



Government of India  
Ministry of Environment, Forest and Climate Change  
(Issued by the State Environment Impact Assessment  
Authority(SEIAA), JHARKHAND)

To,

The Additional General Manager

NTPC LIMITED

SITE OFFICE SIKRI, BARKAGAON, HAZARIBAGH JHARKHAND -  
825311 -825311

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity  
under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC)  
in respect of project submitted to the SEIAA vide proposal number  
SIA/JH/CMIN/426263/2023 dated 11 Sep 2023. The particulars of the environmental  
clearance granted to the project are as below.

1. EC Identification No.	EC23B001JH128665
2. File No.	SEIAA/2023-24/2916/2023
3. Project Type	New
4. Category	B
5. Project/Activity including Schedule No.	1(a) Mining of minerals
6. Name of Project	North West Quarry of Pakri Barwadih opencast Coal Mine Project
7. Name of Company/Organization	NTPC LIMITED
8. Location of Project	JHARKHAND
9. TOR Date	N/A

The project details along with terms and conditions are appended herewith from page  
no 2 onwards.

Date: 11/10/2023

(e-signed)  
Ashok Kumar, IFS  
Member Secretary  
SEIAA - (JHARKHAND)

*Note: A valid environmental clearance shall be one that has EC identification  
number & E-Sign generated from PARIVESH. Please quote identification  
number in all future correspondence.*

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## State Level Environment Impact Assessment Authority, Jharkhand

Nursery Complex, Near Dhurwa Bus Stand, P.O+P.S-Dhurwa, Ranchi, Jharkhand-834004

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website: [www.jseiaa.org](http://www.jseiaa.org)

Letter No : EC/SEIAA/2023-24/2916/2023/

Ranchi, Date :

**To: Head of Project,  
Pakri Barwadih North West Coal Mining Project,  
Sikri Site Office, Barkagaon,  
Hazaribagh – 825311, (Jharkhand).**

**Sub: Environmental Clearance for the project “North-West Quarry of Pakri Barwadih Opencast Coal Mine of M/s NTPC Limited at Village : Bariatu, Basaria, Beltu, Jabra, Kandaber, Nawadih, Sirma & Urub, Tehsil : Keredari and Barkagaon, Distt. : Hazaribagh, Jharkhand (485.159 Ha)”, (Proposal No. : SIA/JH/CMIN/426263/2023) - regarding.**

**Ref: Your application no.- NTPC/PB-NW/2023/166, dated – 11.09.2023.**

Sir,

It is in reference to the project “North-West Quarry of Pakri Barwadih Opencast Coal Mine of M/s NTPC Limited at Village : Bariatu, Basaria, Beltu, Jabra, Kandaber, Nawadih, Sirma & Urub, Tehsil : Keredari and Barkagaon, Distt. : Hazaribagh, Jharkhand (485.159 Ha)” submitted by you for seeking prior Environmental Clearances (EC).

This is a new (Greenfield) project which has been taken for appraisal on 20.09.2023.

**North-West (NW) Quarry of Pakri Barwadih Opencast Coal Mine Project of NTPC Ltd.** is a Greenfield project with a targeted coal production of 3.0 MTPA within the lease area of 485.159 Ha in Bariatu, Basaria, Beltu, Jabra, Kandaber, Nawadih, Sirma and Urub Villages of Keredari and Barkagaon Tehsil in Hazaribagh District of Jharkhand State.

Considering that this is a coal mining project with a lease area of 485.159 Ha. as per MoEF&CC notification S.O.1866(E) dated 20.04.2022, it is classified under Category B which necessitates environmental clearance from SEIAA, Jharkhand.

This quarry is a part of the Pakri Barwadih Coal Mine Block of NTPC Ltd. which comprises three distinct quarries namely, Pakri Barwadih West ( PB-West), Pakri Barwadih East (PB-East) and the subject project. The entire Pakri Barwadih Coal Block is designed to produce 18 MTPA of coal (15 MTPA from PB-West & PB-East + 3 MTPA from PB North west) for captive use at the power plants of NTPC Ltd. located at different parts of country. Mining

operations at PB-West and PB-East Quarry have already commenced subsequent to obtaining the necessary statutory clearances.

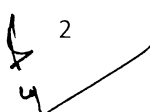
North West Quarry of Pakri Barwadih Coal Mine Project is bound by latitudes 23° 54' 13.04" to 23° 55' 43.25" North and Longitudes 85° 09' 09.79" to 85° 11' 02.40" East. Out of the total lease area of 485.159Ha, private tenancy is 113.557Ha, Government Land is 19.713 Ha and balance 351.89Ha is forest land. 20.692Ha of forest land was already transferred to NTPC vide MoEF&CC letter dated 17.09.2010. For the balance 331.198Ha, Stage-I forest clearance was obtained on 26.05.2023 vide MoEF&CC letter 8-56/2009-FC-(vol). In absence of Khatiyani copy at CO office, DC, Hazaribagh has issued land certification for private tenancy and Government land vide letter no. 3070 dt 05.09.2023 in Form-I (as per Jharkhand Govt. circular 4792 dt 04.12.2018)

Topographically the area is rather hilly, rugged and undulating and the elevation varies from 430m to 460m above MSL. The two sides are defined by Khora Nala west and Khora nala east on the western and eastern side respectively, which discharges its load in Lathorwa Nala which in-turn joins Haharo Nadi. Besides these there are many small streams & streamlets, which discharge their load into this nala. All the nalas of the block are seasonal and become dry during summers.

Khora Nala West enters the mining lease from North Western boundary and flows towards West Central boundary of the mining lease. It traverses path of 1.65 Kms inside the mining lease boundary. The other seasonal nala locally termed as Khora nala east is passing on the eastern side of lease. As per the approved mining plan, for Khora Nala West it is proposed for a realignment around the mine boundary in the NW corner which is to be carried out in the initial phase of mining. As far as Khora nala east is concerned, it is passing in between the PB-W and PB NW block and about 33.18 Mil.T of coal is available as barrier and batter coal between both. No diversion of Khora nala east will be carried out in the initial phase of mining, though it is proposed to mine 33.18 Mil.T of coal in the batter and barrier from year 41 to 52. A detailed study in this regard will be conducted later at an appropriate time and ensured undisturbed water flow for the downstream users.

Barkagaon R.F is located 6.5Km from the lease area. There are no sanctuaries within 10.0 km from the mine lease boundary. Hazaribagh wildlife sanctuary is located about 16.2 kms from the lease. As per the Eco-sensitive zone as per Final Notification S.O 2775(E) dated 01.08.2019 of MOEF & CC. The ESZ is located at a distance of 9.6 km from the lease area. As such NBWL clearance is not applicable.

The method of mining proposed to be adopted to extract coal and OB in PBNW Opencast mine will be proven mechanized opencast method of mining with conventional shovel – Dumper combination technology. There are total 10 nos. of coal seams, 5 each coal bearing horizons belonging to Barakar & Karharbari formation respectively. In ascending order these are seam K-1, K-2, K-3, K-4, K-5 in Karharbari Formation and Local(L), I, II, IV & V in Barakar Formation. Seam I splits into 3 sections viz. I Top, I Middle & I Bottom. At places Seam I Bottom and I Middle combined and form single seam namely I Bottom + Middle. Similarly, Seam II also splits into 3 sections viz. II Top, II Middle and II Bottom. Seam II Top and II



Middle coalesce to form single seam as II Top + II Middle in eastern part. Seam V & IV occur as a combined seam. In the approved Mining Plan, the entire property is envisaged to be mined by opencast method from the view of conservation of coal. The North West quarry is divided in to 2 pits namely Pit-I & Pit – 2.

Total geological coal reserve of PB NW Quarry as per GR is estimated to be about 137.584 Million Tonnes. It is estimated that 105.78 Million Tonnes of mineable coal would be available against overburden of 348.24 Mm<sup>3</sup> within the mine boundaries. Additional reserves of barrier 33.18 Million Tonnes can be mined by removal of batter. The total extractable reserves including the reserves blocked in the common boundary of PB-W and PB-NW is 138.96 Million Tonnes. The average stripping ratio works out to 3.15 m<sup>3</sup>/T.

Out of 438.24 Mil.m<sup>3</sup> of waste to be generated, 74.25 Mil.m<sup>3</sup> will be stored in temporary external dump (Out of which 9.13 Mil.m<sup>3</sup> will remain as embankment and the remaining will be rehandled in the later stage) and the remaining will be simultaneously back filled. As such there will be no external dump.

Power requirement for the mine is estimated as 8.5 MVA which shall be sourced from JUSNL (Jharkhand Urja Sanchar Nigam Ltd.) Patratu at 220 KV, at Main receiving Substation of 220/33/11 KV at Pakri Barwadih. Study is under process for installation of solar panels at Overburden Dump of Pakri Barwadih West mine having a potential of generating around 13 MW solar power. Feasibility shall also be explored for installation of rooftop solar panels on office building to reduce the power requirement. **Total project cost is 91232 Lakh.**

The Peak water requirement for PB North west quarry is estimated as 745.5 m<sup>3</sup>/day. Potable water requirement will be met from borewell. Industrial, water sprinkling and greenbelt and plantation water requirements will be met from mine sump water and treated ETP/STP water. Additional mine sump water will be discharged to Khora Nala for gainful use.

Purpose	Total Water Requirement (KLD)	Quantity Reused (KLD)	Balance water Requirement (KLD)	Remarks
Water Sprinkling / Dust Suppression	500.0	--	500.0	--
Industrial / Mining Use	124.0	96.0	76.0	Treated in ETP
Greenbelt Development	55.0		7.0	Treated in STP
Domestic Use	66.5	--	66.5	--
<b>Total</b>	<b>745.5</b>	<b>96.0</b>	<b>649.5</b>	<b>Source:</b> a) Treated Water - 96.0 KLD

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				b) Mine sump water- 533.0 KLD
				c) Borewell water - <u>116.5</u> KLD
				<b>Total - <u>745.5</u></b> <b><u>KLD</u></b>

**LAND USE DURING MINING:**

Particulars	Area (Ha.)
Excavation Area	440.74
Top Soil Dump	2.00
External Dump	14.45
Road diversion	1.24
Safety zone/ Rationalisation area	4.85
Area under nala/river	16.00
Settling pond	1.03
Infrastructure area	4.85
<b>Total</b>	<b>485.16</b>

**POST MINING LAND USE:**

Type	Land Use (End of Life)	Land Use (Post Closure)				
		Plantation	Water body	Public/ Company Use	Forest Land (Returned)	Total
Backfilled mine Area	335.43	--	--	--	335.43	<b>335.43</b>
Excavated Void	105.31	--	105.31	--	--	<b>105.31</b>
Top Soil Dump	2.00	2.00	--	--	--	<b>2.00</b>
External Dump	14.45	14.45	--	--	--	<b>14.45</b>
Safety zone/ Rationalisation area	4.85	4.85	--	--	--	<b>4.85</b>
Road diversion	1.24	--	--	1.24	--	<b>1.24</b>
Area under	16.00	--	16.00	--	--	<b>16.00</b>

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nala/river						
Settling pond	1.03	--	--	1.03	--	<b>1.03</b>
Infrastructure area	4.85	4.85	--	--	--	<b>4.85</b>
<b>Total</b>	<b>485.16</b>	<b>26.15</b>	<b>121.31</b>	<b>2.27</b>	<b>335.43</b>	<b>485.16</b>

### Coal Production Plan:

Coal Production plan of Pakri Barwadih North West Coal Mining Project is as given below:

YEAR	Scheduled Coal Production
1	0.5
2	1
3	2
4	3
5	3
6	3
7	3
8	3
9	3
10	3
11	3
12	3
13	3
14	3
15	3
16	3
17	3
18	3
19	3
20	3
21	3
22	3
23	3
24	3
25	3
26	3
27	3
28	3
29	3
30	3

31	3
32	3
33	3
34	3
35	3
36	3
37	3
38	3
39	3
40	3
41	3
42	3
43	3
44	3
45	3
46	3
47	3
48	2
49	1.46
Total	<b>138.96</b>

**Geological and Mining Characteristics of PBNW Coal Mining Project:**

<b>Geological reserve</b>	137.584 Million tonnes	
<b>Mineable reserve</b>	138.96 Million tonnes including PB-North West and PB-West batter	
<b>Total waste/Overburden</b>	438.24 Million m <sup>3</sup>	
<b>Waste/Overburden management</b>	<b>Waste (Mil m3)</b>	<b>Management</b>
	74.25	Stored in temporary external dump
	363.99	Simultaneously back filled
	<b>438.24</b>	<b>Total</b>
<b>Bench Dimensions</b>	Maximum bench height of 15 m in top OB and 5-15 m in coal and intervening parting. Overall ultimate pit slope of 43°.	
<b>Stripping ratio</b>	1:3.15 T:m3	

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<b>Method of Mining</b>	Open cast mechanized mining method
<b>Production</b>	3.0 MTPA of Coal
<b>Life of Mine</b>	52 years including 3 years of construction period.
<b>Method of Mining</b>	Open cast mechanized mining method

**Seam wise thickness details**

Sl. No.	Particulars	Minimum	Maximum
1	V COMB	3.24	5.9
2	Parting	3.72	27.16
3	IV COMB	5.15	10.04
4	Parting	0.98	30.55
5	II TOP	6.96	10.61
6	Parting	1.09	5.12
7	II MID	7.17	11.68
8	Parting	0	0
9	II T+M	15.97	20.26
10	Parting	1.4	24.22
11	II BOT	2.85	6.3
12	Parting	5.89	15
13	I TOP	0.42	3.79
14	Parting	0.52	4.51
15	I MID	1.15	8.73
16	Parting	0.17	4.19
17	I BOT	1.01	4.17
18	Parting	0	0
19	I M+B	4.7	11.88
20	Parting	16.8	27.68
21	LOCAL	0.06	2.35
22	Parting	16.39	29.67
23	K- 5	0.08	1.32
24	Parting	4.74	12.65
25	K - 4	0.28	1.74
26	Parting	4.4	9.85
27	K - 3	0.45	1.96
28	Parting	8.45	19.58
29	K -2	0.06	2.99
30	Parting	1.95	13.84
31	K - 1	1.19	4.68

Land Details (Plot wise)

Khata No.:-

Thana Name	Barkagaon & Keredari	Thana No.	41, 32, 33, 42, 45, 46, 43, 44
Khata No.	<b>Urub-</b> 15, 8, 7, 12, 28, 16, 10, 13, 14, 18, 19, 20, 21, 25, 49, <b>Beltu-</b> 4, 14, 18, 20, 31, 37, 52, 53, 56, 58, 60, 61, 65, 67, 70, 74, 78, 87, 88, 90, 94, 96, 98, 100, 106, 124, 128, 143, 150, 152, 160, 161, 166, 168, 178, 190, <b>Kandaber-</b> 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 36, 12, 13, 14, 21, 23, 24, 25, 27, 28, 29, 30, 85, 31, 34, 35, 36, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 57, 58, 49, 59, 60, 62, 63, 64, 89, 66, 67, 68, 70, 72, 74, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 92, 93, 95, 97, 98, 99, 100, 112, 51, 54, 110, 111, <b>Bareatu-</b> 21, 42, 69, 106, 133, 138, 143, 144, 145, 154, 131, 135, 62, 39, 61, 60, 1, 95, 124, 16, 41, 85, 95, 124, 108, 107, 155, 156, <b>Nawadih-</b> 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 3, <b>Sirma-</b> 2, 3, 7, 4, 5, 6, 8, 9, 10, 11, 12, 13, <b>Jabra-</b> 1, 2, 3, 4, 5, <b>Basaria-</b> 2, 1, 3, 4, 5, 6	Khesra No.	<b>Urub-</b> 2, 3, 4, 5, 6, 7, 8, 96, 640, 648, 649, 650, 654, 657, 670, 638, 646, 653, 659, 664, 667, 669, 671, 636p, 651, 656, 676p, 637, 639, 644, 647, 652, 658, 668, 691p, 662, 643, 660, 663, 690p, 641, 655, 665, 672p, 95, 97, 634p, 642, 645, 728p, 635p, 661, 666, 677p, 689p, <b>Beltu-</b> 207, 66, 65, 67, 116, 76, 208, 85, 70, 72p, 102, 103, 108, 109, 121, 124, 199p, 206, 113, 141, 63, 77, 125, 129, 134, 115, 210, 73, 75, 205p, 111, 151p, 64, 122, 126, 78p, 127, 88, 91, 94, 95, 118, 79, 97, 106, 139, 93, 99, 130, 136, 96, 69, 80p, 89, 98, 101, 132, 150p, 114, 133, 142, 107, 137, 140, 86, 215, 71, 110, 212p, 216p, 135, 128, 112, 119, 211, 209, 117, 213, 131, 74, 123, 104, 105, 138, 59, 60p, 68, 90, 92, 100, 120, 267p, 81p, 143p, 198p, 214, 222p, 58p, 62p, 87, 84p, <b>Kandaber-</b> 215, 509, 513, 656, 665, 674, 189, 190, 191, 193, 242, 243, 244, 250, 251, 538, 563, 675, 677, 678, 679, 457, 627, 229, 592, 578, 584, 174, 175, 184, 185, 245, 246, 479, 662, 672, 279p, 145, 458, 438p, 149, 225, 241, 428, 487, 530, 541, 596, 661, 455, 488, 497, 153, 182, 265, 580, 181, 233, 238, 471, 204, 211, 198, 199, 201, 202, 216, 217, 491, 495, 496, 591, 594, 600, 601, 196, 427p, 160, 169, 486, 593, 138p, 278p, 621, 178, 213, 247, 249, 499, 521, 523, 557, 598, 628, 649, 441, 537, 210, 252, 474, 475, 515, 177, 214, 239, 248, 443, 490, 498, 508, 519, 522, 558, 560, 597, 650, 460, 612, 615, 668, 206, 573, 581, 582, 583, 585, 646, 647, 653, 659, 236, 259, 430, 481, 638, 643, 651, 156, 234, 270, 619, 671, 440, 575, 260, 227, 254, 476, 589, 611, 253, 256, 235, 472, 173, 205, 514, 607, 237, 637, 506, 510, 520, 533, 535, 542,

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Type wise Land details of Pakri Barwadih North West Mine								
Sl.No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
Tenancy Land								
1	Tenancy	113.557		4	207	0.15	0.061	Certification has been taken for this area from DC, Hazaribagh (as per Jharkhand Govt. circular 4792 dt 04.12.2018) vide letter no. 3070 dt 05.09.2023
2				14	66	0.11	0.045	
3				14	65	0.06	0.024	
4				14	67	0.07	0.028	
5				14	116	0.06	0.024	
6				14	76	0.15	0.061	
7				14	208	0.06	0.024	
8				18	85	0.48	0.194	
9				20	70	0.13	0.053	
10				20	72p	0.23	0.093	
11				31	102	0.84	0.340	
12				37	103	0.24	0.097	
13				37	108	0.17	0.069	
14				37	109	0.08	0.032	
15				52	121	0.49	0.198	
16				52	124	0.38	0.154	
17				53	199p	0.02	0.008	
18				53	206	0.05	0.020	
19				56	113	0.38	0.154	
20				56	141	0.10	0.040	
21				58	63	0.20	0.081	
22				58	77	0.10	0.040	
23				58	125	0.25	0.101	
24				60	129	0.07	0.028	
25				60	134	0.05	0.020	
26				61	115	0.09	0.036	
27				61	210	0.14	0.057	
28				65	73	0.07	0.028	
29				67	75	0.05	0.020	
30				70	205p	0.01	0.004	
31				74	111	0.03	0.012	
32				74	151p	0.04	0.016	
33				78	64	0.13	0.053	



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78	122	0.22	0.089
78	126	0.25	0.101
78	78p	0.06	0.024
78	127	0.53	0.214
87	88	0.23	0.093
87	91	0.20	0.081
87	94	0.06	0.024
87	95	0.03	0.012
87	118	0.13	0.053
87	79	0.15	0.061
87	97	0.05	0.020
88	106	0.14	0.057
88	139	0.13	0.053
90	93	0.26	0.105
90	99	0.18	0.073
90	130	0.24	0.097
90	136	0.19	0.077
90	96	0.04	0.016
94	69	0.37	0.150
94	80p	0.21	0.085
94	89	0.24	0.097
94	98	0.33	0.134
94	101	0.16	0.065
94	132	0.13	0.053
96	150p	0.10	0.040
98	114	0.32	0.130
98	133	0.32	0.130
98	142	0.11	0.045
100	107	0.14	0.057
100	137	0.02	0.008
100	140	0.14	0.057
106	86	0.19	0.077
106	215	0.16	0.065
124	71	0.16	0.065
128	110	0.10	0.040
128	212p	0.07	0.028

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**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
70				128	216p	0.08	0.032	
71				143	135	0.08	0.032	
72				143	128	0.04	0.016	
73				150	112	0.03	0.012	
74				150	119	0.05	0.020	
75				150	211	0.19	0.077	
76				152	209	0.07	0.028	
77				152	117	0.03	0.012	
78				160	213	0.19	0.077	
79				161	131	0.26	0.105	
80				166	74	0.08	0.032	
81				168	123	0.24	0.097	
82				178	104	0.08	0.032	
83				178	105	0.07	0.028	
84				178	138	0.20	0.081	
1				21	1692	0.42	0.170	
2				42	49	0.13	0.053	
3				42	60	0.25	0.101	
4				69	57	0.22	0.089	
5				106	1693	1.69	0.684	
6				133	51	0.04	0.016	
7				133	55	0.04	0.016	
8				133	56	0.15	0.061	
9				138	47	0.52	0.210	
10				138	54	0.02	0.008	
11				143	1690	0.72	0.291	
12				144	19	0.62	0.251	
13				145	53	0.07	0.028	
14				154	22	2.17	0.878	
15				154	30	0.02	0.008	
16				154	32	0.04	0.016	
17				154	35	0.16	0.065	
18				154	37	0.23	0.093	
19				154	41	0.51	0.206	
20				154	61	0.84	0.340	
21				154	62	0.52	0.210	
22				131	5	0.09	0.036	
23				131	6	0.42	0.170	
24				131	7	1.68	0.680	
25				131	11	0.15	0.061	
26				135	12	0.20	0.081	

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27			131	13	1.13	0.457
28			131	14	0.40	0.162
29			62	15	0.28	0.113
30		Bariyatu	39	16	0.20	0.081
31			61	17	0.19	0.077
32			60	18	0.24	0.097
33			1	20	1.08	0.437
34			95	23	0.19	0.077
35			95	24	0.07	0.028
36			124	25	0.06	0.024
37			124	26	0.12	0.049
38			124	27	0.12	0.049
39			124	28	0.42	0.170
40			16	31	0.78	0.316
41			41	33	0.40	0.162
42			85	34	0.22	0.089
43			85	36	0.11	0.045
44			85	38	0.80	0.324
45			85	39	0.11	0.045
46			95	42	0.33	0.134
47			95	43	0.09	0.036
48			124	44	0.10	0.040
49			124	45	0.10	0.040
50			124	46	0.15	0.061
51			124	48	1.60	0.648
52			124	52	0.05	0.020
53			108	58	0.20	0.081

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
54				107	1688	0.56	0.227	
55				107	1689	0.58	0.235	
56				107	1691	1.08	0.437	
1				2	17	0.02	0.008	
2				2	18	0.39	0.158	
3				1	22	0.32	0.130	
4				1	23	6.21	2.513	
5				2	24	0.40	0.162	
6				2	25	2.17	0.878	
7				1	28	7.26	2.938	
8				1	31	2.21	0.894	
9				2	33	2.70	1.093	
10				2	36	0.22	0.089	
11				2	1	0.20	0.081	

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2	3	1.41	0.571
2	4	0.17	0.069
2	6	0.07	0.028
2	8	0.22	0.089
2	9	0.82	0.332
2	11	1.60	0.648
2	13	1.17	0.473
2	14	0.07	0.028
2	15	0.03	0.012
2	35	0.04	0.016
2	37	0.53	0.214
3	19	0.87	0.352
3	20	0.43	0.174
4	30	1.23	0.498
4	293	0.02	0.008
4	333	0.04	0.016
4	334	0.56	0.227
4	411	0.22	0.089
4	414	0.15	0.061
4	495	0.20	0.081
5	504	0.49	0.198
6	410	0.93	0.376
7	298	0.06	0.024
7	203p	0.71	0.287
7	230p	0.02	0.008
7	295p	0.06	0.024
8	182	0.50	0.202
8	212	0.29	0.117
8	305	0.03	0.012
8	335	0.07	0.028
8	337	0.06	0.024
8	416	0.39	0.158
8	417	0.02	0.008
		0	
7	482	0.28	0.113
7	438p	0.15	0.061
9	350	0.11	0.045
9	412	0.19	0.077
9	415	0.16	0.065
9	432p	0.11	0.045
10	322	0.09	0.036
10	323	0.03	0.012
		0	
10	441	0.36	0.146
10	216p	0.04	0.016
11	166	0.42	0.170
11	209	0.31	0.125

32			11	210	0.19	0.077
33			11	292	0.04	0.016
34			11	302	0.13	0.053
35			11	303	0.04 0	0.016
36			11	306	0.02	0.008
37			11	307	0.04	0.016
38			11	308	0.22	0.089
39			11	309	0.14	0.057
40			11	310	0.12	0.049
41			11	311	0.20	0.081
42			11	312	0.06	0.024

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
43				11	313	0.08	0.032	
44				11	314	0.21 0	0.085	
45				11	325	0.05	0.020	
46				11	326	0.71	0.287	
47				11	327	0.04 0	0.016	
48				11	338	0.03 0	0.012	
49				11	451	0.19	0.077	
50				11	452	0.22	0.089	
51				11	453	0.24	0.097	
52				11	454	0.27	0.109	
53				11	455	0.31	0.125	
54				11	456	0.17	0.069	
55				11	460	0.11	0.045	
56				11	461	0.11	0.045	
57				11	462	0.18	0.073	
58				11	463	0.02	0.008	
59				11	464	0.05	0.020	
60				11	465	0.02	0.008	
61				11	483	0.27	0.109	
62				11	490	0.20	0.081	
63				11	491	0.19	0.077	
64				11	499	0.10	0.040	
65				11	500	0.18	0.073	
66				11	167p	0.03	0.012	
67				11	339p	0.08	0.032	
68				11	428p	0.01	0.004	
69				11	436p	0.10	0.040	
70				11	437p	0.12	0.049	

71			12	353	0.18	0.073
72			13	429p	0.26	0.105
73			14	496	0.16	0.065
74			14	213p	0.33	0.134
75			15	183	0.35	0.142
76					0	
77			15	185	0.33	0.134
78			15	186p	0.59	0.239
79			15	234p	0.02	0.008
80			16	204	0.47	0.190
81			16	296	0.04	0.016
82					0	
83			16	297	0.01	0.004
84			16	299	0.06	0.024
85			16	301	0.08	0.032
86			16	304	0.07	0.028
87			16	439p	0.08	0.032
88					0	
89			16	442	0.64	0.259
90			16	445	0.19	0.077
91			16	467	0.04	0.016
92			16	472	0.29	0.117
93			16	484	0.26	0.105
94			16	493	0.17	0.069
95			16	498	0.10	0.040
96			17	231	0.13	0.053
97			17	347	0.02	0.008
98			17	348	0.19	0.077
99			17	421	0.20	0.081
100			17	476	0.02	0.008
101			17	477	0.15	0.061
102			17	480	0.09	0.036
103			17	503	0.24	0.097
104			18	184	0.11	0.045
105			18	205	0.54	0.219
106			18	300	0.07	0.028
107			18	324	0.26	0.105
108			18	466	0.02	0.008
109			18	440p	0.15	0.061
110			18	502	0.16	0.065
111					0	
112			19	206	0.51	0.206
			19	317	0.60	0.243
			19	319	0.36	0.146
			19	330	0.22	0.089
			19	331	0.32	0.130

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Type wise Land details of Pakri Barwadih North West Mine								
Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
113				19	332	0.04	0.016	
114				19	494	0.21	0.085	
115				19	434p	0.28	0.113	
116				20	336	0.07	0.028	
117				20	341	0.09	0.036	
118				20	342	0.45	0.182	
119				20	345	0.21	0.085	
120				20	346	0.03	0.012	
121				20	349	0.02	0.008	
122				20	413	0.20	0.081	
123				20	418	0.18	0.073	
124				20	501	0.25	0.101	
125				20	340p	0.01	0.004	
126				20	356p	0.02	0.008	
127				20	433p	0.12	0.049	
128				21	315	0.36	0.146	
129				21	320	0.02 0	0.008	
130				21	321	0.54	0.219	
131				21	459	0.39	0.158	
132				21	468	0.05	0.020	
133				21	471	0.08	0.032	
134				21	473	0.32	0.130	
135				21	475	0.09	0.036	
136				21	492	0.18	0.073	
137				21	497	0.06	0.024	
138				21	435p	0.25	0.101	
139				22	294p	0.02	0.008	
140				23	344	0.21	0.085	
141				23	407	0.07	0.028	
142				23	420	0.10	0.040	
143				23	479	0.36	0.146	
144				23	405p	0.03	0.012	
145				23	409p	0.14	0.057	
146				24	448	0.11	0.045	
147				24	470	0.17	0.069	
148				24	359p	0.16	0.065	
149				25	180	0.03	0.012	
150				25	181	0.06	0.024	
151				25	318	0.29	0.117	
152				25	478	0.24	0.097	
153				26	211	0.42	0.170	
154				26	179p	0.06	0.024	

155			26	235p	0.02	0.008
156			27	352	0.22	0.089
157			27	419	0.30	0.121
158			28	233p	0.01	0.004
159			29	444	0.22	0.089
160			29	469	0.02	0.008
161			29	474	0.19	0.077
162			30	354	0.23	0.093
163			30	449	0.13	0.053
164			30	486	0.41	0.166
165			30	487	0.20	0.081
166			30	488	0.19	0.077
167			30	489	0.12	0.049
168			30	431p	0.21	0.085
169			31	291	0.05	0.020
170			31	351	0.09	0.036
171			31	447	0.27	0.109
172			31	485	0.05	0.020
173			31	290p	0.03	0.012
174			31	430p	0.20	0.081
175			32	446	0.42	0.170
176			32	164p	0.23 0	0.093
177			32	165	0.66 0	0.267
1			2	149	0.38	0.154
2			2	169	0.30	0.121
3			2	198	0.14	0.057
4			2	202	0.37	0.150
5			2	237	0.35	0.142

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
6				2	241	1.08	0.437	
7				2	263	0.13	0.053	
8				2	264	0.05	0.020	
9				2	274	0.04	0.016	
10				2	284	0.31	0.125	
11				2	103p	0.21	0.085	
12				2	64p	0.03	0.012	
13				3	28	0.93	0.376	
14				3	29	0.07	0.028	
15				3	31	0.04	0.016	
16				3	69	0.04	0.016	
17				3	70	0.06	0.024	



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3	72	0.07	0.028
3	108	0.19	0.077
3	116	0.09	0.036
3	121	0.14	0.057
3	124	0.11	0.045
3	127	0.04	0.016
3	129	0.42	0.170
3	132	0.04	0.016
7	136	0.07	0.028
3	140	0.08	0.032
3	142	0.17	0.069
3	160	0.09	0.036
3	162	0.85	0.344
3	163	0.40	0.162
3	171	0.25	0.101
3	177	2.15	0.870
3	181	0.80	0.324
3	183	0.05	0.020
3	184	0.10	0.040
3	188	0.36	0.146
3	192	0.41	0.166
3	205	0.16	0.065
3	211	0.30	0.121
3	214	0.17	0.069
3	220	0.10	0.040
3	239	0.29	0.117
3	253	0.11	0.045
3	268	0.36	0.146
3	277	0.80	0.324
3	286	1.46	0.591
3	289	0.14	0.057
3	68p	0.26	0.105
4	109	0.11	0.045
4	112	0.26	0.105
4	170	0.44	0.178
4	178	0.08	0.032
4	182	0.53	0.214
4	197	0.20	0.081
4	204	0.13	0.053
4	236	0.03	0.012
4	238	0.30	0.121
4	252	0.13	0.053
4	107p	0.11	0.045
4	63p	0.01	0.004
4	81p	0.01	0.004
5	150	0.15	0.061
5	199	0.17	0.069

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65				5	230	0.02	0.008	
66				5	231	0.25	0.101	
67				5	290	0.13	0.053	
68				6	114	0.15	0.061	
69				6	122	0.08	0.032	
70				6	123	0.26	0.105	
71				6	130	0.10	0.040	
72				6	131	0.62	0.251	
73				6	139	0.13	0.053	
74				6	141	0.21	0.085	
75				6	143	0.15	0.061	
Type wise Land details of Pakri Barwadih North West Mine								
Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
76			Sirma	6	152	0.21	0.085	
77				6	157	0.20	0.081	
78				6	161	0.06	0.024	
79				6	168	0.33	0.134	
80				6	172	0.26	0.105	
81				6	175	0.57	0.231	
82				6	186	0.38	0.154	
83				6	191	0.38	0.154	
84				6	213	0.17	0.069	
85				6	217	0.64	0.259	
86				6	219	0.09	0.036	
87				6	223	0.14	0.057	
88				6	227	0.04	0.016	
89				6	228	0.57	0.231	
90				6	229	0.05	0.020	
91				6	232	0.28	0.113	
92				6	254	0.29	0.117	
93				6	257	0.20	0.081	
94				6	265	0.08	0.032	
95				6	266	0.17	0.069	
96				6	273	0.10	0.040	
97				2	275	1.06	0.429	
98				6	282	0.10	0.040	
99				6	288	0.16	0.065	
100				6	295	0.54	0.219	
101				6	33p	0.01	0.004	
102				6	73p	0.08	0.032	
103				7	98	0.27	0.109	
104				7	100	0.20	0.081	
105				7	115	0.09	0.036	
106				7	120	0.72	0.291	

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107				7	134	0.07	0.028	
108				7	137	0.12	0.049	
109				7	147	0.28	0.113	
110				7	167	0.36	0.146	
111				7	173	0.14	0.057	
112				7	174	0.43	0.174	
113				7	179	0.21	0.085	
114				7	187	0.71	0.287	
115				7	190	0.24	0.097	
116				7	201	0.23	0.093	
117				7	207	0.75	0.304	
118				7	209	0.05	0.020	
119				7	210	0.48	0.194	
120				7	215	0.09	0.036	
121				7	221	0.06	0.024	
122				7	222	0.56	0.227	
123				7	226	0.13	0.053	
124				7	249	0.19	0.077	
125				7	255	0.30	0.121	
126				7	283	0.13	0.053	
127				7	287	0.14	0.057	
128				7	293	0.43	0.174	
129				7	101p	0.21	0.085	
130				7	32p	0.12	0.049	
131				7	83p	0.10	0.040	
132				8	74	0.13	0.053	
133				8	102	0.04	0.016	
134				8	118	0.19	0.077	
135				8	126	0.09	0.036	
136				8	128	0.47	0.190	
137				8	135	0.29	0.117	
138				8	145	0.48	0.194	
139				8	151	0.28	0.113	
140				8	165	0.20	0.081	
141				8	166	0.31	0.125	
142				8	180	0.07	0.028	
143	8	193	0.17	0.069				
144	8	196	0.48	0.194				
145	8	203	0.24	0.097				
Type wise Land details of Pakri Barwadih North West Mine								
Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
146				8	206	0.12	0.049	
147				8	208	0.42	0.170	
148				8	233	0.04	0.016	

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8	234	0.96	0.389
8	246	0.37	0.150
8	258	0.15	0.061
8	261	0.07	0.028
8	262	0.18	0.073
8	267	0.12	0.049
8	279	0.25	0.101
8	285	0.24	0.097
8	294	0.70	0.283
8	67p	0.11	0.045
9	110	0.12	0.049
9	113	0.51	0.206
9	117	0.34	0.138
9	119	0.22	0.089
9	133	0.38	0.154
9	146	0.30	0.121
9	155	0.10	0.040
9	158	0.03	0.012
9	248	0.36	0.146
9	256	0.26	0.105
9	259	0.40	0.162
9	269	0.12	0.049
9	270	0.94	0.380
9	271	0.03	0.012
9	281	0.16	0.065
10	164	0.25	0.101
10	176	0.03	0.012
11	260	0.09	0.036
11	276	0.15	0.061
1	5	1.22	0.494
1	10	0.13	0.053
1	13	0.03	0.012
1	16	0.33	0.134
1	19	0.08	0.032
1	22	0.07	0.028
1	28	1.06	0.429
1	33	0.06	0.024
1	37	0.06	0.024
1	40	0.12	0.049
1	44	0.09	0.036
1	47	0.18	0.073
1	54	0.13	0.053
1	57	0.40	0.162
1	59	0.99	0.401
1	71	0.19	0.077
1	73	0.04	0.016
1	76	0.05	0.020

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19			1	77	0.08	0.032
20			1	83	0.03	0.012
21			1	89	0.32	0.130
22			1	93	0.11	0.045
23			1	96	0.07	0.028
24			1	38	0.32	0.130
25			1	68	0.13	0.053
26			2	4	0.15	0.061
27			2	7	1.11	0.449
28			2	9	0.16	0.065
29			2	12	0.04	0.016
30			2	18	1.04	0.421
31			2	21	0.06	0.024
32			2	26	0.10	0.040
33			2	29	0.25	0.101
34			2	34	0.29	0.117
35			2	35	0.02	0.008
36			2	39	0.13	0.053
37			2	41	0.10	0.040
38			2	43	0.08	0.032

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
39			Jabra	2	46	0.25	0.101	
40				2	52	0.53	0.214	
41				2	55	0.09	0.036	
42				2	58	0.04	0.016	
43				2	61	0.39	0.158	
44				2	63	0.14	0.057	
45				2	67	0.09	0.036	
46				2	69	0.08	0.032	
47				2	72	0.16	0.065	
48				2	75	0.06	0.024	
49				2	79	0.04	0.016	
50				2	81	0.03	0.012	
51				2	84	0.16	0.065	
52				2	86	0.27	0.109	
53				2	90	0.60	0.243	
54				2	92	0.03	0.012	
55				2	94	0.16	0.065	
56				2	97	0.16	0.065	
57				3	3	1.22	0.494	
58				3	8	0.45	0.182	
59				3	11	0.14	0.057	
60				3	14	0.06	0.024	

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3	15	0.06	0.024
3	17	0.20	0.081
3	20	0.16	0.065
3	23	0.08	0.032
3	25	0.64	0.259
3	27	0.16	0.065
3	30	0.43	0.174
3	36	0.23	0.093
3	45	0.60	0.243
3	53	0.54	0.219
3	56	0.04	0.016
3	60	0.21	0.085
3	62	0.24	0.097
3	64	0.17	0.069
3	65	0.59	0.239
3	66	0.10	0.040
3	70	0.37	0.150
3	74	0.10	0.040
3	78	0.02	0.008
3	80	0.02	0.008
3	82	0.07	0.028
3	85	0.18	0.073
3	88	0.11	0.045
3	91	0.21	0.085
3	95	0.11	0.045
4	48	0.39	0.158
4	50	0.14	0.057
2	215	0.32	0.130
2	509	0.88	0.356
2	513	1.08	0.437
2	656	0.23	0.093
2	665	0.74	0.299
2	674	0.68	0.275
3	189	0.24	0.097
3	190	0.11	0.045
3	191	0.11	0.045
3	193	0.20	0.081
3	242	0.10	0.040
3	243	0.17	0.069
3	244	0.19	0.077
3	250	0.11	0.045
3	251	0.13	0.053
3	538	0.06	0.024
3	563	0.45	0.182
3	675	0.12	0.049
3	677	0.24	0.097
3	678	0.13	0.053







21				3	679	0.09	0.036	
<p align="center"><b>Type wise Land details of Pakri Barwadih North West Mine</b></p>								
Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
22				4	457	0.55	0.223	
23				4	627	0.30	0.121	
24				5	229	0.17	0.069	
25				5	592	0.29	0.117	
26				6	578	0.53	0.214	
27				6	584	0.10	0.040	
28				7	174	0.18	0.073	
29				7	175	0.17	0.069	
30				7	184	0.41	0.166	
31				7	185	0.36	0.146	
32				7	245	0.23	0.093	
33				7	246	0.23	0.093	
34				7	479	0.28	0.113	
35				8	662	0.29	0.117	
36				8	672	0.45	0.182	
37				8	279p	0.01	0.004	
38				9	145	0.14 0	0.057	
39				9	458	0.26	0.105	
40				10	438p	0.38	0.154	
41				11	149	0.20 0	0.081	
42				36	225	0.05	0.020	
43				11	241	0.26	0.105	
44				11	428	0.18 0	0.073	
45				11	487	0.78	0.316	
46				11	530	0.59	0.239	
47				11	541	0.33	0.134	
48				11	596	0.06	0.024	
49				11	661	0.27	0.109	
50				12	455	0.41	0.166	
51				12	488	0.40	0.162	
52				12	497	0.09	0.036	
53				13	153	0.14 0	0.057	
54				13	182	0.22	0.089	
55				13	265	0.26	0.105	
56				13	580	0.23	0.093	
57				14	181	0.32	0.130	
58				14	233	0.19	0.077	

59				14	238	0.07	0.028	
60				14	471	0.34	0.138	
61				21	204	0.28	0.113	
62				21	211	0.37	0.150	
63				23	198	0.07	0.028	
64				23	199	0.05	0.020	
65				23	201	0.11	0.045	
66				23	202	0.06	0.024	
67				23	216	0.11	0.045	
68				23	217	0.07	0.028	
69				23	491	0.45	0.182	
70				23	495	0.09	0.036	
71				23	496	0.04	0.016	
72				23	591	0.33	0.134	
73				23	594	0.23	0.093	
74				23	600	0.09	0.036	
75				23	601	0.06	0.024	
76				24	196	0.58	0.235	
77				24	427p	0.30	0.121	
78					0			
79				25	160	0.66	0.267	
80					0			
81				25	169	0.24	0.097	
82					0			
83				25	486	1.46	0.591	
84				25	593	0.26	0.105	
85				25	138p	0.27	0.109	
86				25	278p	0.07	0.028	
87					0			
88				27	621	0.34	0.138	
89				28	178	0.17	0.069	
90				28	213	0.05	0.020	
91				28	247	0.14	0.057	
				28	249	0.39	0.158	
				28	499	0.05	0.020	
				28	521	0.18	0.073	
				28	523	0.08	0.032	
Type wise Land details of Pakri Barwadih North West Mine								
Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
92				28	557	0.28	0.113	
93				28	598	0.14	0.057	
94				28	628	0.36	0.146	
95				28	649	0.23	0.093	
96				29	441	0.72	0.291	
97				29	537	0.30	0.121	

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30	210	0.10	0.040
30	252	0.17	0.069
85	474	0.17	0.069
30	475	0.17	0.069
30	515	0.33	0.134
31	177	0.18	0.073
31	214	0.21	0.085
31	239	0.07	0.028
31	248	0.48	0.194
31	443	0.13	0.053
31	490	0.64	0.259
31	498	0.06	0.024
31	508	0.14	0.057
31	519	0.40	0.162
31	522	0.26	0.105
31	558	0.08	0.032
31	560	0.74	0.299
31	597	0.05	0.020
31	650	0.29	0.117
34	460	0.18	0.073
35	612	0.12	0.049
35	615	0.24	0.097
35	668	0.05	0.020
36	206	0.31	0.125
36	573	0.14	0.057
36	581	0.16	0.065
36	582	0.26	0.105
36	583	0.22	0.089
36	585	0.09	0.036
36	646	0.35	0.142
36	647	0.46	0.186
36	653	0.16	0.065
36	659	0.32	0.130
38	236	0.04	0.016
38	259	0.08	0.032
39	430	0.34	0.138
39	481	0.48	0.194
39	638	0.10	0.040
39	643	0.30	0.121
39	651	0.48	0.194
40	156	0.17	0.069
40	234	0.16	0.065
40	270	0.20	0.081
42	619	0.16	0.065
42	671	0.18	0.073
42	440	0.42	0.170
43	575	0.49	0.198

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145			44	260	0.07	0.028
146			45	227	0.04	0.016
147			45	254	0.25	0.101
148			45	476	0.18	0.073
149			45	589	0.14	0.057
150			46	611	0.30	0.121
151			47	253	0.90	0.364
152			47	256	0.10	0.040
153			48	235	0.24	0.097
154			48	472	0.62	0.251
155			49	173	0.23	0.093
156			50	205	0.18	0.073
157			50	514	0.20	0.081
158			50	607	0.20	0.081
159			51	237	0.06	0.024
160			52	637	0.34	0.138
161			53	506	0.05	0.020

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
162				53	510	0.13	0.053	
163				53	520	0.26	0.105	
164				53	533	0.56	0.227	
165				53	535	0.34	0.138	
166				53	542	0.14	0.057	
167				53	547	0.60	0.243	
168				53	550	0.72	0.291	
169				53	553	0.22	0.089	
170				53	562	0.52	0.210	
171				53	569	0.16	0.065	
172				53	654	0.18	0.073	
173				53	660	0.24	0.097	
174				57	224	0.05	0.020	
175				57	586	0.13	0.053	
176				58	572	0.42	0.170	
177				58	624	0.19	0.077	
178				49	194	0.30	0.121	
179				49	231	0.12	0.049	
180				59	500	0.30	0.121	
181				59	501	0.73	0.295	
182			Kandaber	59	502	0.12	0.049	
183				59	507	0.60	0.243	
184				60	157	0.19	0.077	
185				60	195	0.05	0.020	

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186			60	574	0.17	0.069
187			60	639	0.21	0.085
188			60	658	0.08	0.032
189			62	141	0.50	0.202
190			62	218	0.14	0.057
191			63	208	0.25	0.101
192			63	459	0.17	0.069
193			63	605	0.21	0.085
194			64	482	0.08	0.032
195			64	635	0.16	0.065
196			64	667	0.14	0.057
197			89	203	0.16	0.065
198			66	465	0.32	0.130
199			66	666	0.20	0.081
200			67	186	0.12	0.049
201			67	432p	0.42	0.170
202			68	226	0.05	0.020
203			68	588	0.06	0.024
204			68	590	0.07	0.028
205			68	613	0.10	0.040
206			68	616	0.30	0.121
207			68	670	0.09	0.036
208			70	154	0.18	0.073
209			70	579	0.16	0.065
210			70	617	0.32	0.130
211			72	180	0.24	0.097
212			72	263	0.25	0.101
213			72	534	0.65	0.263
214			74	524	0.28	0.113
215			75	429	0.25	0.101
216			75	599	0.54	0.219
217			76	147	0.14	0.057
218			76	148	0.05	0.020
219			76	209	0.11	0.045
220			76	462	0.25	0.101
221			76	463	0.49	0.198
222			76	477	0.05	0.020
223			76	540	0.29	0.117
224			76	645	0.18	0.073
225			77	146	0.10	0.040
226			77	275	0.05	0.020
227			77	276	0.11	0.045
228			77	602	0.11	0.045
229			77	603	0.13	0.053
230			77	604	0.28	0.113
231			78	618	0.34	0.138

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
232				78	652	0.20	0.081	
233				79	504	0.03	0.012	
234				79	505	0.05	0.020	
235				79	511	0.14	0.057	
236				79	512	0.16	0.065	
237				79	525	0.07	0.028	
238				79	526	0.04	0.016	
239				79	528	0.10	0.040	
240				79	529	0.08	0.032	
241				79	531	0.02	0.008	
242				79	532	0.02	0.008	
243				79	536	0.30	0.121	
244				79	539	0.28	0.113	
245				79	543	0.08	0.032	
246				79	544	0.22	0.089	
247				79	546	0.12	0.049	
248				79	548	0.96	0.389	
249				79	549	0.55	0.223	
250				79	551	0.20	0.081	
251				79	552	0.10	0.040	
252				79	554	0.12	0.049	
253				79	555	0.16	0.065	
254				79	556	0.19	0.077	
255				79	561	0.18	0.073	
256				79	570	0.10	0.040	
257				79	571	0.10	0.040	
258				79	626	0.22	0.089	
259				79	655	0.16	0.065	
260				81	641	0.77	0.312	
261				81	642	0.02	0.008	
262				82	503	0.08	0.032	
263				82	576	0.28	0.113	
264				82	577	0.26	0.105	
265				82	622	0.22	0.089	
266				82	623	0.32	0.130	
267				83	451	0.28	0.113	
268				83	452	0.45	0.182	
269				83	453	0.12	0.049	
270				83	464	0.20	0.081	
271				83	566	0.10	0.040	
272				83	567	0.11	0.045	
273				83	568	0.14	0.057	

274			84	223	0.08	0.032
275			84	456	0.35	0.142
276			84	644	0.28	0.113
277			84	663	0.30	0.121
278			84	673	0.25	0.101
279			84	676	0.10	0.040
280			85	158	0.30	0.121
281			85	478	0.17	0.069
282			86	150	0.16	0.065
283			86	151	0.14	0.057
284			86	152	0.15	0.061
285			86	163	0.05	0.020
286			86	164	0.14	0.057
287			86	165	0.14	0.057
288			86	166	0.14	0.057
289			86	167	0.15	0.061
290			86	187	0.08	0.032
291			86	188	0.08	0.032
292			86	192	0.06	0.024
293			86	220	0.05	0.020
294			86	221	0.08	0.032
295			86	222	0.09	0.036
296			86	230	0.05	0.020
297			86	232	0.06	0.024
298			86	255	0.28	0.113
299			86	447	0.15	0.061
300			86	448	0.16	0.065
301			86	449	0.10	0.040

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
302				86	450	0.56	0.227	
303				86	467	0.31	0.125	
304				86	468	0.28	0.113	
305				86	469	0.22	0.089	
306				86	470	0.25	0.101	
307				86	219	0.11	0.045	
308				87	228	0.09	0.036	
309				87	587	0.26	0.105	
310				88	606	0.05	0.020	
311				88	610	0.30	0.121	
312				89	155	0.27	0.109	
313				89	262	0.18	0.073	
314				89	264	0.34	0.138	
315				89	516	0.20	0.081	

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89	608	0.07	0.028
90	480	0.22	0.089
90	636	0.20	0.081
92	207	0.28	0.113
92	461	0.28	0.113
92	609	0.40	0.162
93	614	0.08	0.032
93	620	0.20	0.081
93	669	0.05	0.020
95	595	0.74	0.299
95	657	0.34	0.138
97	632	0.64	0.259
98	631	0.16	0.065
99	630	1.78	0.720
100	648	0.42	0.170
112	269	0.77	0.312
51	140	0.36	0.146
51	143	0.16	0.065
51	144	0.17	0.069
51	159	0.62	0.251
51	161	0.09	0.036
51	162	0.07	0.028
51	168	0.29	0.117
51	170	0.37	0.150
51	171	0.22	0.089
51	172	0.16	0.065
51	179	0.27	0.109
51	183	0.20	0.081
51	258	0.06	0.024
54	261	0.08	0.032
54	266	0.08	0.032
54	267	0.11	0.045
54	268	0.07	0.028
54	272	0.12	0.049
54	274	0.07	0.028
54	439	0.65	0.263
54	445	0.21	0.085
54	446	0.60	0.243
54	483	0.27	0.109
54	489	0.29	0.117
54	492	0.80	0.324
54	494	0.38	0.154
54	517	0.30	0.121
54	518	0.08	0.032
54	136p	0.12	0.049
54	142p	0.12	0.049
54	273p	0.53	0.214

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1				15	2	1.55	0.627	
2				8	3	1.12	0.453	
3				7	4	0.82	0.332	
4				12	5	0.94	0.380	
5				28	6	1.13	0.457	
6				16	7	1.02	0.413	
7				15	8	0.63	0.255	
8				10	96	1.21	0.490	
9				10	640	0.21	0.085	
Type wise Land details of Pakri Barwadih North West Mine								
Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
10				10	648	0.13	0.053	
11				10	649	0.40	0.162	
12				10	650	0.51	0.206	
13				13	654	0.15	0.061	
14				13	657	0.16	0.065	
15				13	670	0.13	0.053	
16				14	638	0.49	0.198	
17				14	646	1.03	0.417	
18				14	653	0.16	0.065	
19				14	659	0.12	0.049	
20				14	664	0.34	0.138	
21				14	667	0.36	0.146	
22				14	669	0.46	0.186	
23				14	671	0.34	0.138	
24				14	636p	0.95	0.384	
25				18	651	0.43	0.174	
26				18	656	0.14	0.057	
27				18	676p	0.10	0.040	
28				19	637	0.20	0.081	
29					639	0.19	0.077	
30				19	644	0.17	0.069	
31				19	647	0.07	0.028	
32				19	652	0.17	0.069	
33				19	658	0.30	0.121	
34				19	668	0.36	0.146	
35				19	691p	0.04	0.016	
36				20	662	1.03	0.417	
37				21	643	0.39	0.158	
38				21	660	0.11	0.045	
39				21	663	0.37	0.150	
40				21	690p	0.08	0.032	

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41				25	641	0.66	0.267	
42				25	655	0.85	0.344	
43				25	665	0.45	0.182	
44				25	672p	1.23	0.498	

**Gair Majurwa Land**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
1			Beltu	190	59	0.28	0.113	
2				190	60p	3.53	1.429	
3				190	68	0.32	0.130	
4				190	90	0.10	0.040	
5				190	92	0.01	0.004	
6				190	100	0.05	0.020	
7				190	120	0.22	0.089	
8				190	267p	1.67	0.676	
1			Bariyatu	155	8	0.35	0.142	
2				155	9	2.31	0.935	
3				155	10	0.05	0.020	
4				155	29	0.04	0.016	
5				155	40	0.02	0.008	
6				155	59	0.04	0.016	
7				155	1685	1.53	0.619	
8				156	1687	2.35	0.951	
1			Basaria	5	5	0.53	0.214	
2				5	7	0.03	0.012	
3				5	21	0.03	0.012	
4				5	26	0.01	0.004	
5				5	29	1.18	0.478	
6				6	16	0.07	0.028	
1				34	208	0.10	0.040	
2				34	329	0.04	0.016	
3				34	406	0.02	0.008	
4				34	443	0.02	0.008	
5				34	457	0.03	0.012	
6				34	481	0.13	0.053	

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl. No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
7			Nawadih	34	229p	0.05	0.020	
8				34	280p	0.23	0.093	
9				34	355p	0.04	0.016	
10				34	458	0.16	0.065	
11				34	408p	0.05	0.020	

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	35	328	0.14	0.057
	35	343	0.09	0.036
	35	450p	0.34	0.138
Sirma	12	71	0.16	0.065
	12	99	0.04	0.016
	12	111	0.04	0.016
	12	125	0.09	0.036
	12	138	0.01	0.004
	12	148	0.08	0.032
	12	153	0.07	0.028
	12	154	0.02	0.008
	12	156	0.19	0.077
	12	159	0.17	0.069
	12	185	0.03	0.012
	12	189	0.22	0.089
	12	194	0.06	0.024
	12	200	0.02	0.008
	12	212	0.11	0.045
	12	216	0.04	0.016
	12	224	0.03	0.012
	12	235	0.81	0.328
	12	242	0.31	0.125
	12	243	1.18	0.478
	12	244	0.12	0.049
	12	251	0.10	0.040
	12	278	0.08	0.032
	12	280	0.08	0.032
	12	292	0.05	0.020
	13	218	0.02	0.008
	13	225	0.37	0.150
	13	250	0.06	0.024
	13	272	0.13	0.053
Jabra	5	1	0.13	0.053
	5	6	0.07	0.028
	5	24	0.46	0.186
	5	31	0.07	0.028
	5	32	0.15	0.061
	5	42	0.10	0.040
	5	49	0.27	0.109
	5	51	2.30	0.931
	5	87	0.04	0.016
	110	48p	3.40	1.376
	110	139	0.04	0.016
	110	176	0.01	0.004

Certification has been taken for this area from DC, Hazaribagh in Form-I (as per Jharkhand Govt. circular 4792 dt 04.12.2018) vide letter no. 3070 dt 05.09.2023

4			110	200	0.32	0.130
5			111	240	0.87	0.352
6			110	257	0.09	0.036
7			110	277	0.28	0.113
8			110	437p	0.01	0.004
9			110	442	0.04	0.016
10		Kandaber	110	454	4.42	1.789
11			110	466	0.04	0.016
12			110	473	1.73	0.700
13			110	484	4.55	1.841
14			110	485	0.41	0.166
15			110	564	1.14	0.461
16			111	565	0.46	0.186
17			110	629	0.02	0.008
18			110	633	0.14	0.057
19			110	664	0.03	0.012
20			110	680	0.39	0.158
1			49	95	0.22	0.089

**Type wise Land details of Pakri Barwadih North  
West Mine**

Sl.No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
2			Urub	49	97	0.81	0.328	
3				49	634p	1.35	0.546	
4				49	642	0.66	0.267	
5				49	645	0.27	0.109	
6				49	728p	2.57	1.040	

**Forest Land**

Sl.No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
1			Beltu	190	58p	5.58	2.258	Stage-I FC has been
2				190	62p	1.34	0.542	
3				190	84p	4.72	1.910	
4				190	87	1.16	0.469	
1			Bariyatu	155	1	24.00	9.713	
2				155	2	109.75	44.415	
3				155	3	70.50	28.531	
4				155	4	75.00	30.352	
5				155	63p	20.41	8.260	
6				155	232p	126.12	51.040	
7				155	1686	67.50	27.317	
1			Basaria	5	27	24.00	9.713	
2				5	32	26.75	10.826	
3				5	34	31.75	12.849	

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1	Forest	327.058	Nawadih	3	162p	3.27	1.323	granted by MoEF&CC vide 8-56/2009-FC-(vol) Dt 26.05.2023
2				3	276p	0.15	0.061	
3				3	399p	3.81	1.542	
4				3	422	21.00	8.499	
5				3	505	33.50	13.557	
1			Sirma	12	30p	50.80	20.558	
1			Jabra	5	2	9.10	3.683	
1			Kandaber	110	212	10.13	4.100	
2				110	375	6.050	2.448	
3				110	559	1.96	0.793	
4				110	625	9.02	3.650	
5				110	634	15.00	6.070	
6				110	640	4.66	1.886	
1			Urub	49	9p	18.07	7.313	Stage-II FC has been granted by MoEF&CC vide 8-56/2009-FC-(vol) Dt 17.09.2010
2				49	10p	7.02	2.841	
3				49	12p	4.72	1.910	
4				49	13p	4.21	1.704	
5				49	85p	9.10	3.683	
6				49	94p	7.20	2.914	
7				49	105p	0.81	0.328	

**Jungle Jhari Land**

Sl.No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
1	Jungle Jhadi	24.832	Beltu	190	81p	0.52	0.210	Stage-I FC has been granted by MoEF&CC vide 8-56/2009-FC-(vol) Dt 26.05.2023
2				190	143p	5.83	2.359	
3				190	198p	0.46	0.186	
4				190	214	1.64	0.664	
5				190	222p	0.07	0.028	
1			Bariyatu	155	21	0.09	0.036	
2				155	50	0.49	0.198	
1			Basaria	5	2	1.07	0.433	
2				5	10	1.33	0.538	
3				5	12	1.42	0.575	
1			Nawadih	3	152p	0.80	0.324	
2				3	174p	3.54	1.433	
3				3	187p	0.39	0.158	
4				3	207	2.14	0.866	
5				3	218p	0.73	0.295	
6				3	237p	0.06	0.024	
7				3	316	1.32	0.534	
1				12	97p	1.01	0.409	
2				12	144	2.68	1.085	

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Type wise Land details of Pakri Barwadih North West Mine								
Sl.No.	Land Type	Total Area (Ha)	Village	Khata	Plot	Area of Plot (Acre)	Area of Plot (Ha.)	Remarks
3			Sirma	12	195	2.47	1.000	
4				12	240	1.82	0.737	
5				12	245	0.30	0.121	
6				12	247	0.74	0.299	
7				12	291	0.33	0.134	
8				12	296	0.41	0.166	
1			Kandaber	110	197	0.72	0.291	
2				110	271	0.27	0.109	
3				110	431	1.90	0.769	
4				110	444	0.13	0.053	
5				110	493	2.07	0.838	
6				110	527	0.59	0.239	
7				110	545	0.47	0.190	
1			Urub	49	635p	1.00	0.405	
2				49	661	9.82	3.974	
3				49	666	7.95	3.217	
4				49	677p	4.75	1.922	
5				49	689p	0.03	0.012	
	<b>TOTAL AREA</b>	<b>485.16</b>						

**Statutory Clearances:**

1	LOI/Lease docs	:	Land has been Transferred to National Thermal Power Corporation (NTPC)
2	CO	:	The CO, Keredari Block vide letter no. 572, dated 03.07.2023 has clarified that Khatiyani /Revenue record is not available in the Keredari block.
		:	The CO, Barkagaon Block vide letter no. 613, dated 03.07.2023 has clarified that Khatiyani /Revenue record is not available in the Keredari block. In the absence of Khatiyani, the Deputy Commissioner, Hazaribagh has issued certificate vide letter no. 3070/Ra. dated 05.09.2023 in the light of Land, Revenue and Reforms Deptt., Govt. of Jharkhand notification no. 4792, dated 04.12.2018.
3	DFO Wild Life	:	DFO, Wildlife Hazaribag vide letter no. 1219, dated 26.06.2023 certified that the said project is outside Eco

			Sensitive Zone of Hazaribag Wildlife Sanctuary													
4	DFO Forest Distance	:	<p>DFO, Hazaribag West Division vide letter no. 3724, dated 08.07.2023 certified that the proposal includes forest land.</p> <p>Out of 485.16 Ha of lease area, 351.89 Ha is forest land.</p> <ul style="list-style-type: none"> <li>• 20.692 ha of forest land is already transferred to NTPC vide Stage-II FC no. 8-56/2009-FC-(vol) dt 17.09.2010.</li> <li>• FC Stage-I for 331.198 Ha is granted vide letter no.- 8-56/2009-FC-(VOI) – I/44905/23, dated 26.05.2023.</li> </ul>													
5	Mine Plan Approved	:	Mine Plan approved by Ministry of Coal, Govt. of India vide no. 13016/29/2003-CA-I(Part), Dated- 07.03.2016													
6	Public Hearing	:	Public hearing conducted on 11.11.2022													
7	Terms of Reference (ToR)	:	<b>Terms of Reference (ToR)</b> granted by MOEF&CC, Govt. of India vide J-11015/60/2019-IA-II(M), dated 26.06.2019													
8	CGWA	:	No Objection Certificate (NOC) for Ground Water Abstraction issued by CGWA vide NOC no. : CGWA/ NOC/ MIN/ORIG/2021/12198, dated 22.08.2023 valid up to 01.07.2025													
9	Diversion of Forest Land	:	<p>Out of 485.16Ha of lease area, 351.89 Ha is forest.</p> <ul style="list-style-type: none"> <li>• 20.692 ha of forest land is already transferred to NTPC vide Stage-II FC no. 8-56/2009-FC-(vol) dt 17.09.2010.</li> <li>• FC Stage-I for 331.198 Ha is granted vide letter no.- 8-56/2009-FC-(VOI) – I/44905/23, dated 26.05.2023.</li> </ul> <table border="1"> <thead> <tr> <th colspan="4">DETAILS OF PRESENT STATUS OF LAND</th></tr> <tr> <th>S.No</th><th colspan="2">Type</th><th>Area (Ha)</th></tr> </thead> <tbody> <tr> <td rowspan="2">1</td><td rowspan="2">Tenancy</td><td>Agricultural</td><td rowspan="2">113.557</td></tr> <tr> <td>Habitation</td></tr> </tbody> </table>	DETAILS OF PRESENT STATUS OF LAND				S.No	Type		Area (Ha)	1	Tenancy	Agricultural	113.557	Habitation
DETAILS OF PRESENT STATUS OF LAND																
S.No	Type		Area (Ha)													
1	Tenancy	Agricultural	113.557													
		Habitation														

					Grazing			
					Barren			
			2	Government Non Forest	Agricultural	19.713		
					Habitation			
					Grazing			
					Barren			
			3	Gair Majarua Jungle Jhari (GMJJ)	Forest	24.832		
			4	Forest		327.058		
			Total					485.16

#### **IMPACT AND MITIGATION MEASURES:**

- ❖ **Air:** The principal sources of air pollution due to mining and allied activities are drilling, blasting, movement of HEMM, wind erosion of dumps, CHP operation etc. It is proposed to adopt various control measures such wet drilling, controlled blasting, fixed water sprinkling of 2km length, mobile water sprinkler, covering transport vehicles with tarpaulin, avenue plantation, etc.
- ❖ **Water:** Effluents generated from the workshop building will be treated in ETP with oil and grease trap of 60 KLD capacity. The treated water will be reused within the workshop. Domestic effluent will be treated in Sewage treatment plant with 60KLD capacity is proposed to be installed for treatment of domestic waste water. The treated water will be used for greenbelt and plantation. Rainwater runoff from waste dump and coal stock will be collected through surface runoff management structures such as 6550m of garland drain, 4700m of retaining wall, check dam etc. Dumps will be stabilized by means of plantation of native species with geo textile matting.
  - a) **Surface Water:** To analyse change in hydraulic pattern of Khora nala east under existing as well as diverted conditions, a detailed study was carried out through “Think Innovative Solutions, Ranchi”. The conducted study suggests that diversion of both nalas seems technically feasible as the desired cross section and flow can be maintained even after diversion. Besides, to ensure the surface water quality various measures are planned such as construction of retaining wall, peripheral garland drain, settling ponds, embankment between the mine pit and the nala on either side, check dam / check weirs at vulnerable places, etc., letting

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out supernatant clearwater from mine sump conforming discharge limits into Khora Nala for gainful use by downstream users.

- b) **Ground Water:** Think Innovative Solutions. Ranchi carried out a detailed Hydrological study. Water level monitoring was carried out in 19 locations and it is seen that the water level in the pre monsoon is ranging from 1.5 – 10.4m BGL and the post monsoon water level ranges from 2.35 – 9.8m BGL. Two VES have been conducted within the mining lease area. There are 5 (five) different layers i.e., top soil, clay/weathered and fractured formation. Pumping test was conducted on the bore well-constructed in the mine periphery with the aquifer thickness of 7 meters. The hydraulic conductivity (k) calculated is 0.984 meter /day and transmissivity is 6.89 m<sup>2</sup>/day. Due to the low permeability of the aquifer units, the impact of pumping on local water regime will be minimal and the radius of influence will be limited.
- c) **Rainwater Harvesting:** In the 5 years, maximum of 17,32,701.30cum of total rainfall runoff will be generated in year 5. Rainwater harvesting by means of artificial recharge and rainwater storage structures is proposed in order to effectively utilize the above mentioned quantum of rainfall.
- ❖ **Noise:** The main sources of noise are drilling, excavation, dumpers, dozers, etc. Various control measures such as acoustic enclosures, avenue plantation, providing PPEs to workers, plantation around CHPs, proper maintenance of equipments.
- ❖ **Vibrations:** Mining activity in the adjacent Pakribarwadih West quarry is in place for the last 5 years. The Rock Excavation Engineering Division of CSIR-CIMFR, Dhanbad carried out field investigations at the Pakribarwadih West quarry. During this period, ten trial blasts were conducted at various locations of the mine. For controlled blasting operations using SME explosive within the blasting zone of 100 -150 m, blasthole diameter of 100-115 mm have been suggested to contain ground vibration within the safe level. However, for controlled blasting beyond 150 m from the residential houses, 160 mm blasthole diameter have been recommended.
- ❖ **Biological Environment:** Schedule-I species are Elephant, Indian Pangolin, Sloth Bear, Python, Indian Flapshell Turtle, White-Rumped Vulture, Indian Vulture, Indian Peafowl based on the letter obtained from DFO vide Lr.No.122 dated 27.03.2023. Site specific conservation plan has been approved by PCCF Wildlife & Chief Wildlife Warden, Jharkhand vide Office Order No.32 dated 03.08.2023. Rs 45.31 Crores has been allocated for a period of 10 years for implementation of various activities under Site Specific Wildlife Conservation Plan.
- ❖ **Green Belt Development:** Consultation with State forest department and State soil conservation department shall be made to select the species required for green belt / vegetation cover development. Species commonly found in Sal forest should be planted along the rows of sal saplings. Species serving the role of commercially valuable timber,



NTPF and nurse trees/wildlife trees which attract wildlife, nitrogen fixation are considered to achieve the multiple uses. With regards to greenbelt and plantation, it is proposed to carry out plantation inside the lease area, avenue planation and also outside wherein a total of about 5,37,650 trees will be planted through the life of the mine with a total budget of Rs. 1075.30 Lakhs.

- ❖ **Dump stabilization:** Proper levelling, grading, spreading of top soil in the inactive dump slopes, geotextiling, coir matting for dump slope stabilization. Plantation of hardwood species and other leguminous trees and shrubs, and hardwood species that can tolerate a wide range of acidity, fertility, moisture, and temperature will be established. The tree species that are best-suited to the soil properties and landscape conditions shall be planted on the site. Species of trees, shrubs, herbs, grasses with multiple use value like fuel, fodder, fruit, medicine will be used during the process of ecological restoration.

- ❖ **Socio Economy:**

Comprehensive need-based assessment was carried out by Asia Institute of Sustainable Development wherein the needs of the villagers were assessed. Based on the need requirement captured through FGDs, a CSR perspective Plan has been prepared for duration of 5 years. An amount of Rs.1.5 Crores has been allocated towards the implementation of the needs assessed.

- ❖ **Rehabilitation & Resettlement:**

Need Assessment study for villages around the quarry was conducted by the Asia Institute for Sustainable Development, Ranchi. 18 project affected area in this project of which 8 core villages falling within the lease area are directly affected by the PB NW Project namely Bariatu, Basaria, Beltu, Jabra, Kandaber, Nawadih, Sirma and Urub. 791 PAFs (Project Affected Families) in the 8 villages, who are losing land, or both land and home (204- Home oustees alone). Out of the 8 villages, Basaria, Nawadih and Sirma villages will be rehabilitated in PB North West Quarry. For the Pakri Barwadih North West Block, 485.159Ha of land from 8 project affected villages, (113.557Ha Tenancy Land) namely Basaria, Bariyartu, Beltu, Kandaber, Nawadih, Sirma, Jabra and Urub, has been notified by the Govt. and compensation disbursement is under progress. NTPC shall ensure all payments towards land compensation, R&R benefits and other benefits are being made as per State Government resolution.

The above measures will be implemented by the Environmental Management Group of the proponent. The total capital cost of environmental control measures works out to Rs.30.75 Crores and recurring cost works out Rs.1.43 Crores per annum (which is inclusive of public hearing action plan budget).

Public hearing for this project was conducted on 11.11.2022 under the chairmanship of representative of Dy. Commissioner, Hazaribag (District Land Acquisition Officer, Hazaribagh). About 1145 people participated in the public hearing and 23 people expressed their views during





the meeting. Public had expressed their concerns about compensation, employment, education, health facilities, pollution due to mining operations, training to locals. etc.

❖ **Risk & Hazard Mitigation:**

NTPC is committed to work towards 'Zero Harm' from their mining activities and carry out Health Risk Assessment (HRA) for identification of workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and wellbeing of workers and nearby community.

Mining and allied activities will be carried out in conformation with the prevailing statutory provisions as per Mines Act 1952 and CMR 1957 applicable for safety in opencast mines, DGMS Circular 03 of 2019 on Risk Management plan, all statutory rules, regulations, applicable laws etc, rules imposed by local/State/Central authorities if any. Factors of risks involved due to human induced activities in connection with mining & allied Operations are Failure of Slope of mine benches and dumps, Operation of main mining & other equipments, Drilling, Storage & handling of explosives and Blasting. Other risk factors due to natural activities are Fire due to electricity and Oil, Flooding of mine/Mine Inundation and Natural calamities. Elaborate procedures and SOP's will be made and followed to mitigate the risks involved in the mining activity.

The description given above on predictions of anticipated impacts and various mitigative measures for each environmental parameter brings out the fact that systematic and scientific mining of coal with proper and timely execution of various environment management measures suggested in the report will ensure maintenance of future environmental quality within statutory limits. The impacts due to project will be suitably compensated by the liberal packages of rehabilitation and resettlement plan for the home and land oustees. By judicious implementation of the well laid Environmental Management System (EMS) as given in the report, it will be possible to achieve an environmentally sustainable industrial growth.

**During the presentation the following documents were sought :**

- i. Details regarding forest clearance, compensatory afforestation, NOC for ground water withdrawal, status of wildlife conservation plan, EMP cost.
- ii. Time bound action plan alongwith budget to address the issues raised during public hearing.
- iii. Budgets involved in the EC application of this project.
- iv. Details of utilization of excess water from the mine pit.
- v. Management of safety zone, surface water quality, energy conservation.
- vi. Undertaking regarding the diversion of Khora Nallah.



**The Project Authorities have submitted the above mentioned documents.**

State Level Environment Level Impact Assessment Authority (SEIAA), Jharkhand in its 109<sup>th</sup> meeting held on 27<sup>th</sup> & 28<sup>th</sup> September, 2023 discussed the project proposal along with recommendations made by SEAC in its 108<sup>th</sup> meeting held on 19<sup>th</sup>, 20<sup>th</sup>, 21<sup>st</sup>, 22<sup>nd</sup>, 23<sup>rd</sup>, 24<sup>th</sup> and 25<sup>th</sup> September, 2023 and decided to grant EC to the project

On the basis of recommendation of SEAC and decision of SEIAA to grant of EC. Environmental Clearance is hereby issued to the **“North-West Quarry of Pakri Barwadih Opencast Coal Mine of M/s NTPC Limited at Village : Bariatu, Basaria, Beltu, Jabra, Kandaber, Nawadih, Sirma & Urub, Tehsil : Keredari and Barkagaon, Distt. : Hazaribagh, Jharkhand (485.159 Ha)”** alongwith the following specific conditions as recommended by SEAC:-

**I. Specific Conditions:**

- i. This Environmental Clearance is valid subject to the following condition below –  
That this project has-
  - a. Obtained all legal rights to operate at concerned place.
  - b. Complied with all existing concerned laws of the land and
  - c. Complied with the decisions of SEIAA on the issue of Environmental Clearance till date.
- ii. **The Project Authorities shall take all necessary measures to ensure that the quality of the Khora Nallah water is not affected due to the mining activities.**
- iii. Project Proponent will ensure that a safety barrier of 45 m on both side of the road passing within ML area will be maintained and no mining activity will be carried out in the safety barrier. After getting the permission for diversion of road from the competent authority, the copy of the permission for diversion shall be submitted to SEIAA/SEAC, Jharkhand alongwith the 06 monthly compliance report.
- iv. Mining activities in the safety barrier can be undertaken after diversion of the road is fully implemented and said land must be included in approved Mine Plan for the mining purposes.
- v. The Project Authorities must ensure Offset of conventional energy requirement of not less than 2% by installation of solar panel. Overall conservation of not less than 20% is to be ensured by use of efficient energy measures.
- vi. No mining/activity shall be undertaken in the forest land or deemed forest without obtaining requisite prior forestry clearance.
- vii. This Environmental Clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT, MoEF & CC and any other Court of Law, if any, as may be applicable to this project.



- viii. Environmental clearance is subject to obtaining prior clearance from forestry and Wildlife angle including clearance from standing committee of NBWL, as may be applicable to this project (in case any fauna occurs / is found in the Project area or if the area involves forest land or Wildlife habitat i.e. core zone of elephant/tiger reserve etc. and or located with in 10 km. of protected area).
- ix. The project proponent may apply simultaneously for forest and NBWL clearance, in order to complete the formalities without undue delay, which till process on their respective merits, no rights will vest in or accrue to them unless all clearance are obtained.

## II. Statutory compliance:

- i. The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1980, in case of the diversion of forest land for non-forest purpose involved in the project.
- ii. The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
- iii. The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (incase of the presence of schedule-I species in the study area).
- iv. In the writ petition (Civil) no. 202/1995, T.N. Godaverman Thirumulpad vs union of India and ors. the Hon'ble Supreme Court passed an order dated 03.06.2022 " National Park or Wildlife Sanctuary must have an ESZ of minimum 01 km in which the activities prescribed and prescribed in the guidelines of 09th February, 2011 shall be strictly adhered to".
- v. The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee.
- vi. The project proponent shall obtain the necessary permission from the Central Ground Water Authority, in case of drawl of ground water / from the competent authority concerned in case of drawl of surface water required for the project.
- vii. Solid waste/hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016 / Hazardous & Other Waste Management Rules, 2016 as amended from time to time.
- viii. It shall be mandatory for the project management to submit six (06) monthly compliance report in respect of the stipulated prior environmental clearance terms and conditions in hard copies and soft copies to the regulatory authority concerned



Regional Office of MoEF & CC at Ranchi and Jharkhand State Pollution Control Board (J.S.P.C.B.), Ranchi/SEIAA/CPCB.

- ix. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- x. The SEIAA, Jharkhand or any other competent Authority may alter modify the above conditions or stipulate any further condition in the interest of Environment Protection.

### III. Air quality monitoring and preservation:

- i. Continuous ambient air quality monitoring stations as prescribed in the statute be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10, PM2.5, SO2 and NOx. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months.
- ii. The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.
- iii. Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water / mist sprinkling / rain gun etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.
- iv. The transportation of coal shall be carried out as per the provisions and route envisaged in the approved Mining Plan or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.
- v. Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.



- vi. Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.
- vii. Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.

#### **IV. Water quality monitoring and preservation:**

- i. The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.
- ii. The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No. J-20012/1/2006-1A.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.
- iii. Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.
- iv. Monitoring of water quality upstream and downstream of water bodies shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change / Regional Office.
- v. Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.
- vi. Catch and or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check



run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.

- vii. Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming to the specific requirement (standards).
- viii. Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Adequate ETP / STP needs to be provided.
- ix. The water pumped out from the mine, after siltation, shall be utilized for industrial purpose *viz.* watering the mine area, roads, green belt development *etc.* The drains shall be regularly desilted particularly after monsoon and maintained properly.
- x. The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake *etc.* shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.
- xi. The project proponent shall take all precautionary measures to ensure reversion/ riparian ecosystem in and around the coal mine upto a distance of 5 km. A reversion/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.

#### **V. Noise and Vibration monitoring and prevention**

- i. Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules, 2016 in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, *etc.* shall be provided with personal protective equipments (PPE) like ear plugs / muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.
- ii. Controlled blasting techniques shall be practiced in order to mitigate ground vibrations, fly rocks, noise and air blast *etc.*, as per the guidelines prescribed by the DGMS.
- iii. The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.



## **VI. Mining Plan:**

- i. Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.
- ii. Mining shall be carried out as per the approved mining plan(including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).
- iii. No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980
- iv. Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.

## **VII. Land Reclamation:**

- i. Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change (MOEF&CC) from time to time shall be submitted to MOEFCC/Regional Office (RO).
- ii. The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agricultural /forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27<sup>th</sup> August, 2009 and subsequent amendments.
- iii. The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining" / "post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.
- iv. Fly ash shall be used for external dump of overburden, backfilling or stowing of mine as per provisions contained in clause (i) and (ii) of subparagraph (8) of fly ash notification issued vide SO 2804 (E) dated 3<sup>rd</sup> November, 2009 as amended from time to time. Efforts shall be made to utilize gypsum generated from Flue Gas Desulfurization (FGD), if any, along with fly ash for external dump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.
- v. Further, it may be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes.







Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office.

- vi. The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.

#### **VIII. Green Belt:**

- i. The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
- ii. Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority) shall be developed all along the major approach/ coal transportation roads..

#### **IX. Public hearing and Human health issues:**

- i. Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & it's RO on six- monthly basis.
- ii. The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the personnel identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, as amended time to time.
- iii. Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.
- iv. Implementation of the action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the action plan submitted with budgetary provisions during the public hearing.





Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.

- v. The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/5712014-IA.II (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area.

#### **X. Corporate Environment Responsibility:**

- i. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1<sup>st</sup> May 2018, as applicable, regarding Corporate Environment Responsibility.
- ii. The company shall have a well laid down environmental policy duly approved by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest / wildlife norms / conditions and / or shareholders / stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.
- iii. A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
- iv. Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry / Regional Office along with the Six Monthly Compliance Report.
- v. Self environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.
- vi. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the plants shall be implemented.
- vii. Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

#### **XI. Miscellaneous:**

- i. The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.

- ii. The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
- iii. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
- iv. The project proponent shall monitor the criteria pollutants level namely:  $PM_{10}$ ,  $SO_2$ ,  $NO_x$  (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
- v. The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
- vi. The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
- vii. The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.
- viii. The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.
- ix. The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
- x. The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
- xi. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).
- xii. Concealing factual data or submission of false / fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- xiii. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
- xiv. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.



- xv. The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
- xvi. The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.
- xvii. Any appeal against this Environmental Clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
- xviii. The Prescribed EC is valid as per Notification no. S.O. 1807(E) dated 12.04.2022 of MoEF & CC, Govt. of India.


Sd/-  
Member Secretary  
State Level Environment Impact  
Assessment Authority, Jharkhand.

**Memo No : EC/SEIAA/2023-24/2916/2023/ 309**

**Ranchi, Date : 06/10/2023**

Copy to:

1. Additional Chief Secretary, Department of Forests, Environment & Climate Change, Govt. of Jharkhand.
2. Deputy Commissioner, District - Hazaribagh, Jharkhand.
3. Divisional Forest Officer, Hazaribagh West Forest Division, Hazaribagh, Jharkhand.
4. Divisional Forest Officer, Wildlife Division, Hazaribagh, Jharkhand.
5. Director IA Division, Monitoring Cell, MoEF and Climate Change, Indira Paryavaran Bhavan, Jorbag Road, Aliganj, New Delhi – 110003.
6. Integrated Regional Office, Ranchi, Ministry of Environment, Forest and Climate Change, 2<sup>nd</sup> Floor, Jharkhand State Housing Board (HQ), Harmu Chowk, Ranchi, Jharkhand – 834002.
7. Member Secretary, Jharkhand State Pollution Control Board, Ranchi.
8. Secretary, Jharkhand State Expert Appraisal Committee, Ranchi.
9. Website.
10. Guard file.

  
Member Secretary  
State Level Environment Impact  
Assessment Authority, Jharkhand.