PRE-FEASIBILITY REPORT

For

PRIOR ENVIRONMENTAL CLEARANCE

Of

PARSA OPENCAST COAL MINE PROJECT (5 MTPA) & PIT HEAD COAL WASHERY (5 MTPA)

At

HASDO-ARAND Coal Field, Udaipur & Premnagar Tehsil

Surguja & Surajpur District, Chhattisgarh State

Project Proponent

M/s Rajasthan Rajya Vidyut Utpadan Nigam Limited

(RRVUNL)

R.C. Dave Marg, Vidyut Bhawan, Jyoti Nagar,

Jaipur, Rajasthan 302005.

Contents

Pre-Feasibility Report

1. Executive Summary

S. No.	Description	Details
1	Name of the Project	Parsa Opencast Coal Mine Project (5 MTPA) & Pit Head Coal Washery (5 MTPA)
2	Name and Address of the Applicant (present & permanent address)	Rajasthan Rajya Vidhut Utpadan Nigam Limited Vidyut Bhawan, Janpath, Jyoti Nagar, Jaipur, Rajasthan – 302 005
3	Location of the Mine	Mine is located in Hasdo-Arand Coalfield area, Tara, Janardanpur Villages under Premnagar Tehsil in Surajpur District & Ghatbarra, Fatehpur, Hariharpur and Salhi villages under The Udaipur Thesil in Surguja District, Chhattisgarh. The Mine lease area is 12.52 Sq. Km (1252.447 Ha) Coordinates of the Mine Lease area are- Latitude 22°48'57.01"N to 22°51'56.85"N Longitude 82°45'10.50"E to 82°47'22.86"E
4	Production/Estimated Reserves	Capacity: 5 MTPA Geological Reserve : Total: 256.40 Million Tonnes
5	Total area reserved for Mining	1252.447 Ha
6	Total Water requirement & Source	Total water requirement for the project is 2385 m^3/day including mining activities, washery & potable water. Water required for the mining activities will be sourced from tube wells in the first year and & afterwards water will be sourced from mine reservoir after treatment in water treatment plant.
7	Working hours	Three shifts operation with 8 hour shift has been planned.
8	Manpower (Operation)	768
9	Estimated Cost of the Project	Rs. 1450 Crore
10	Nearest Railway station, Sea Port,	Nearest railway station-Bisrampur (62 km, NW) on the Bijuri-Ambikapur section of South East

	Airport	Central Railway (New Railway line from Surajpur R.S. to Pit Head is under construction). Nearest Airport Raipur (290 km, SW).
11	Existence of Public Road, Railway Track nearby	The Block is connected to the SH-2A and passing at a distance of about 0.5 Km from its N-W corner.

2. Introduction of the project

2.1 Identification of Project and Project proponent

The Parsa coal block in the state of Chhattisgarh has been allotted to M/s. Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL) vide vesting order No - 103/24/2015/NA dated 08th September, 2015 to meet the coal requirement of their three thermal power project.

The block was earlier allotted to M/s Chhattisgarh State Power Generation Company Limited (CSPGCL) and the earlier Mining Plan and Mine Closure Plan (5 MTPA) was approved by Ministry of Coal vide letter no.- 13016/90/2006-CA-I (Part) on dated 19th May, 2014.

2.2 Brief Description of nature of the project

The proposed project involves the mining of coal in an extent of 12.52 Sq. Km (1252.447 Ha) and falls in schedule 1(a) (i) Mining of Minerals of Category 'A'.

2.3 Need for the project and its importance to the Country and or Region

The coal produced in the Parsa Coal mine will be transported to the following Power plants of RRVUNL in Rajasthan-

i. Chhabra TPP, District- Baran, Rajasthan
ii. Kalisindh TPP, District- Jhalawar, Rajasthan
iii. Suratgarh Supercritical TPP, District-Shriganganagar, Rajasthan

2.4 Domestic and Export Market

Coal produced from this coal block shall be utilised in the power plants existing at three locations in Rajasthan and details are given in Table 2.1

Table-2.1

Sl. No.	Name of specified end	Address	Configuration	Capacity
1.	Chhabra TPP Unit -3 to 6	Motipura Choki, Chhabra, District- Baran, Rajasthan	2 x 250 MW 2 x 660 MW	1820 MW
2.	Kalisindh TPP Unit – 1 & 2	Village-Undal, Tehsil Jhalrapatan, District-Jhalawar, Rajasthan	2 x 600 MW	1200 MW
3.	Suratgarh Supercritical TPP, Unit- 7 & 8	Thukrana, Tehsil – Suratgarh, District-Shriganganagar, Rajasthan	2 x 660 MW	1320 MW

2.5. Employment Generation due to the Project

The mining project will generate direct& indirect employment. About 768 people will get direct employment.

3. Project Description

3.1. Interlinked Projects

Proposed project is for mining of coal for Chhabra TPP, Kalisindh TPP & Suratgarh Supercritical TPP of RRVUNL. Lease area is 12.52 Sq. Km. (1252.447 ha) and it is proposed to produce maximum of 5 MTPA.

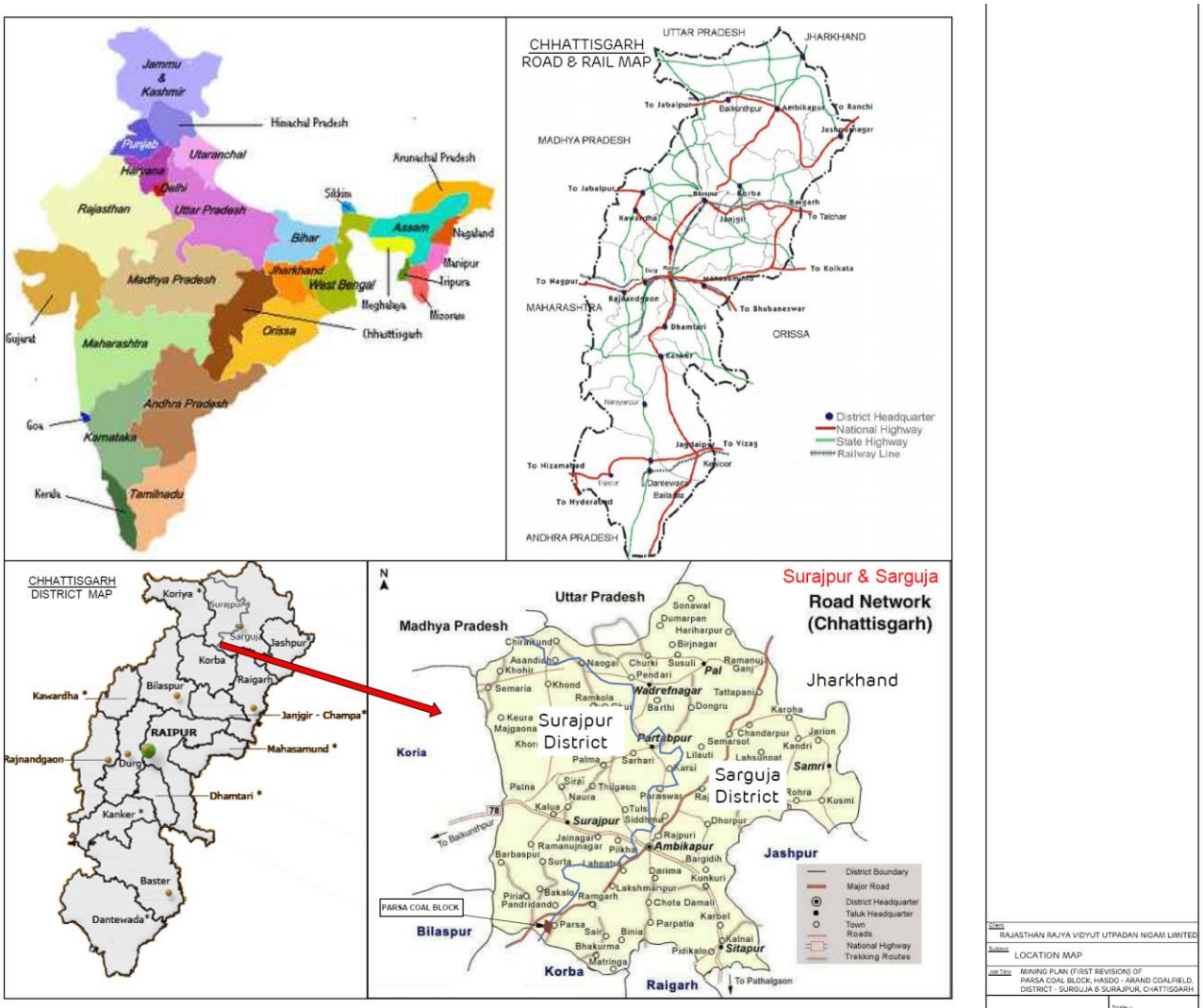
3.2. Details of alternative sites

Mineral is natural occurring substance which is site specific. Hence, no alternative site has been examined.

3.3. Location of Project

Mine is located in Hasdo-Arand Coalfield Tara, Janardanpur Villages under Premnagar Tehsil in Surajpur District & Ghatbarra, Fatehpur, Hariharpur and Salhi villages under Udaipur Thesil in Surguja District, Chhattisgarh.

Fig. 3.1 Index map of the site



Client: RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED

Subject: LOCATION MAP

Job Title: MINING PLAN (FIRST REVISION) OF PARSA COAL BLOCK, HASDO - ARAND COALFIELD, DISTRICT - SURGUJA & SURAJPUR, CHATTISGARH

RQP : KUMAR RAJESH SINGH
RQP No : 34011/(29)/2008 - CPAM

Scale :- NOT TO SCALE

PLATE NO. - I

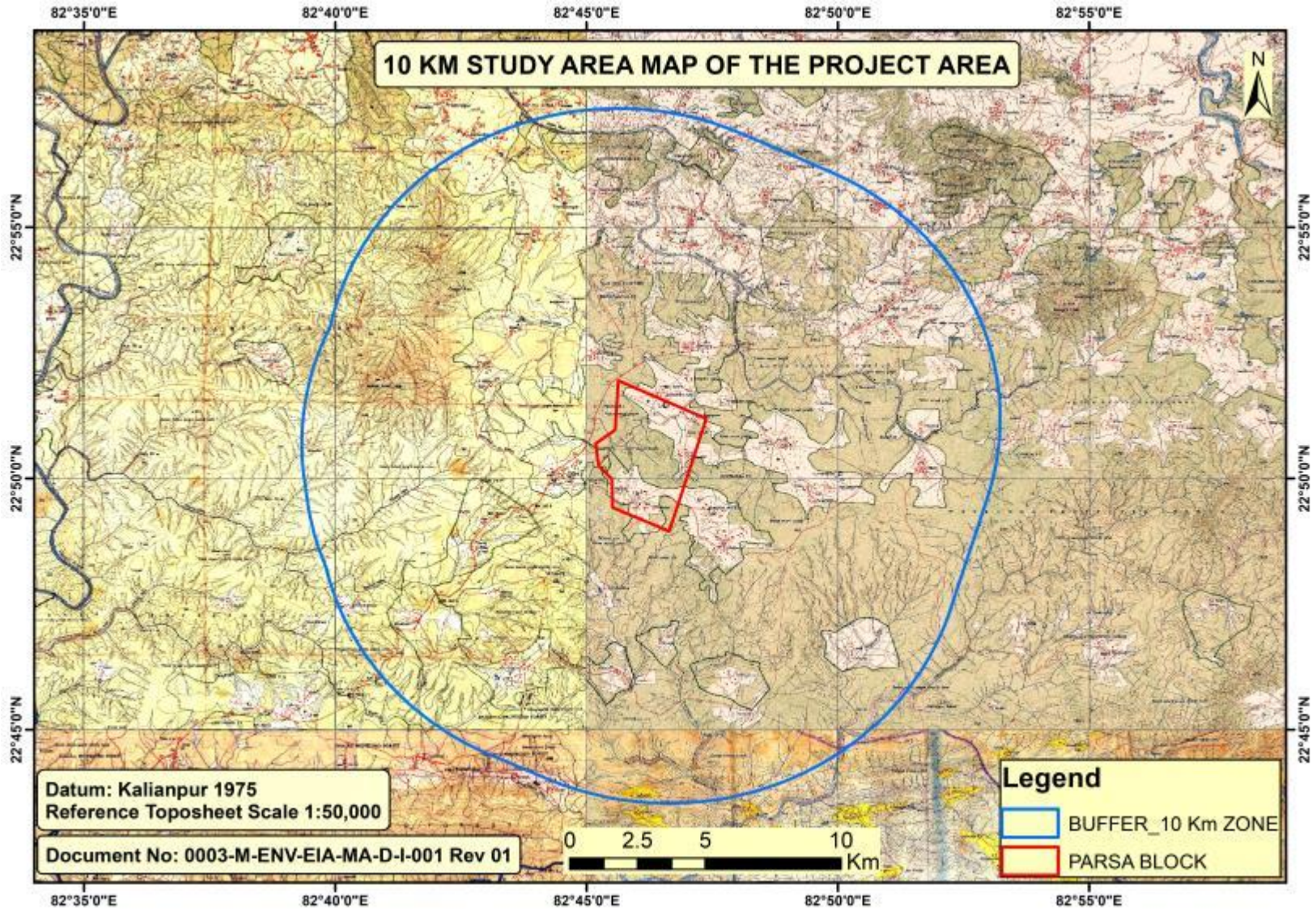


Fig. 3.2 Topo map

3.4. Project Description and Project Details

Net geological reserves of coal as per Geological Report (GR) are 230.76MT these reserves have been cross checked by Recognized Qualified Person (RQP) and have been found in order.

Table 3.1 Summary of Coal Reserves

1.	Gross Geological Reserves (MT)	256.40
2.	Net Geological Reserves (MT)	230.76
3.	Net Geological Reserves blocked in barrier, batter, nala diversion and not considered for mining (MT)	40.81
4.	Net Geological Reserves considered for mining	189.94
5.	Mining loss @ 3 % (MT)	5.70
6.	Mineable reserves (MT)	184.24
7.	Coal blocked in barrier & batter in eastern side of Parsa Coal Block	10.80
8.	Coal Under Batter in Southern & Western Boundary of Parsa Coal Block by Highwall Mining @20%	5.37
	Total Recovery of Coal (MT)	**200.41**

For the rated output of 5.0 Mty, the life of the mine has been estimated as 45 years including three years of construction period, built up period & reducing trend of coal production in start and finishing years of the mine.

The Parsa coal block is spread over an area of 12.52 sq. km. As per vesting order it is bounded by Latitude 22°48 57.01″ & 22°51′ 56.85″ N and Longitude 82° 45′10.50″ & 82° 47′ 22.86″ E. The block is covered under Survey of India topo sheet no. 64J/13 on RF 1: 50000.

The block is rectangular in shape and extends about 3.05 km along strike direction (NW-SE) and about 4.23 km along dip direction (NE-WS). The Tehsil headquarter at Udaipur is located 26 km northeast of the block on State Highway (SH)-2A connecting Bilaspur and Ambikapur.

The boundaries of Parsa block is given below:

North: About 100 to 550m North of Incrop of Seam-IV.

South: An imaginary line connecting points at 260m, 290m, 250m, 220m & 190m south of BH No. PCL-70, 84, 106, 86 & 87 respectively and joining the

eastern and western boundaries of the block.

East: Common boundary with Parsa (East)-Kanta Basan coal block of RRVUNL.

West: Common boundary with Tara coal block of Chhattisgarh Mineral Development Corporation (CMDC).

Total 1252.447 Ha of land is proposed to be acquired for the Parsa Opencast project, which would be utilized for different purposes to carry out the operations as stated in Table below.

Table 3.2 Land Requirement

SL. NO.	PARTICULAR	LAND (ha)
A	**MINING**	
	EXCAVATION AREA & BARRIER	1129.375
B	**INFRASTRUCTURE & OB DUMP AREA**	
1	EXTERNAL DUMP	64.084
2	TOP SOIL DUMP	2.600
3	ELECTRIC LINE & INFRASTRUCTURE AREA	13.228
4	COAL EVACUATION ROUTE & APPROACH	2.370
5	CHP & WASHERY	13.586
6	DIVERSION OF NALA	14.801
7	SETTLING POND	2.260
8	RATIONALIZATION AREA	10.143
	TOTAL (B)	**123.072**
	GRAND TOTAL (A + B)	**1252.447**

3.4.1 Sequence of Opencast mining

Construction Period

Three year has been considered as construction period. During this period, following construction activities will be taken up:

- Making of approach road,
- Land acquisition,
- Bringing power line to the project and construction of electrical sub-station, power supply
- Infrastructure like office, store, workshop, coal handling plant, washery etc.

- Statutory clearance
- Colony (essential Residential Buildings)
- Railway siding and construction of MGR for coal dispatch.

Opening of Mine field

Table 3.3 Mine parameters

Parameters	Unit	Value
Maximum depth	m	275
Maximum strike length:		
along the Mine Floor	Km	2.95
along the Mine	Km	3.05
Minimum strike length:		
along the Mine Floor	Km	1.67
along the Mine	Km	2.20
Maximum dip rise length:		
on the Mine Floor	Km	3.95
on the Mine Surface	Km	4.23
Minimum dip rise length:		
on the Mine Floor	Km	2.58
on the Mine Surface	Km	2.90
Area:		
On the Mine Floor	ha	936.20
On the Mine Surface	ha	1114.69

Parsa opencast mine is proposed to be developed in the 1st year of mine operation by grading properly the access trench of 40 m width with the help of Hyd. Backhoe and 35 T dumpers and other auxiliary HEMM. The access trench is to be graded from 515 m R.L. at 1 in 16 to the mine floor of about 500 m R.L. The box cut is developed in such a manner so as to facilitate the proper drainage of water towards the sump. This would also facilitate extension of coal and OB bench for full development of mine. The mine will advance towards dip direction exposing the floor of Seam-IV. After creation of sufficient de-coaled area, internal backfilling of OB will be started. The coal production will start from the 1st year of mine operation and the target coal production of 5.00 MTY will be achieved in the 3rd year of mine operation.

The alignment of the face has been so planned as to facilitate the drainage of

water. The quarry has been divided into two parts i.e. east and west for optimum accommodation of internal dump. Both Eastern and Western part will be worked simultaneously. During working of the quarry, haul road will be developed at 1 in 16 gradients along center of the quarry. This has been done in order to maximize the volume of the internal dump.

As gradient of coal seam is flat, haul road in quarry is designed along center of the quarry. This central haul road will serve both eastern as well as western quarry. A belt conveyor will be installed along one side of haul road for in-pit transportation of coal to surface. 40 m haul road has been proposed. Out of which, 10 m will be used for installation of belt conveyor. Coal is proposed to be transported from in pit to surface by belt conveyor to reduce fleet size of dumper as well as noise and dust pollution.

Washery Process Details:

In order to ramp-up the mine production schedule, a Coal Washery with a Raw Coal throughput capacity of 5 MTPA has been proposed at the mines pit head of the Parsa Coal block to wash coal in order to meet the coal requirement of thermal power projects of RRVUNL. The technology adapted for achieving the committed quality requirement of customer, for 5 MTPA production stage, no of wasing circuits have been proposed for washing the (-) 50 mm coal. The raw coal produced from Mines being conveyed to CHP through feeding conveyor and after crushing stage of CHP, (-)50 mm raw coal being conveyed to Washery Building through feeding conveyor. At first instance from the raw coal 0-13mm shall be screened out and separated and the oversizes of (+)13 to (-)50mm coal shall be fed to these washing circuit which shall deliver two products i.e. washed coal with average 30% ash and the rejects. The washed product from the washing plant shall be mixed with already screened out 0-13mm coal and it shall be fed to the dispatch system of the coal handling plant. The quality of the dispatch coal shall meet the requirement of the RRVUNL i.e. 30% ash, 10% moisture and overall GCV shall not be less than 4500 Kcal. /kg. (ADB) Sufficient water will be available from mine seepage to cater water requirement of various mining & washery activities. Hence no ground water is required. The washery will produce approximate 3.8 MTPA of clean coal with an ash content of 30% and 1.2 MTPA of rejects with an ash content of about 60% approx. The clean coal will be transported by rail to RRVUNL's power plants whereas the rejects are envisaged to generate Power by setting up a FBC Power Plant. The yield of washery shall be around 77.5%.

The washery is planned with the state of the art technology with due consideration to environment in and around washery. The washery plant will be operating with a carefully designed closed loop water circuit with zero discharge outside and also deploys suitable required measures to keep noise and air under control as per statutory norms. Also afforestation surrounding the plant has been considered to work as barrier for dust and noise.

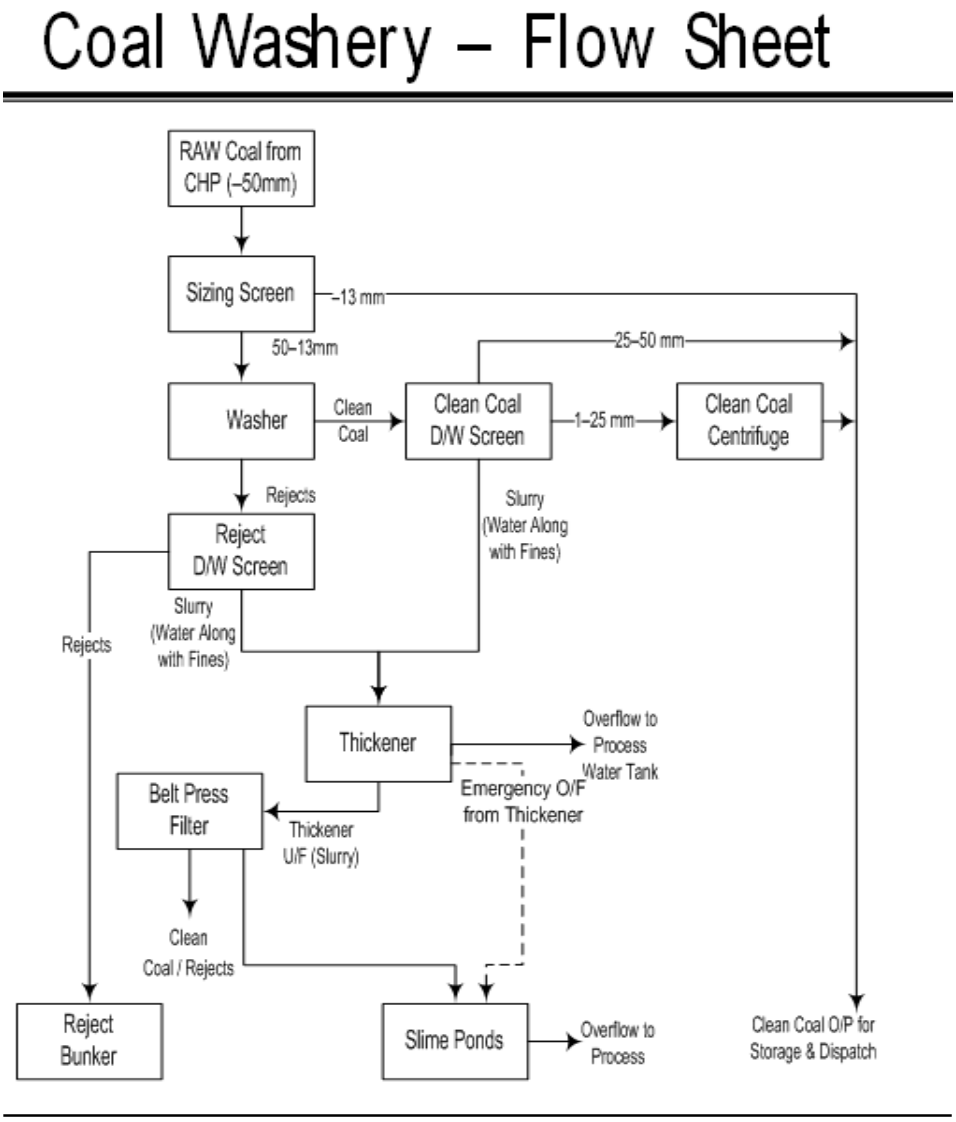


Fig. 3.3 Washery Flow Chart

5 MTPA state of art CHP & washery will be constructed either in Parsa coal block or in Parsa East Kanta Basan coal block taking socio- environmental aspect into consideration.

Coal Transportation

It has been planned to bring coal from coal face to surface by belt conveyor. Conveyors are provided to transport coal into Coal Handling plant. Belt conveyor has been envisaged for less fleet of dumper, negligible air pollution and negligible noise pollution. It is envisaged to transport coal from CHP to 4000 tones capacity RCC Silo by belt conveyor.

Wagon loading station will be used for loading coal into a rake of open type Wagons while in motion hauled by loco. Normally the rake shall consist of identical type of wagons. Prior to commencement of rake loading operation, the 4000 tones capacity RCC Silo will be filled with coal by belt conveyor.

Exchange yard will be the handing over point of the rakes between the railway and the Colliery. After clearance of the rakes in the exchange yard, Colliery's shunting loco will haul the empty rakes of wagons to the wagon loading station via in-motion Weigh Bridge. Rake will leave exchange yard to the loading station/waiting line on the advice from the Central Control room. Details of rake to be loaded will be available with the operator at the in motion weigh bridge prior to its arrival and the same will be entered by the operator and transmitted electronically to the rake loading operator/control cabin of Wagon Loading Station.

The in motion wagon loading system shall be weigh batch type (having pre- weigh bin) system. The rake will be hauled at a uniform speed below the wagon loading point and will be loaded with required quantity of coal by using the pre-weigh bin system.

The nearest railhead Bisrampur on the Bijuri-Ambikapur section of the South East Central Railway (SECR) is located about 62 km from the northwestern corner of the block. A Common Rail Corridor (CRC) of 70 Km is under construction from Surajpur Railway Station a part of South East Central Railway to adjacent Parsa East Kanta Basan (PEKB) opencast coal project for transportation of coal.

Loaded Coal wagon will move to Surajpur Railway Station which is situated on Anuppur- Ambikapur branch line on Bilaspur Division of South East Central Railway. From Surajpur Railway Station, coal wagon will move to power plant by rail.

3.5. Availability of water its source, Energy/ Power Requirement and Source

3.5.1 Water Source

Total water requirement for the project is 2385 m^3/day including mining activities, washery & potable water. Water required for the mining activities will be sourced from tube wells in the first year and & afterwards water will be sourced from mine reservoir after treatment in water treatment plant.

3.5.2 Energy/Power Source

The proposed mining block is virgin. Based on rated capacity of 5.0 MTY ROM Coal for Parsa coal Block and assuming certain parameters for coal transportation and loading, washery & pumping etc the tentative requirement of power shall be in the range of 5-7 MVA at 33 kV.

The power supply for Parsa Coal Block shall be taken from existing 132/33 KV switchyard at nearby Parsa East & Kanta Basan Coal Block (allotted to M/s. RRVUNL), which is about 5 KM from Parsa Coal Block.

Restricted earthing has been envisaged for Electrical System. All electrical system will have protection from lightning and high voltage surge. Switching station and substation shall be equipped with all safety features firefighting system.

3.6. Quantity of Wastes Generated (Liquid and Solid) and Scheme for their Management /Disposal

The opencast mine is planned up to 275 m depth with overall average stripping ratio of 6.12.

The total volume of Over Burden (OB) has been estimated as 1227.19 Mcum. The OB removed during initial years will be placed beyond the incrop of the seam- IV. The total volume of external dump has been estimated as 21.02 Mcum solid. Rest of the OB will be placed in internal dumps. The total volume of internal OB, i.e. the volume which will be accommodated internally by backfilling has been estimated as 1206.17 Mcum. (Refer Dump plan).

The internal dumping will start when about 100 m space is available on quarry floor. By adopting the proposed sequence of mining, as the quarry advances, the amount of internal dump will increase as more space for the internal dumping is

created. For external dumps no additional land will be required outside the block boundary. External dump will be accommodated inside the block boundary. Two external dump i.e external dump west and external dump east has been proposed on the north western and north eastern side of the block boundary respectively. Two internal dump i.e. internal dump west and external dump east has also been proposed.

There will not be any internal dump till 2nd year of mine operation. It is proposed to start internal dumping from 3rd year of mine operation. As the gradient of the seam is flat, during working of the quarry substantial amount of OB will be accommodated in internal dump. During 3rd year of mine operation, 1.16 Mcum of OB will be accommodated in internal dump and remaining 11.44 Mcum of OB will be accommodated in external dump. From 4th year of mine operation, no external dumping will be required. Hence, OB will be accommodated in internal dump for rest of the mine life.

Overburden will be dumped in external as well as internal dump. Height of western external dump and eastern external dump will be 60m above ground level at the end of mine operation. During closure of mine, overburden dumped above ground level will be used to fill void upto 30 m below ground level. It is proposed to maintained water body in the final void that is 30 m below ground level. At the closure stage, Eastern internal dump height will be 60m above ground level in 179.96 ha and at ground level in 227.37 ha and western internal dump height will be 60m above ground level in 176.88 ha and at ground level in 212.72 ha. It is proposed to restore 440.09 ha of land to ground level which will be used for agriculture purpose after spreading of top soil. In 440.09 ha, which is proposed to be restored to agriculture purpose, low height grass/plant will be planted to maintain fertility of soil.

The land reclamation will be taken progressively after exhaustion of coal and completion of internal back dumping and flushing with external dumps.

The top soil is to be used with minimum time lag for spreading over the external & internal dumps.

It is proposed to reclaim dump with plantation etc. after dumping / spreading top soil over the external and internal dumps.

Out of 1227.19 Mcum of OBR, 21.02 Mcum have been accommodated in external dumps, which constitutes about 1.71 % of total dumping.

Phased dump planning along with dump capacity has been given in table below:

Table No 3.4: Dump Schedule

YEAR	External Dump	Cumm External Dump	Internal Dump	Cumm Internal Dump	Total Overburden	Cumm Overburden
1	3.51	3.51	-	-	3.51	3.51
2	6.07	9.58	-	-	6.07	9.58
3	11.44	21.02	1.16	1.16	12.60	22.18
4	-	21.02	12.60	13.76	12.60	34.78
5	-	21.02	12.60	26.36	12.60	47.38
6	-	21.02	19.95	46.31	19.95	67.33
7	-	21.02	19.95	66.26	19.95	87.28
8	-	21.02	19.95	86.21	19.95	107.23
9	-	21.02	19.95	106.16	19.95	127.18
10	-	21.02	19.95	126.11	19.95	147.13
11	-	21.02	19.95	146.06	19.95	167.08
12	-	21.02	19.95	166.01	19.95	187.03
13	-	21.02	24.65	190.66	24.65	211.68
14	-	21.02	24.65	215.31	24.65	236.33
15	-	21.02	24.65	239.96	24.65	260.98
16	-	21.02	24.65	264.61	24.65	285.63
17	-	21.02	24.65	289.26	24.65	310.28
18	-	21.02	24.65	313.91	24.65	334.93
19	-	21.02	30.75	344.66	30.75	365.68
20	-	21.02	30.75	375.41	30.75	396.43
21	-	21.02	30.75	406.16	30.75	427.18
22	-	21.02	30.75	436.91	30.75	457.93
23	-	21.02	41.25	478.16	41.25	499.18
24	-	21.02	41.25	519.41	41.25	540.43
25	-	21.02	41.25	560.66	41.25	581.68
26	-	21.02	41.25	601.91	41.25	622.93
27	-	21.02	41.25	643.16	41.25	664.18
28	-	21.02	41.25	684.41	41.25	705.43
29	-	21.02	51.75	736.16	51.75	757.18
30	-	21.02	51.75	787.91	51.75	808.93
31	-	21.02	51.75	839.66	51.75	860.68
32	-	21.02	51.75	891.41	51.75	912.43
33	-	21.02	47.50	938.91	47.50	959.93
34	-	21.02	47.50	986.41	47.50	1,007.43
35	-	21.02	47.50	1,033.91	47.50	1,054.93
36	-	21.02	41.25	1,075.16	41.25	1,096.18
37	-	21.02	38.25	1,113.41	38.25	1,134.43

YEAR	External Dump	Cumm External Dump	Internal Dump	Cumm Internal Dump	Total Overburden	Cumm Overburden
38	-	21.02	30.75	1,144.16	30.75	1,165.18
39	-	21.02	24.65	1,168.81	24.65	1,189.83
40	-	21.02	19.95	1,188.76	19.95	1,209.78
41	-	21.02	12.60	1,201.36	12.60	1,222.38
42	-	21.02	4.81	1,206.17	4.81	1,227.19
Total	**21.02**		**1,206.17**		**1,227.19**	

Top soil management

Efforts will be made to excavate and segregate top soil separately. Top soil will be scrapped by dozer before the ground preparation for drilling and blasting. Scrapped top soil will be transported to the top soil storage area. During initial period of mining the top soil shall be directly utilized for plantation of saplings along the proposed roads and barren land. As and when the external waste dump gets stabilized the stored top soil will be spread over the area of dump to facilitate plantation.

Top soil is proposed to be removed separately and dumped outside the quarry in a manner so as not to loose its fertility. The top soil would be spread over the reclaimed land, afterward.

Top soil will be removed and dumped on the area shown on surface plan. Top soil will be stored for initial four years and during subsequent years it will be directly spread over the reclaimed area.

4. Site Analysis

4.1. Topography

The block is characterized by undulating topography with mounds as well as elevated and flat land. The elevation of the area above Mean Sea Level (MSL) ranges from 505 m in the northeast to 559 m in the southwest with higher values in the eastern part. The elevation of the mounds generally ranges from 520 m to 554m above Mean Seal Level (MSL). The general slope of the land is towards NNW in the northern, central and western part of the block while the slope is towards SE in the southern part (Plate III).

The area is incised by a prominent nala flowing from SW to NE in the northern part of the block and joins the Atem Nadi. The drainage within

the block is controlled by several small streamlets joining the above nala. The Atem Nadi and this stream together control the drainage of the area. The southern part of the block is free from the presence of any prominent nala. Small ponds and dug wells are common in the area. These are utilized for irrigation and drinking water purpose.

4.2 Land Use Pattern

Table No 4.1: Existing Land Use

Land Use Category	Area (Ha)
Forest Land	841.538
Tenancy Land (Agriculture etc.)	365.366
Government Land (Non Agriculture)	45.543
Total	**1252.447**

Table No 4.2: Village wise Land Use

(A) SCHEDULE OF LAND									
Detals of Tenancy, Govt. and Chhote - Bade Jhar ka Jungle (Rev. Forest)									
SL. NO.	MOUZA	PATWARI HALKA No.	TAHSIL	DISTRICT	PROPOSED AREA (HECTARE)				TOTAL
					TENANCY LAND		Govt. Rev.	CJJ + BJJ	
					ADIVASI	NON-ADIVASI			
1	TARA	17	PREMNAGAR	SURAJPUR	45.052	16.540	3.388	29.510	94.490
2	JANARDANPUR	17	PREMNAGAR	SURAJPUR	47.696	5.560	2.150	12.260	67.666
3	FATEHPUR	17	UDAIPUR	SURGUJA	94.378	5.278	18.290	78.609	196.555
4	GHATBARRA	17	UDAIPUR	SURGUJA	3.642	0.000	0.521	4.822	8.985
5	HARIHARPUR	16	UDAIPUR	SURGUJA	57.969	7.900	7.064	74.895	147.828
6	SALHI	16	UDAIPUR	SURGUJA	72.353	8.998	14.130	85.438	180.919
	TOTAL				**321.090**	**44.276**	**45.543**	**285.534**	**696.443**

(B) SCHEDULE OF LAND								
Details of Reserve and Protected Forest								
SL. NO.	**FOREST CIRCLE**	**FOREST DIVISION**	**RANGE**	**NAME OF BLOCK**	**COMPARTMENT NO.**	**TOTAL AREA (HECT.)**	**REQUIRED AREA (HECT.)**	**REMARKS**
1	SURGUJA	SOUTH SURGUJA	UDAIPUR	PIRIYA	1982	389.925	124.748	
2	SURGUJA	SOUTH SURGUJA	UDAIPUR	PIRIYA	1981	369.708	12.483	
3	SURGUJA	SOUTH SURGUJA	UDAIPUR	TARA (EAST)	P - 1986	105.05	37.209	
4	SURGUJA	SOUTH SURGUJA	UDAIPUR	JANARDANPUR	P - 1997	346.648	11.109	
5	SURGUJA	SOUTH SURGUJA	UDAIPUR	GHATBARRA	P - 2006	298.501	298.496	
6	SURGUJA	SOUTH SURGUJA	UDAIPUR	GHATBARRA	P - 2005	386.659	50.63	
7	SURGUJA	SOUTH SURGUJA	UDAIPUR	FATEHPUR	P - 1998	200.032	21.329	
	TOTAL						**556.004**	
GRAND TOTAL		**(A + B) = 696.443 + 556.004 = 1252.447 ha.**						

Table No 4.3: Pre-mining, during mining & post mining land use

Pre Mining land Use "Ha"			land use "Ha"									
			Type	During Mining	End of Life	Post Closure						
						Agriculture Land	Plantation	Water Body	Public Use	Grass/Green Belt	Dismantled	Total
Tenancy	Agriculture	365.366	Excavation Area	1,129.375	1,129.375	440.095	371.513	317.767	-	-	-	1,129.375
	Township		Backfilled Area (in Excavation Area)	1,059.092	1,059.092	-	-	-	-	-	-	-
	Grazing		Excavated Void (in Excavation Area)	70.278	70.278	-	-	-	-	-	-	-
	Barren		Top Soil Dump	2.600	2.600	-	-	-	-	2.600	-	2.600
	Water Bodies		External Dump	64.084	64.084	-	40.706	-	-	23.378	-	64.084
	Road		Safety Zone	-	-	-	-	-	-	-	-	-
	Community		Haul Road between quarries	-	-	-	-	-	-	-	-	-
	Inhabitated		Road diversion	-	-	-	-	-	-	-	-	-
			Diversion of Nala	14.801	14.801	-	-	-	14.801	-	-	14.801
			Settling pond	2.260	2.260	-	-	2.260	-	-	-	2.260
Govt	Non Agriculture	45.543	Electrical Line & Infrastructure area	13.228	13.228	-	2.646	-	10.582	-	-	13.228
Non Forest	Township		CHP & Washery	13.586	13.586	-	2.718	-	8.694	2.174	-	13.586
	Grazing		Coal Evacuation Route & Approach Road	2.370	2.370	-	0.474	-	1.896	-	-	2.370
	Barren		Rationalisation area	10.143	10.143	-	10.143	-	-	-	-	10.143
			Garland drains	-	-	-	-	-	-	-	-	-
			Embankment	-	-	-	-	-	-	-	-	-
			Green Belt	-	-	-	-	-	-	-	-	-
			Water ReseNoir near pit	-	-	-	-	-	-	-	-	-
			UG entry	-	-	-	-	-	-	-	-	-
Forest		841.538	Undisturbed/ Mining right for UG	-	-	-	-	-	-	-	-	-
			Resettment	-	-	-	-	-	-	-	-	-
Free Hold			Agriculture Land	-	-	-	-	-	-	-	-	-
Total		1,252.447	Total (exclude back filled & Void area)	1,252.447	1,252.447	440.095	428.200	320.027	35.973	28.152	-	1,252.447

4.3. Meteorological Data

Table No 4.4: Meteorological Data

Sr. No.	Parameters		Unit	Oct-2008	Nov-2008	Dec-2008
1	Wind Speed	Max	m/s	11.8	6.2	6.2
		Avg	m/s	1.62	1.35	1.28
2	Predominant Wind Direction	----		ENE	NEN	ENE
3	Temperature	Max	^{0}C	34.6	27.5	35.7
		Min	^{0}C	10.1	7.7	5.3
		Avg	^{0}C	22.38	17.62	16.19
4	Relative Humidity	Max	%	96.2	99.7	99.3
		Min	%	22	18.5	19.4
		Avg	%	72.64	76.17	77.12
5	Atmospheric Pressure	Max	mb	960	959	951
		Min	mb	943	936	940
		Avg	mb	954	952	943
6	Rainfall	Max	mm	32.6	3.9	0.0
		Min	mm	2.5	0.3	0.0
		Total	mm	25.9	2.0	0.0
7	Solar Radiation	Max	millivolt	926.0	922.4	919.9
		Min	millivolt	10.9	11.2	10.7
		Avg.	millivolt	188.2	186.8	184.1

5. Infrastructure facilities

5.1 Site Services:

The company will provide necessary infrastructure for its operations and for the well-being of its workforce.

Project Affected Person (PAPs) will be rehabilitated as per the approved policy of Chhattisgarh State.

5.2 Workshop

For maintenance and repair of equipment deployed in Parsa opencast project, the following maintenance and repair concept has been envisaged:

a) Daily maintenance, scheduled maintenance, minor repair and medium repair proposed to be carried out in the project maintenance and repair unit.

b) Capital repair and major overhauling of equipment at manufacturer's repair unit or, by outside agency at site.

5.3 E&M Maintenance and repair unit

Scope of work for E&M maintenance and repair unit will be-

- Minor repair, medium repair and replacement of components, assemblies and sub-assemblies of CHP, pumps and electrical equipment.
- Minor and medium repair of switch gears, motors, self-starters and other electrical equipment.

5.4 Road

Colony Roads

The width of colony roads has been envisaged as 5m. Provision for culverts, tree guards and drains would be provided.

Haul Road

Haul roads suitable for plying 100T & 35T class rear dumpers with side drains and dozer path would be provided within the mining area.

Heavy Duty Road

The dumpers deployed in the benches will also go to the workshop for maintenance as well as dump for dumping. Hence a provision for heavy duty road has been made. The type of road suitable for 100T & 35T class rear dumpers would be provided connecting, workshop, dumps etc.

5.5 Building

Service Buildings

The residential colony consists of type quarters, community and welfare buildings, parks and playground etc. for the proposed Project. The colony has been envisaged.

The Service Buildings include community buildings like dispensary, primary school, officers' and staff rest houses, clubs, post office, bank, shopping center,

community center etc. apart from offices, workshop & stores, sub-stations, shovel erection yard, magazine & other statutory buildings like canteen, first aid center, rest shelter, training centers, pit head bath etc.

Community Buildings

Community facilities, essential for a sound living of the project personnel and their families like Parks and Playground, Primary School, Workers' Institute, Staff club, Community Centre, shopping complex etc. have been envisaged in the present report.

Sub-Station

Sub-station has been considered to cater for the requirements of the Project & township. This will be brick masonry, RCC beam and slab construction with RCC louvers for ventilation and ducts with proper size for electric cables.

Magazine

Required provision for magazine has been made in the report.

Statutory Buildings

There are provisions for canteen, first aid centre, rest shelter, training centre, pit head bath etc. The areas for various statutory buildings have been considered on the basis of BPE guidelines

Figure-5.1 Surface Plan