

**Nov,
2020**

EXECUTIVE SUMMARY OF

CAPACITY EXPANSION OF IRON ORE FROM EXISTING 1.405 MTPA TO 2.35 MTPA (INCL. 0.55 MTPA BMQ) ALONG WITH BMQ BENEFICIATION PLANT OF 0.6 MTPA, DOLERITE CRUSHING & SCREENING PLANT OF 2 MTPA AND IRON ORE SCREENING PLANT OF 250 TPH

**VILLAGE: KACHCHE (ARIDONGRI), TALUKA: BHANUPRATAPPUR,
DISTRICT: UTTAR BASTAR KANKER, STATE: CHHATTISGARH**

STUDY PERIOD: MARCH TO MAY 2020

[The proposed project is listed under Schedule 1 (a) and 2 (b), Mining of Minerals and Mineral Beneficiation under the Schedule of EIA Notification, 2006 and categorized as Category A]

PROJECT PROPONENT

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1. Project Description

Kacche Aridongri Iron Ore Mine is an existing mine for production of 1.405 Million Tons per annum and has proposed for enhancement of iron ore production capacity from existing 1.405 MTPA to 2.35 MTPA (incl. 0.55 MTPA BMQ), installation of BMQ Beneficiation Plant of 0.6 MTPA capacity, 250 TPH Iron Ore Screening Plant with Magnetic Separators for processing of low-grade ore and Dolerite Crushing & Screening plant of 2 MTPA.

The proposed project is listed under activities 1(a) and 2(b), Mining of Minerals and Mineral Beneficiation under the Schedule of EIA Notification, 2006 and categorized as Category-A.

2. Status of Statutory Clearances and Approvals

CLEARANCES / APPROVALS	DATE
Lease deed for 106.60 Ha lease was initially executed on 30.09.2008 for a period of 20 years i.e. up to 30.09.2028. Subsequent to the enactment of Mines and Minerals (Development and Regulation) (Amendment) Act, 2015, the period of mining lease of 106.60 ha. lease was extended up to 29.09.2058	30.09.2008
Mining Lease deed for 32.36 Ha was executed for a period of 50 years i.e. up to 11.05.2065	12.05.2015
These two leases were amalgamated in the year 2015. Thus, the total lease area of Kacheche Aridongri Iron Ore Mine is 138.96 Ha. Lease deed of amalgamated 138.96 Ha. was executed on 03.09.2015 for a period of 50 years	03.09.2015
Review of Mining Plan along with Progressive Mine Closure Plan for an area of 138.96 Ha has been approved by Indian Bureau of Mines, Raipur (C.G.) vide letter no. Durg/Chup/Khayo-1227/2019-Raipur	09.01.2020
In principal approval/ Permission has been granted by the Mining Department, Raipur vide letter no F7-29/2016/12 for disposal of Minor Mineral Dolerite obtained during excavation within Aridongri Iron Ore Mine Lease.	21.09.2020
Ministry of Environment, Forest & Climate Change MoEF&CC accorded Environment Clearance under the provisions of EIA Notification, 2006 for lease area 106.60 Ha for production of 0.705 Million Tons per Annum of Iron Ore vide letter no. J-11015/339/2006-IA.II (M)	26.06.2007
Environment clearance for expansion of lease area from 106.60 ha. to 138.96 ha. and enhancement of production capacity from 0.705 to 1.405 MTPA was granted by MoEF&CC vide letter no. J-11015/384/2012-IA.II (M) dated	12.12.2014
Environment Clearance was amended for installation of 400 TPH Crushing & Screening facility within 138.96 Ha mine lease area for sizing of ore vide Letter No. J-11015/384/2012-IA.II (M).	26.05.2016
Forestry clearance for 95.04 Ha. of forest land of the lease area of 106.60 Ha has been granted by MoEF&CC vide letter no. 8-5/2007-FC. Remaining 11.56	04.08.2008

CLEARANCES / APPROVALS	DATE
Ha. area is Revenue land / Patta land.	
Forest clearance for the 32.36 Ha Lease has been granted by MoEF&CC vide letter no. 8-36/2012-FC	19.02.2015
Consent to establish (CTE) under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981 for 0.705 Million Tonnes per Annum capacity was granted by Chhattisgarh Environment Conservation, Board (CECB), Raipur vide letter no 5158/TS/CECB/2007	18.09.2007
CTE was granted by Chhattisgarh Environment Conservation Board (CECB) vide letter no. 3027/TS/CECB/2015 for expansion of lease area from 106.60 ha. to 138.96 ha. and enhancement of production capacity from 0.705 to 1.405 MTPA.	05.10.2015
CTE for the amendment for installation of 400 TPH Crushing & Screening facility within 138.96 Ha mine lease area was issued by CECB vide letter no. 4928/TS/CECB/2016	7.12.2016
Consent to Operate under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981 was obtained for 0.705 Million Tonnes per Annum capacity on 08.09.2008. Renewal of CTO was made from time to time. Last CTO granted by CECB vide letter no. 7993/TS/CECB/2019 dated 11.12.2019 is valid till 05.01.2021	

3. Mine Site Details

S. No.	Particulars	Details		
A.	Mining Lease Details			
1.	Name of the Project	Enhancement of iron ore production capacity from existing 1.405 MTPA to 2.35 MTPA (incl. 0.55 MTPA BMQ) along with BMQ Beneficiation plant of 0.6 MTPA, Dolerite Crushing & Screening Plant of 2 MTPA and Iron Ore Screening Plant of 250 TPH capacity with Magnetic Separators within existing leasehold area of 138.96 Ha.		
2.	Location	Village Kachche (Aridongri), Tehsil Bhanupratappur, District Uttar Bastar Kanker, State Chhattisgarh		
3.	Latitude and Longitude	Pillar No	Latitude	Longitude
		B	N20°24'42.73776"	E81°4'6.555288"
		C	N20°24'42.53773"	E81°04'13.16868"
		D	N20°24'27.78048"	E81°04'13.28954"
		E	N20°24'27.73987"	E81°04'06.57600"

S. No.	Particulars	Details		
		F	N20°24'13.53910"	E81°04'06.63651"
		G	N20°24'13.33339"	E81°03'47.34940"
		H	N20°24'09.44879"	E81°03'47.33956"
		I	N20°24'09.33642"	E81°03'34.20093"
		J	N20°25'01.44269"	E81°03'33.73692"
		K	N20°25'01.51454"	E81°03'47.18549"
4.	Toposheet No.	64 D/14, 64 D/15 64 H/2 & 64 H/3		
5.	Method of mining	Fully Mechanized Opencast Mining using Drilling & Blasting followed by loading Iron ore and OB by hydraulic excavator into tippers		
6.	Life of mine	15.84 years		
7.	Geological reserve	34.517 Million Tons		
8.	Mineable reserves	Iron: 21.538 Million Tons Banded Magnetite Quartzite (BMQ): 8.712 Million Tons Total: 30.251 Million Tons		
9.	Working Regime	300 days / 3 Shifts per day / 8 hours per Shift		
10.	Bench height / bench width	8m/10-15m		
11.	Overburden to be generated	27.27 Million cum (11.523 Million cubic m during planned period and 15.747 Million cubic m from 2025-26 to Conceptual period)		
12.	Employment Potential	Existing-1091 Proposed-50 Total 1141		
13.	Water requirement	Existing water Requirement: 25 KLD (Mostly for domestic use and dust suppression Source: Through Borewells & Mine Water Total After Expansion Domestic Water Requirement: 40 m ³ /day Industrial Water Requirement: 374m ³ /day Total Requirement: 414m³/day Source: Borewell – 300 m ³ /day Mine Pit Water – 114 m ³ /day		
14.	Ecological Sensitive Park, Wildlife	None		

S. No.	Particulars	Details
	Sanctuary, Reserve etc.) Within 10 km of the project area.	
15.	Cost Details	
16.	Cost of the project	Rs. 6147 lakhs
17.	Cost for EMP	Rs. 312 Lakhs/ - for 5 years (Rs 67 lakh as capital cost and Rs. 49 lakhs as a Recurring cost)
18.	Cost for CER	Rs. 105 Lakhs
19.	OH&S	Rs. 60 Lakhs

4. Need of Project:

Expansion of Kachche Aridongri Iron Ore Mine will have the following benefits:

- GPLI shall be able to meet its increased iron ore demand for the captive Sponge Iron, Steel and Pellet Plant at Siltara, Raipur.
- Utilization of low grade BMQ and processing of Dolerite will promote conservation of minerals
- Eco-friendly and scientific mining due to reduced land degradation for waste dumping.

5. Benefits of the Project

- Shall add to revenue generation of the District / State.
- Shall generate additional employment, both direct and indirect which will lead to economic growth.
- Shall provide services like medical facilities and other facilities to local villages under the company's community development program.
- Increased Iron ore production will boost the economy, thereby providing growth and development of the region.

In view of the above, Godawari Power and Ispat Limited now proposes to expand the capacity of its Kachche Aridongri Iron Ore Mine.

6. Machinery to be Deployed is listed Below:

Equipment	Specification	Existing Fleet, Nos.	Fleet required to own, Nos.
Hydraulic Excavator	Bucket Capacity: 2.8 - 3.5 cum	4	4
Hydraulic Excavator	Bucket Capacity: 1.8 cu. m	6	4

Equipment	Specification	Existing Fleet, Nos.	Fleet required to own, Nos.
Dumper/Tipper	Capacity: 31 t	12	12
Dumper/Tippers	Capacity: 25 t	51	45
Hyva	Capacity: 20 t	5	6
Drill	Diameter: 150 mm	7	1
Drill	Diameter: 115 mm	7	8
Pay Loader	Capacity: 1.4 cu. m	6	5
Crawler Dozer	Power: 165HP	4	4
Motor Grader	Power: 165 HP	1	1
Crane	Capacity: 10 t	1	1
Water Sprinkler	Capacity: 12 kl	4	4
Diesel Browser	Capacity: 6 kl & 2.5 kl	2	2
Rock breaker	Capacity: 20 t	4	3
Jack hammers with Compressors	Dia.: 32 mm	4	4
Explosive Van	10 t	1	1
Bus	35-seater	1	1
Camper and another pick up vehicle	-	7	7
Portable Tower Lights for face lighting	-	12	12

7. Baseline Study:

Parameters	Baseline Status
Ambient Air Quality	PM ₁₀ – 88.00 to 20.00 µg/m ³ PM _{2.5} – 48.00 to 16.00 µg/m ³ SO ₂ – 22.00 to 4.00 µg/m ³ NO _x – 36.00 to 14.00 µg/m ³
Noise Level	Noise Level During Day Time – 68.6 and 43.7 dB (A) Noise Level During Night Time – 48.2 to 31.00 dB(A)
Water Quality	<p>Ground Water: All the Parameters Like pH varies from 6.66 to 9.87, Total Hardness varies from 90 to 436 mg/L, Total Dissolved Solids varies from 180 to 850 mg/L, Chlorides – 12.9 to 197 mg/l etc. are found within the permissible limits.</p> <p>Surface Water: All the Parameters Like pH varies from 7.03 to 7.56, Total Hardness varies from 66 to 288 mg/L, Total Dissolved Solids varies from 82.5 to 604 mg/L, Dissolved Oxygen – 4.2 mg/l to 5.8 mg/l etc. are found within the</p>

Parameters	Baseline Status
	permissible limits.
Soil Quality	pH- 5.58 to 7.45 Organic matter 1.06% to 1.32 %
Ecology and Biodiversity	There are no wildlife sanctuary/biosphere reserve/national parks present within 10 Km radius of the study area. No Schedule-I species was observed during study.
Socio Economic	The proposed expansion case will provide positive impact to the nearby area. The project will provide direct and indirect employment to nearby villagers.
Traffic	The proposed project will not cause major impacts due to increase in traffic due to transportation of additional material. the PCU/Day which is 492 PCU/day. The LOS study shows that the existing traffic scenario is “Very good” and the free flow of vehicles is observed during the study period. Due to the mine project the traffic density will increase and the value of LOS will remain same as Very good.

8. Raw Materials Requirement

Raw Material		Existing	Total After Expansion
Fuel Consumption	HSD	2484 kl/year	2704 kl/year
	Lube Oil	124 kl/year	135 kl/year
Explosive Consumption*		1488 Tons/Year	1807 Tons/Year

*Through Third Party Agreement

9. Water Requirement:

Total water requirement at Kachche Aridongri Iron Ore Mine for domestic and industrial use is 414m³/day. Head-wise water requirement and their probable consumption & extent of recycling is given below:

Purpose	Existing Water Requirement	Total Water Requirement	Unit
Domestic Consumption	3	40	cu. m/day
Industrial Consumption	22	374	cu. m/day
Total*	25	414	cu. m/day

The mine has permission for drawl of 300 cu.m/day of water through borewells. Balance 114 cu.m/day water requirement will be met through mine water.

10. Power Requirement

At Present maximum power demand of the mine is 1000 KVA. The power requirement of the mine is presently being met from CSPDCL substation located at Dalli-Rajhara Total Maximum power demand after proposed expansion will be 6400 KVA. In future additional power requirement of the mines will also be met from CSPDCL substation.

Existing

1000 KVA (Source CSPDCL substation)

Proposed

6400 KVA (Source -CSPDCL substation)

11. Man Power Requirement:

Expansion of the mine shall provide an opportunity of continuing direct employment for 50 persons. Total manpower after the expansion will be 1141 persons and indirect employment of approx. 2000 persons.

12. Environmental Impact and Mitigation Measures

12.1. Land Environment

The proposed expansion will be carried out within the existing mining lease area of 138.96 Ha. Additional facilities; BMQ beneficiation plant, dolerite crushing & screening plant and 250 tph Screening plant with magnetic separator shall be installed within the existing mining lease area at non mineralized area. No additional land shall be required for the project. Considering the land required for the proposed expansion is already in possession, no major change in land use is envisaged.

Forest land of 127.4 Ha within the lease area has already been diverted and no fresh tree felling is involved. Hence there will be no change in land use pattern or soil quality.

12.2. Air Environment

Impact

- Fugitive dust emissions during drilling of blast holes
- Fugitive emissions from Feed Hopper, Jaw Crusher, Vibro-feeder, Double Deck Screen, Cone Crusher, Double Roll Crusher and Single deck screen
- Fugitive emissions from Feed Hopper, Jaw Crusher, Triple Deck Screen and Cone Crusher of Dolerite Crushing & Screening Plant
- Fugitive emissions from Vibro-feeder, Double deck Screen and transfer points of 250 tph Screening Plant.

- Haul road emissions during transportation of ROM, BMQ and Dolerite to their respective plants.
- Dust and gaseous emissions during blasting
- Gaseous emissions from mining fleet machineries and transport vehicles

Mitigation Measures

- Wet drilling is being done. All new drilling machines shall have dust extraction system
- Dry fog Dust Suppression Systems proposed for all dust generating areas like Crushers, Screens and Transfer Point
- Mixing of dust palliatives like Calcium Chloride / Magnesium Chloride or DGMS approved dust bond chemicals like Filset-50, Pulver Bond etc. in sprinkling water for effective dust suppression.
- Compaction & gradation and drainage on both sides of haul roads
- Proper maintenance of transport vehicles
- Avoiding overloading and enforcing speed limit on dumpers
- Site Mixed Slurry (SMS) has been proposed for blasting
- Regular maintenance and overhaul of mining fleet machineries and vehicles.

12.3. Water Environment

Impact

- Water requirement of the Mine is 414 m³/hr., out of which 300 m³/hr. water will be sourced from Ground water which may have impact on ground water
- Impact on ground water due to intersection of ground water table during mining operation
- Impact on surface water due to run-off from waste dumps during rainy season
- Waste water generation from BMQ Beneficiation Plant

Mitigation Measures

- Two nos. of Rain Water harvesting Ponds have been proposed to harvest rain water every year
- The mining activity is proposed to be carried out in the planned period (next five years) up to 414 mRL whereas the Ground water table lies from 375 m to 380 m., hence the mining activity will not interfere anywhere with the natural drainage pattern during the planned period.
- To reduce the possibility of any siltation in natural streams from Waste Dumps, 5 nos. of Garland drain (in addition to 2 existing), 5 nos. of Retaining Wall (in addition to 2 existing) and 3 nos. of Settling Ponds have been proposed.
- Beneficiation plant effluent will be used for plantation

12.4. Noise Environment

Impact

Followings are the major noise source from the Mine:

- Drilling
- Blasting
- Operation of HEMM & Vehicular Movement
- Crushing & Screening at existing Ore Processing Plant, Dolerite Plant, 250 tph Screening plant and BMQ Beneficiation Plant

Mitigation Measures

- Provision of sound-insulated chambers for workers deployed on machines producing higher levels of noise like bulldozers, drills, etc.
- Selection of new low-noise equipment from the manufactures failing which use of additional retrofits if available.
- Providing silencers or enclosures for noise generating machines such as DG sets, compressors, etc.
- Attenuation of Structure-Borne Sound: Preventing transmission of vibration from machines to the load-bearing structure can considerably reduce structure-borne sound:
 - I. Large heavy machines should be mounted on foundations which are completely separated from buildings or other structures
 - II. Placing other machines on a stable foundation and where possible using an elastic separation such as rubber blocks or steel springs.
 - III. Severely vibrating machines may require separate foundations and isolation joints between floor slabs to prevent propagation of structure-borne noise.
- Sound Insulated Rooms: Cabins (at BMQ Beneficiation Plant/ Dolerite Crushing & Screening Plant etc.) should be constructed of materials with good sound attenuation properties and ideally will have:
 - I. Double glazed windows - (two 6 mm glass panes with 50 mm air space can give 10 dB(A) attenuation).
 - II. Ventilation openings with attenuators such as acoustic louvers.
 - III. An adequate air conditioning system, to avoid doors being left open.

12.5. Ground Vibration, Air Blast and Fly-rock

Ground vibration, fly rock, air blast, noise, dust and fumes are the deleterious effects of blasting on environment. The explosive energy sets up a seismic wave in the ground, which can cause significant damage to structures and disturbance to human occupants. When an explosive charge is fired inside the blast hole, it is instantly converted into hot gases, which exert intense pressure on the blast hole walls.

Mitigation Measures

The following measures shall be taken at the mines for control of vibrations due to blasting:

- Using optimum maximum explosive charge per delay to keep the ppv below the threshold limit.
- Optimizing blast design by exercising strict control over blast design parameters such as burden, spacing, proper stemming orientation of all blast drill holes and accurate drilling based on rock type, jointing pattern, proper face preparation etc.
- Blasting will be done in favorable weather condition.

The following measures will be taken to control the fly rock during blasting operations at the proposed mining blocks:

- Muffle blasting will be done wherever any blasting is to be taken within 200 m of any structure.
- Proper burden and spacing will be maintained according to the bench height, nature of rocks and dia of the holes.
- Length of the stemming column shall not be less than the burden.
- Angular holes will be made in conformity with the slope of the bench.
- As far as possible holes will be located beyond weak zones
- All loose pieces of rocks from the blasting site will be cleared before charging the hole.
- Drill hole depths will be checked before loading by the Blasting Incharge.
- Proper warning signals, flags are posted before blasting at various locations.
- Blasting Shelters have been constructed with thick MS sheets with enclosures on all sides except one side, to take shelter for persons engaged in blasting.
- Guards are be posted on all access roads leading to the blasting site, who prevent unauthorized entry of mine personnel.

12.6. Ecology & Bio-diversity

Impact

- There may be some impact on the biological environment due to the air pollution during transportation of iron ore to the end use plant at Raipur.
- Noise and vibrations due to the blasting operations may have some impact on the fauna present in the area

Mitigation Measures

- Transportation of iron ore in truck, covered with tarpaulin and regular water sprinkling on the approach road.
- Plantation along the approach road will further reduce the impact.
- Blasting operations will be during daytime, preferably before 15.00 hrs.
- No National Park, Wild Life Sanctuary, Bio-sphere Reserve, Elephant Reserve, Tiger Reserve or Elephant Corridor etc. is present within 10 km of mining lease area.
- There is no Schedule-I flora or fauna present in the study area
- The project does not involve any fresh tree felling for the proposed expansion, instead of 38,912 trees will be planted inside the mining lease area during the planned period.

12.7. Socio-economic Environment

- The project does not envisage any leasing or acquisition of private land. Hence R&R plan is not applicable under the present proposal.
- Additionally, 50 nos. of manpower will be required thus mine shall employ total 1141 persons.
- Minimum burden on existing infrastructure as local people will be given preference in employment.
- Improved infrastructural facilities such as developments of approach routes within the village area, street light, health facilities etc.

13. Waste Management

Top Soil Management

As major mining area is already broken due to present mining, negligible top soil generation is expected. Top soil in the area is scanty. Total of 0.004 Mm³ top soil will be generated during the ensuing planned period from 2020-21 to 2024-25.

The top soil will be stacked at earmarked designated places and due to low shelf-life, total top soil generated during the ensuing period will be used for proposed plantation purpose. Minimum storage time shall be attempted to avoid nutrient loss.

Overburden Generation and Management

A total of 11.523 Mm³ of wastes will be generated from entire Kachche Aridongri Iron Ore Mines during the planned period i.e. upto FY 2024-25. Out of this, 7.863 Mm³ waste will be dumped in the proposed waste dump WD1, 0.806 Mm³ waste will be dumped in the proposed backfill BF1 and balance 2.854 Mm³ of waste will be dumped in external dumps WD3, WD4, WD5 & WD6. A total of 27.27 Mm³ of wastes will be generated upto conceptual stage.

Management of Tailing from Beneficiation Plant

Press filter has been installed for management of Tailings. Filter cake shall be dumped in Waste Dump WD2.

Waste Dump Management

- The waste dumps will be formed in layers/lifts. The slope of dump will be maintained at a slope of 37 degrees, which is nearly equal to the angle of repose of the waste materials.
- In the final stages, to prevent wash-offs, the top surface of the dump will have an in-ward slope. When the dump has been filled up to its holding capacity, these will be systematically rehabilitated with afforestation.

- All the waste dumps will be surrounded by garland drains to minimise wash-offs. Total 6 nos. of Garland drains will be provided till conceptual stage along with 6 nos. of Retaining Walls and 3 nos. of Settling Ponds.

14. Development of Green Belt

At present 86,835 trees have been planted at Kachche Aridongri Iron Ore Mine, covering an area of 24.8 Ha. The mine has also proposed to plant additional 38,912 no of trees during the plan period. Budget of Rs. 45.381 lakhs has been kept for Greenbelt development.

15. Corporate Environment Responsibility (CER)

PP has kept Rs. 62 Lakhs (1% of the project cost of Rs. 61.47 Crores) under the CER. The activities proposed under CER shall be worked out based on the issues raised during the Public Hearing and Social need assessment.

The details of the activities to be undertaken and the budget allocated shall be prepared after Public Hearing is conducted.

16. Occupational Health Measures

An Occupational Health Centre (OHC) is already in place at the Mine. A systematic program for medical check-up at regular intervals is being followed at the Occupational Health Centre (OHC) of the Mine for all workers (including contractor workers) to ascertain any changes in the health condition of workers due to the working conditions. Employees health is being checked at the time of joining and at regular interval, thereafter. This shall be continued after the expansion also. A budget of Rs. 60 has been kept for Occupational health measures.

17. Environment Management Plan

The Environmental Management Plan consists of the set of mitigation, management, monitoring and institutional measures to be taken during the implementation and operation of the project, to eliminate adverse environmental impacts or reduce them to acceptable levels. To implement EMP, a capital budget of Rs. 269 lakhs and revenue budget of Rs.28.71 lakhs per year proposed.
