Capital @ 11.50%	59.00	69.41
	Total Cost of Production	**1684.24**	**1926.94**

Area Planning Officer
WCL, Pench Area

C-125

In a recent meeting held at WCL, it was decided to work out economics of Recast P.R. for Jamunia U/G Mine on Departmental Option considering operation and maintenance of C.M. Package by WCL on its own as this technology is no longer new for WCL/CIL. Accordingly, the store cost for Recast P.R. for Jamunia U/G Mine has been worked out with Repair & Maintenance Cost of all P&M including C.M. Package as per CMPDI norms and considered in the cost of production.

20.7 Total Capital Investment, Cost of Production, Profitability & IRR

The Total Capital Investment, Cost of Production, Profitability and IRR at 100% and 85% target capacity in Departmental Option (September 2015) is tabulated below:

Sl. No.	Parameters	Departmental Option	
		100%	85%
1	Total Capital Investment (Rs. Crores)	409.8748	
2	Cost of Production (Rs./t)	1684.24	1926.94
3	Average Selling Price for Power Sector (Rs./t)	2263.62	2263.62
4	Profit / Loss for Power Sector (Rs./t)	(+) 579.38	(+) 336.68
5	I.R.R. for Power Sector (%)	(+) 17.08%	(+) 12.17%

21.0 ENVIRONMENT MANAGEMENT

Ministry of Environment & Forests accorded Environment Clearance (Phase-I) to Jamunia Underground Coal Mine of WCL for a Normative Production Capacity of 0.72 MTPA and Peak Capacity of 0.828 MTPA in a ML Area of 332.30 ha without any Forest Land on 31-12-2012.

The Recast Project Report for Jamunia U/G Mine is being prepared for a Normative Capacity of 0.84 Mty and a Peak Production Capacity of 1.05 Mty. The total land base required for the project is 292 hectares under All Rights and 7 hectares under Surface Rights. Bord & Pillar method of mining in conjunction with caving is proposed with continuous cutting technology. A revised EMP may have to be prepared based on this Recast Project Report.

The Ambient Air Quality, Water Quality, Noise Levels, Flora & Fauna, Micrometeorological Data and Socio-Economic status in core and buffer zone will have to be determined on the basis of Base Line Data Generation.

22.0 MINE CLOSURE COST

Mine Closure cost has been computed based on the recent guidelines circulated by Government of India, Ministry of Coal, Shastri Bhawan, New Delhi. The closure

Area Planning Officer
WCL, Pench Area

activities will include subsidence survey for a period of 3 years after mine closure, filling of subsidence cracks, fencing of caved out area and post-project monitoring for a period of 3 years after mine closure. Taking the recent guidelines into consideration, the Mine Closure Cost in Recast Project Report for Jamunia U/G Mine works out to Rs. 4.47/t.

23.0 SUMMARY

In the Recast Project Report for Jamunia U/G Mine, the Financial Evaluation has been worked out on only Departmental Option as on September 2015. The Total Capital Investment works out to Rs. 409.8748 Crores. The Cost of Production is estimated to be Rs. 1684.24/t and Rs. 1926.94/t at 100% and 85% target capacity respectively. With an average sale price of Rs. 2263.62/t for Power Utilities (Including IPPs), Fertilizer & Defence Sectors, the mine is expected to make a profit of Rs. 579.38/t and Rs. 336.68/t at 100% and 85% target capacity respectively.

The I.R.R. at 100% and 85% target capacity works out to (+) 17.08% and (+) 12.17% respectively for Power Sector, **thereby achieving desired IRR at 85% capacity for notified price of coal for Power Sector.**

24.0 DELIBERATION OF RECAST PROJECT REPORT (INCLUDING MINING PLAN) OF JAMUNIA UG BY THE TECHNICAL SUB COMMITTEE of WCL BOARD

The Recast Project Report (Including Mining Plan) for Jamunia U/G Mine prepared in September 2015 was presented by RI-IV, CMPDIL in the Technical Sub Committee Meeting of WCL held on 20.05.2016 at WCL (HQ), Nagpur. After detailed deliberations, the Technical Sub Committee of WCL Board recommended the Recast Project Report (Including Mining Plan) for Jamunia U/G Mine for placing before the WCL Board for:

1. **Approval for the Recast Project Report (Including Mining Plan) of Jamunia UG Mine with a capacity of 0.84 Mty with a capital requirement of Rs. 409.8748 crs on Departmental Option, yielding an IRR of 12.17% at 85% capacity for Power Sector at Notified Selling Price.**
2. **Approval to obtain Environment Clearance upto 1.05 Mty peak capacity.**

25.0 FINANCIAL APPRAISAL of RECAST PROJECT REPORT:

As per the directives for investment proposal, the Recast Project Report (Including Mining Plan) of Jamunia UG Mine (Sept 2015) has been financially appraised by M/s Infrastructure Development Consulting Services (IDCS) and the report submitted. The report of Financial Appraisal endorses the financial calculations of the Recast Project Report for Jamunia UG Mine (Sept 2015) with observation as given below :

IRR on Departmental Option is in line with the CMPDIL and comes out to be 12.17% at 85% for power sector.

Area Planning Officer
WCL, Pench Area

C-127

26.0 SUBMISSION

As agreed by Competent Authority the Recast Project Report (Including Mining Plan) for Jamunia UG (Sept 2015) is placed before the WCL Board for ;

1. Approval for the Recast Project Report (Including Mining Plan) of Jamunia UG Mine (Sept 2015) with a capacity of 0.84 Mty with a capital requirement of Rs. 409.8748 Crs on Departmental Option, yielding an IRR of 12.17% at 85% capacity for Power Sector at Notified Selling Price.

2. Approval to obtain Environment Clearance upto 1.05 Mty peak capacity.

Company Secretary

Area Planning Officer
WCL, Pench Area