

EXECUTIVE SUMMARY

of

EIA/EMP REPORT

for

**Modification cum Expansion of Existing Project from
0.1 MTPA Billet to 0.25 MTPA Rolled Product**

of

M/s BHASKAR STEEL AND FERRO ALLOY PVT. LTD.

At: Badtumkela, Sundergarh, Odisha

Prepared by



GLOBAL TECH ENVIRO EXPERTS PVT. LTD.

C-23, BJB NAGAR

BHUBANESWAR-751014

PH. NO.-06742433487

Email-globalexperts@rediffmail.com

info@globaltechenvexpt.com

Executive Summary

Introduction

M/s. Bhaskar Steel & Ferro Alloy Limited (BSFAL) was established at Badtumkela in Sundergarh District of Odisha and is geographically located at Latitude 21^o 49' 49.20" N Longitude 84^o 55' 40.79" E. in the year 2003. The company started producing 0.105 MTPA Billet utilizing facilities of DRI, IF, & 12 MW power plant.

M/s BSFAL took ToR vide F.No.-J-11011/491/2008-IA II (I), dtd. 31st July 2015 and amended thereafter for expansion of its existing unit capacity in two phases from 0.105 MTPA Steel Billet and 12MW Power to 0.419MTPA steel Billet and 88 MW power; converting billets partly to 0.264 MTPA Rolled Product.

Therefore base line study was conducted for expansion project from Nov 2015 to January 2016 and preparation of EIA & EMP report started.

The company was facing load throw problem while tapping molten metal which resulted in reduction of power generation frequently. The company therefore proposed a 1x3T small IF to run during tapping hour of other IFs and got ToR to incorporate same in phase-I of EIA and EMP report of expansion project which was in progress.

So, ToR was amended and new ToR was granted vide MoEF letter No. F. No. J-11011/491/2008-IAII (I) dated 31st July, 2015 incorporating 1x3T additional IF along with facilities granted in expansion EC.

But the company faced problem in acquiring land. The company applied to IDCO, Govt. of Odisha for allotment of additional land and till date acquisition of land has not been finalized, and may take time. Therefore, the company proposes a small expansion on the vacant space of 84 Ac (34ha) of land on which existing plant is running

So, again fresh ToR was granted to the company vide letter no F. No. J-11011/491/2008-IAII (I) dated 18th August, 2017 to set up 1x350 +1x100 TPD DRI Kilns, 4x12+1x3 T IF with 1x16 T LRF, 6/11 strands CCM, 25 TPH Rolling Mill and 16 MW Power Plant in addition to the existing Configuration.

Meanwhile the company changed its name from Bhaskar Steel and Ferro Alloy Limited (BSFAL) to **Bhaskar Steel and Ferro Alloy Private Limited (BSFAPL)** by certificate of Incorporation issued by Govt. of India, Ministry of Corporate Affairs, WB vide SRN C 80259187, dtd.02.03.2016.

Project Description

Existing facilities

1)1x300 TPD DRI kiln2)4x8T IF3)12 MW CPP

Expansion facilities

1x350 TPD + 1x100 TPD DRI Kilns, 4x12 T+1x3 T IF, 25 TPH Rolling Mill, 16 MW Power Plant

Project cost:

The estimated project cost for expansion project of M/s BSFAL is INR 270.00 crore. The capital cost has been arrived at on the basis of the prices for equipments and facilities, cost of construction work and materials. Provisions have been made for the other costs associated with the project namely land, site preparation, and interests on loan during construction, margin money for working capital and start up expenses.

Time schedule

The project will be completed & commissioned in two years of time after getting consent to establish from SPCB, Odisha and EC from MoEFCC.

Raw material inventory

The proposed raw material for the expansion project is Iron Ore-3,85,000 TPA, Coal-3,50,000 TPA, Pig-30,000 TPA, Scrap-15,000 TPA, Sponge Iron-20,000 TPA, Limestone-10,000 TPA

Power & water requirement

Total Power Requirement 28 MW

Captive Power generation 28 MW

Water requirement for the proposed project comes to about 1400 m³/day. Water will be drawn from river Brahmani and permission has been taken.

Manpower

About 2000 people will get direct employment in various grades. This figure includes employment in technical, operation, maintenance, finance, commercial, personnel and general administration.

Besides this direct employment contract labours will be taken to assist in manual jobs, sweeping, road washing, security and canteen management. These people may be required to work in shift. About 500 people will get indirect employment for these purposes.

Process description

DRI grade Hematite Iron ore lumps will be directly reduced to sponge iron using coal as reductant. Heat of reaction will be carried away through flue gas and utilised in WHRB to produce steam and there by generate power.

Sponge iron, scraps and purchased Pig iron will be heated to melting temperature of iron by eddy current of medium frequency coreless Induction furnace and thus red-hotliquid Iron metal will be produced and gangue in the form of slag will be scooped out from surface of molten iron. Requisite Ferro Alloys will be added to molten iron in Ladle Refining Furnace as per the customer demand.

Molten steel from LRF will be continuously casted to billets of required dimension and will be drawn in hot rolling mill to TMT rods of desired specification for sale.

Zero liquid discharge out of plant boundary to be maintained by clarifying waste water and recycling or reusing.

Emission, effluent& their management

Fugitive dust emission in raw material handling plant, internal roads and material charging section.

Water sprinklers, Dry fog system in closed material conveyors, swivel hood, bag filter with ID fan and stack

Suspended particle and fume emission from Power plant, DRI kiln, IF and pelletisation plant stack.

SO₂, NO_x from power plant and DRI stacks.

Contaminated iron ore tailing slurry from beneficiation plant

CT & Boiler drum blow down and water treatment plant sludge waste water

Site details

The site is located at village Badtumkela of Sundergarh district in the state of Odisha, The location is well connected with road and rail. The NH-23 only at 3 Km away from the plant site is passing on east direction of the project site. The SH-10 connects Towns such as Banei, Rourkela which is 6 km away from the project site. The nearest railway station Barsuan is passing on North -South direction at 20 km away from the plant site. Brahmani River is flowing only 1.5 Km away on South direction from the project site and the company will draw water from the river to meet its water requirement.

Project area neither comes under flood zone of nearby river nor under earthquake zone.

Other industries

10 numbers of metallurgical industries are operating within 10km radius of the project site.

Forest land

In Buffer zone there are some major forests, these are Kuriya Block RF, Senara RF are two major reserved forests with in 10 km radius of the Study area. Indira pahari PF, Brindabanpur PF, Muktipur PF, Bheti PF, Dubrajpur PF, Nimtikur PF, dandahit PF.

But the company does not require any forest land for non-forestry work.

Environmental status

Base line study of 10km radius area of project site was done from Dec 2015 to Feb 2016

The climate in the study region is generally dry and hot and is characterized with seasonal variations of temp., humidity, rainfall etc.

Wind roses on sixteen-sector basis (N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, and NNW) have been drawn for 01-24 hours.

From the analysis of data the overall predominant wind direction has been from North & North-East during winter season.

The average wind velocity is 1.13 m/s and the calm period is 12.99%. Atmospheric inversion level at the project site has been prepared using temperature, relative humidity, hourly wind speed and direction and rainfall.

The mixing height derived while preparing isopleths found varying from 30m to 1100m in a particular day during study period.

As per report of IMD Delhi for Project site Latitude $21^{\circ} 49' 49.20''$ N & Longitude $84^{\circ} 55' 40.79''$ E the inversion height in winter is minimum 20-40m at 7:00 hours and maximum 1100-1150m at 14:00 hours

AAQ monitoring stations were set up at 8 locations of study area with due importance in favour of predominant wind direction. Of course dust emission inside project area was found on higher side, but ambient air analysis in other stations shows:

During the study period, the concentrations of PM_{10} varied between **35.8 to 70.6** $\mu\text{g}/\text{m}^3$ at different locations of the study area. The **98th** percentile values of PM_{10} ranged between **45.9-70.6** $\mu\text{g}/\text{m}^3$ during the study period. PM_{10} value was observed to be highest at the site meant for industrial activities.

The concentrations of $PM_{2.5}$ varied between **11.2-35.8** $\mu\text{g}/\text{m}^3$ at different locations of the study area. The **98th** percentile values of $PM_{2.5}$ ranged between **22.0 to 33.4** $\mu\text{g}/\text{m}^3$ during the study period. $PM_{2.5}$ value was observed to be highest at the site meant for industrial activities.

During the study period, the average levels of SO_2 concentrations at all location varied from **4.3 to 9.6** $\mu\text{g}/\text{m}^3$ and the **98th** percentile values of SO_2 varied between **5.5 to 9.4** $\mu\text{g}/\text{m}^3$. The core zone is having the maximum value.

The concentrations of NO_x values varied between **9.3 to 14.1** $\mu\text{g}/\text{m}^3$ at different locations. The **98th** percentile values of NO_x ranged between **10.5 to 14.1** $\mu\text{g}/\text{m}^3$ during the study period.

The concentrations of NO_x values varied between **222 to 445** $\mu\text{g}/\text{m}^3$ at different locations. The **98th** percentile values of NO_x ranged between **284 to 444** $\mu\text{g}/\text{m}^3$ during the study period.

Trace elements and heavy metals are almost nil which indicates that particulate matter is only dust having a little bit of lime dust escaping from stacks and normal road dust.

Water

The nearest river of project site is Brahmani River from where the project proposes to draw water for the expansion project. As per CPCB/MoEF&CC. Study the polluted stretch of river Brahmani is from Panposh to Rourkela only and project site proposed is 64 km away from nearest polluted stretch.

Analysis of **surface water** samples collected from 8 locations show that DO levels at the surface water exhibited values 4.0-5.6 mg/l indicating favourable conditions for the growth and reproduction of normal population of fish and other aquatic organisms in the water

bodies. BOD values of all the samples were found to be in range of 2.0-2.8 mg/l which is more than permissible limit. The pH of the surface water samples varied from 6.96-8.12 Iron and Fluoride are within limit prescribed. The concentration of **heavy metals** like cadmium, arsenic and lead in the ground water samples of the different sources were either negligible or in not detectable range.

The analytical results of **Ground water** samples at different location for various parameters reveal that all the parameters comply with IS: 10500 standards indicating their suitability for drinking and other purposes.

Soil

Six numbers of soil samples collected from study area and analysed found to be poor in organic Carbon and Phosphorous indicating soil of study area is not fertile agricultural land and care to be taken while developing green belt.

Noise

The high values of noise level were observed in Industrial site and this is because of different plant operations and vehicular movement but it is within the noise standard level of 75 dB. In all other locations the noise level was found to be within the prescribed noise standard of SPCB.

Flora & Fauna

During study period base line team did not come across any endangered species, and **No Schedule-I fauna is found within study area, so no Wildlife Conservation Plan has been prepared.**

As per MoEF & CC and Odisha forest Department reveals that there are no Wildlife sanctuaries, National parks/biosphere reserves in 10 km radius from the proposed site boundary. As per the records of the ENVIS Botanical Survey of India there are no plants of conservation importance in the study area, it can be concluded that there are five species belonging to Sch-II and rest of the species belong to Sch-III, Sch-IV and Sch-V of Wildlife Protection Act, 1972.

Socio-economics

As per the scope of present study, the information on the sociological aspects like demography, human settlements, social aspects like SC & ST population, literacy levels and economic aspects like occupational structure of workers has been gathered and compiled from secondary sources viz. 2011 Census Data which were downloaded from website: www.censusindia.gov.in as these data are not available in market.

Literacy is an important indicator for understanding the socio-economic development of any area. The total literacy of the study area is 64 %. From that the male literacy in the study area was found to be 35 % and the female literacy in the study area was found to be 28% The overall study indicates that the literacy rate in female population is alarmingly low which can be attributed to the male dominated social structure prevailing in the villages. The educational facility in the district is good as the district is in developing stage.

Average literacy rate of Sundargarh in 2011 were 73.34 compared to 64.86 of 2001. If things are looked out at gender wise, male and female literacy were 81.01 and 65.48 respectively. For 2001 census, same figures stood at 75.34 and 53.88 in Sundargarh District. Total literate in Sundargarh District were 1,342,322 of which male and female were 750,147 and 592,175 respectively. In 2001, Sundargarh District had 1,015,485 in its district.

Occupational Pattern:

As per the 2011 census, the workers are classified mainly as main workers, marginal workers and non-workers. From the data it was observed that the percentage of total other workers is 82%, cultivators is 11%, agricultural labourer is 4% and house hold work laborers status is 3% of the total population of the study area .

Impact assess & management Plan

The impact assessment process systematically identifies, characterizes and evaluates the potential impacts arising out of the project and prioritizes them so that they can be effectively addressed through a proper Environmental Management Plan

The impacts have been identified based on the possible worst case emission, effluent discharge and solid waste generation from the proposed expansion project.

Pollution

The plant processes like DRI, IF, power plant, etc are causes of air pollution. The sources and type of pollution in the operation process are presented in the **Table 7.2**. It may be observed that heat, dusts, SO₂, CO, and NO_x to the air environment are the prime pollution parameters from the proposed project. However with proper planning and innovative management technique and the use of suitable pollution control devices, it is possible to run the manufacturing processes without much endangering the air environment.

The AAQ monitoring done at 8 locations and stack emission data has been fed to soft ware to find out predicted isopleths of dust concentration at different villages, AAQ results when added up with predicted values from isopleths the resultant GLC value in different sampling locations indicated in **table- 7.3** At plant site the maximum resultant of PM₁₀ and PM_{2.5} value will be 18.9µg/m³, 9.87 µg/ m³. In the core zone the monitoring value was found to be high in comparison to other site due to fugitive emission. The predicted contributions of different pollutants from the proposed steel plant when added with the monitored existing background levels of PM₁₀, PM_{2.5}, and SO₂ respectively it will increase a little but all the values will be within the NAAQS norms.

Sampling points have been considered taking habitations into consideration. No sensitive receptor inside 10km buffer zone to be influenced by pollutants.

Waste water

Waste water generated from process will be settled, treated and reused and recycled where ever applicable. Some waste water will be utilized in green belt watering and dust suppression through sprinklers. No effluent will be discharged out side plant boundary. Hence zero discharge norm will be followed and therefore water quality modeling not done.

Waste water utilization:

Total waste water generation 70 m³

Efforts to be made to reuse most of the water in the plant itself. This water comes under the category of 'Waste Liquor' and has to be treated to render it harmless. Backwash from Filtration Plant will be led to pits for removing suspended solids. The overflow from the pits will be reused in the plant water system. The sludge from the pits will be dried and dumped. Effluents from the SMS are likely to contain suspended solids and oil & grease. These effluents will be routed to settling pits fitted with oil & grease trap. The clarified water will be reused in the plant. Cooling Tower Blow-down from various recirculation systems will be cascaded for reuse in other qualitatively compatible systems. Thus, proposed plant will recycle water to the maximum extent possible. The Blow Down water from various plant units will be collected along with the drainage water and used for Dust Suppression by Spraying and for gardening purpose.

Transportation

Majority of raw material and product shall be transported through rail. NH-143 is the nearest highway through which balance Raw material and product will be transported to and from project site. About 6.0 lakh tons of balance material consisting Raw material and product per annum will be transported which will bring additional load of 140-150 trucks per day on existing road, i.e. about 6 nos of additional trucks to and fro per hour. Existing National highway can take care of this additional load but road connecting project to NH to be widened and strengthened.

Traffic study done on road from project meeting NH 143 shows average PCU (passenger car unit) of the existing two-lane NH 143 is 127/hr and peak hour load is estimated to be 256 PCU/hr. Details given in chapter 6 under ToR 6 (ix). Additional traffic load on existing two-lane NH 143 will be 42 PCU/hr and total load 298 PCU/hr after commissioning of the expansion project.

Materials to be transported through pollution compatible Euro or Bharat III/IV vehicle. Materials transported through trucks are to be fully covered to avoid spillage on roads. Fly ash to be transported through tankers or moistened if required to be transported through open truck.

Internal roads are to be black topped with regular water sprinkling and wheel washing arrangement. This along with road side plantation and green belt will control dust emission during transportation of material.

Fly ash utilisation

M/s BSFAPL has proposed to set up fly ash brick manufacturing unit of its own to utilize fly ash. Balance if any will be supplied to nearby fly ash brick manufacturers free of cost.

In Swatch Bharat Yojana modular toilets have been planned to be supplied to people who cannot afford to build their own toilet for which brick blocks at cheaper rate will be manufactured from fly ash and induction furnace slag, so there will be demand for fly ash.

Green belt development

Green vegetation cover is beneficial in many ways leading to conservation of biodiversity, retention of soil moisture, recharge of ground water and maintaining pleasant micro climate of the region. In addition, vegetation cover can also absorb pollutants from the environment and helps in effective pollution control.

Environmental protection has been considered as an important domain for industrial and other developmental activities in India. Ministry of Environment & Forests (MoEF) has taken several policy initiatives and promoted integration of environmental concerns in developmental projects. One such initiative is the notification on Environmental Impact Assessment (EIA) of developmental projects issued in 1994 and further revised notification in year 2006 under the provisions of Environment (Protection) Act, 1986.

Green belt not only restrict environmental pollution but it helps to maintain the ecological balance of the region.

Rain water harvesting

Average rainfall during the monsoon period 237 mm/month

Average annual rainfall of project area 1300 mm

M/s. BSFAPL plans to have water rain water harvesting ponds to collect the storm water and rain water particularly during the monsoon and will use the same for plant purposes as and when required. It has allocated 8 half low lying land for the purpose. In the absence of any other data, the general run off calculated is based on Rational Formula as mentioned hereunder.

Annual average rain fall of the project area =1300mm

$Q = CIA$

Where $Q =$ Run off in m^3 /annum

$i =$ Precipitation =1.3m (average annual rainfall)

Total catchments area $A = 32 \text{ Ac} = 320000 \text{ m}^2$

$C =$ Considering avg. Run off coefficient of the area= 0.7

Run off calculation from this area/annum

$Q = 1.3m \times 320000 \text{ m}^2 \times 0.7 = 2,91,200 \text{ m}^3$

Rain water harvesting pond

About 8 AC of land has been allocated to store rain water for plant use so that make up water drawl can be reduced.

Capital cost and recurring cost/annum for environmental pollution control measures

The company will invest Rs 1340 Lakh (about 4 % of total project cost) as capital investment towards implementation of Environmental Management Plan. The Annual recurring cost will be about Rs 134 Lakh.

Investment towards EMP, Implementation & its yearly maintenance is given in Table 7.8

Disaster management Plan

Disaster may be defined as a sudden occurrence of incidence in such a magnitude as to affect the normal pattern of life inside or in the vicinity of plant which have the potential of causing extensive injury or loss of life or damage to property and tend to cause disruption inside/outside the site.

No such disaster is anticipated from the project except fuel oil tank pool fire.

First aid centre, trained medical staff and ambulance service, fire hydrants and portable fire extinguisher set will be able to control local pool fire.

ESC activities

M/s BSFAPL has already spent 4749 Lakh in ESC activities. Under ESC head it has carried out the following activities:

- Constructed tube well for supply of drinking water in nearby village.
- Provided the health checkup facilities to villagers.
- Constructed bathroom to increase sanitary conditions.
- Undertakes maintenance of School and village roads.
- Financial Aid to students for education purposes.
- However at this expansion project proposal the company commits to utilize 2.5% of total project cost of Rs.270 crore towards ESC activities i.e. Rs.6.75 cr. This fund shall be utilized over a period of 5 years after profitable production. The project have several beneficial impacts which will obviously improve the socioeconomic conditions of the locality. A committee will be formed taking local administration, social worker, management and worker representatives to take decision and fix priority for activities. . The expenses under ESC activities will be mainly as follows:
 - Eradicating extreme hunger and poverty
 - Promotion of education
 - Promoting gender equality and empowering women
 - Reducing child mortality and improving maternal health
 - Combating human immunodeficiency virus, acquired immune deficiency syndrome, malaria and other diseases
 - Ensuring environmental sustainability
 - Employment enhancing vocational skills
 - Social business projects

- Contribution to the Prime Minister's National Relief Fund or any other fund set-up by the central government or the state governments
- Such other matters as may be prescribed

Details ESC year wise budget has been dealt in chapter-4.

No litigation/court case is pending against the project in any court of law as per information supplied by project proponent.