EXECUTIVE SUMMARY OF EIA/EMP STUDY

FOR

Proposed Expansion of Induction Furnace
& Re-rolling Mill Project

by

M/s Balmukund Concast Pvt. Ltd.
MAHADEOPUR PHULARI ; BIHTA
DIST. PATNA (BIHAR)

SUMMARY
ENVIRONMENTAL IMPACT ASSESSMENT

1.0 Introduction :-

Balmukund Concast Pvt. Ltd. (BCPL) was installed in the year 1995 for manufacturing of MS Ingot/Billet & MS Bar Road with initial capacity of 36000 MT/Annum MS Ingot & 52350 MT/Annum MS Bar/ROD. BCPL is situated at Mahadeopur Phulari, Bihta, District Patna, Bihar having Latitude $25^0$34'46.32"N & Longitude $84^0$52'0.09"E at 51 m. above MSL nearby NH-30. It is about 20 kms. from district head quarter Patna and is well connected by NH - 30 and rail with rest of the country. BCPL is about 2 Km. (S) from Bihta Railway Station on Howarh - Delhi Main Line Sec. of ECR.

Further BCL has increased the capacity and current existing capacity of manufacturing is 64350 MT/Annum MS Ingot/Billet & 60000 MT/Annum MS TMT Bar/ROD.

State Environment Impact Assessment Authority (SEIAA), Bihar has granted Environmental Clearance for existing 64350 TPA Induction Furnace Project and 60,000 TPA Re-rolling Mill Project vide Ref. No. 94/SEIAA/17 Dt: 27.06.2017.

Bihar State Pollution Control Board has granted Discharge & Emission Consent Order of the existing unit of BCPL vide Ref. No. T-7151 dt: 06.12.2019 & Ref. No. T-7152 dt: 06.12.2019 for the period up to 31.12.2023.

Now, to fulfill the increasing demand of standardized & quality products in the market, company intends to increase its production capacity by expansion of existing unit. It is proposed to increase the capacity by replacing 2 old furnaces of 5 Ton with

2 new induction furnaces of 15 TPH capacity with Continuous Casting Machine (CCM) and modernization of existing 2 nos. rolling mill for additional production of 85650 MT/Annum MS Billet & Re-rolling Mill for additional production of 120000 MT/Annum TMR Bar/Rod.

All necessary infrastructures are available in the existing plant premises. In existing project there are 2 nos. 5 TPH & 1 No. 12 TPH Induction furnace and 2 rolling mills

The Company owns a total land of 10.0 Acres under leasehold basis. Ample space is available for plant expansion and setting up of expanded induction furnace & re-rolling mill within the existing premises and there will not be any need to purchase additional land. All necessary infrastructures are available in the existing plant premises.

As per EIA Notification'2006 issued by Ministry of Environment & Forests, Govt. of India vide Gazette Notification No. S.O. 1533(E) dt: 14th Sep.'2006 and amendments thereafter, all projects of Metallurgical Industries (ferrous & non ferrous) having ≥ 30000 TPA capacity will be treated as Category 'B' projects and 'therefore, require prior Environmental Clearance from State Environment Impact Assessment Authority (SEIAA). In this connection, M/s BCPL submitted an application along with filled up 'Form I' along with Pre-Feasibility Report in the prescribed format to SEIAA, Bihar on 05.03.2020 vide proposal No. SIA/BR/IND/50831/2016 for obtaining approved TOR for preparation of EIA/EMP Report and grant of Environmental Clearance for its proposed expansion project.

The proposal was considered by the State Expert Appraisal Committee (SEAC), Bihar in its meeting held on 21st May.'2020 to determine the Terms of Reference (TOR) for preparation of EIA/EMP Report for obtaining Environmental Clearance in accordance with the provisions of the EIA Notification 2006 and amendments thereof. Accordingly, based on recommendation of SEAC, Bihar, SEIAA has granted TOR vide F. No. SIA/3(a)/220/16/II/20 dated 29.07.2020., with mentioning the Standard, Specific and Additional TOR for preparation of EIA/EMP Report. Standard, Specific and Additional TOR issued by SEIAA/SEAC, Bihar and their compliance in EIA Report is enclosed in the beginning of this EIA/EMP report.

2.0 Project Location and Environmental Sensitivity

PARTICULARS	*DETAILS*
• Location	**Vill. Mahadeopur Phulari, Block : Bihta Dist. Patna, Bihar**
• Latitude	$25^0$34'46.32"N
• Longitude	$84^0$52'0.09"E
• Elevation above mean sea level	**51 m.**
• Total Plant Area	**10 Acres (40468.6 Sq. M.)**
• Nearest Railway Station	**Bihta (2 Km.)**
• Nearest Highway	**NH – 30**
• Nearest Major City	**Patna (20 km.)**
• Nearest River	***River Sone (6 Km.)***
• National Park, Reserve Forest	***Not exist within 10 km. radius***
• Wildlife Sanctuary	
• Biosphere Reserve, Hill & Valleys	

3.0 Salient Features of the Project

<table>
<tr><td>a) Land Availability</td><td>:</td><td colspan="4">- Total Land: 10.0 Acres

BCPL owns a total land of 10.0 Acres under leasehold basis. Ample space is available for plant expansion and setting up of expanded induction furnace & re-rolling mill within the existing premises and there will not be any need to purchase additional land. All necessary infrastructures are available in the existing plant premises. No alternate sites have been considered for the proposed expansion project, the land is already used for industrial purpose. It is owned by the BCPL under lease agreement.</td></tr>
<tr><td rowspan="3">b) Capacity</td><td rowspan="3">:</td><td>Facilities</td><td>Existing</td><td>Proposed Expansion</td><td>TOTAL Capacity</td></tr>
<tr><td>Induction Furnace</td><td>64350 MT/Annum</td><td>85650 MT/Annum</td><td>150000 MT/Annum</td></tr>
<tr><td>Re-rolling Mill Furnace</td><td>60000 MT/Annum</td><td>120000 MT/Annum</td><td>180000 MT/Annum</td></tr>
<tr><td>c) Production Details</td><td>:</td><td>MS Ingot/Billet</td><td>150000 TPA</td><td>TMT Bar/Rod</td><td>180000 TPA</td></tr>
<tr><td>d) Solid Waste Generation</td><td>:</td><td colspan="4">- Iron Slag : 15000 TPA
- End Cuttings : 5445 TPA</td></tr>
</table>

e) Raw Materials	:	**ITEM**	**Requirement** *in MT / Annum*	Source
		Steel Scrap & CI / Pig Iron	9000	Jharkhand (Ramgarh, Bokaro, Jamshedpur, Dhanbad)
		Sponge Iron	144000	
		Pig Iron	27000	
		Ferro Alloy, FeSi	0.04	
f) Power	:	16500 KVA from SBPDCL		
g) Source of Water	:	Own Borewell		
h) Water Requirement	:	80 M^3 / Day		
i) Total Cost of Expansion Project	:	Rs. 1565.0 Lakhs		

4.0 Associated activities required by or for the project

Raw Material

Product wise raw materials requirement for the proposed project, source of raw materials & its transportation is mentioned in table below;

ITEM	**Input Qty.** *in MT / Annum*	Source	Mode of Transportation
Steel Scrap & CI	9000	Jharkhand (Ramgarh, Bokaro, Jamshedpur, Dhanbad)	By Road through closed trucks
Sponge Iron	144000		
Pig Iron	27000		
Ferro Alloy, FeSi	0.04		

5.0 Technology and process description

Manufacturing Process Details

It is proposed to increase the capacity by replacing 2 old furnaces of 5 Ton with 2 new induction furnace of 15 TPH capacity with Continuous Casting Machine (CCM) and modernization of existing 2 nos. rolling mill for additional production of 85650 MT/Annum MS Billet & Re-rolling Mill for additional production of 120000 MT/Annum TMR Bar/Rod.

MS Ingot / Billet Manufacturing Process

Procured raw materials are charged into the induction furnace to ensure optimum utilization. Carbon in the form of petroleum coke, breeze coke, is charged in to the furnace for attaining necessary level of carbon in the process. Once the minimum

temperature of the furnace is reached, sponge iron is charged in small batches and the slag formed in the process will be removed from time to time. As soon as the charge is completely melted, necessary Ferro Alloys and De-Oxiders are added in required amount is added to maintain the desired quality and composition of the molten metal.

The temperature of liquid metal is allowed to rise in the furnace till the correct pouring temperature is achieved which is checked with the help of Immersion Pyrometer. The hot metal is poured with the hydraulic system in the preheated ladle after adding certain fluxes so that the temperature is maintained at about 1600 degree centigrade. Ladle is then carried by EOT charge to the Concast machine and kept above the tundish of the Concast Machine (Machine equipped with moulds, secondary cooling segments, withdrawal and gas cutting units, dummy bar insertion system, run out roller table and cooling bed).

The bottom of the ladle is opened by hydraulic system and hot metal starts pouring out into the Concast Machine. Through tundish, it passes through copper moulds. Copper moulds give the particular desired shape. During casting operation, the metal level in the mould is maintained within predetermined limits by adjusting the flow of metal in to the mould or by withdrawal speed. To initiate casting, a dummy bar is inserted into the bottom end of the mould, while the other end of the dummy bar is held by withdrawal/ straightening rolls when the molten steel at the correct temperature reaches the stipulated level inside the mould, the withdrawal rolls and mould reciprocating unit are operated. The cooling water circulation through the mould (primary cooling) and in the secondary circuit started a few minutes before the actual casting operation. The dummy bar is withdrawn followed by the hot solidify billet.

The cooling water circulating around the mould carries away enough heat from the liquid steel to produce a solid outer skin of sufficient strength to safety envelope the liquid portion at the interior that will solidify by the secondary cooling, which consist of spraying of water on the body of the billet. Before beginning to withdraw the dummy bar it must be insured that the outer casing of the billet is strong enough otherwise a rupture in the skin may occur resulting in a break out which releases the molten metal and forces a shut down of the operations. Thus, the important parameters are temperature of liquid steel, rate of primary and secondary cooling, mould reciprocating characteristics, which all influence the casting rate and the quality of the casting. The solidified billet further passes through straightening machine, cut to required length and sent to the cooling bed through the roll conveyer

system. The total system requires soft water for cooling of copper moulds. Sized billets are lifted by crane to finishing yard for inspection and storage / dispatch

Re-rolling Mill Manufacturing Process

Rolling is a process of converting the shape of feed stock into desired finished section in hot condition by passing the material between a pair of grooved rolls and providing suitable draft at various stages. The whole operation has to be conducted at a particular temperature range and within a limited time span.

M. S. Ingots / Billet after shearing to definite length will be charged from one end to gas fired reheating furnace by a pusher and discharged at the other end after being heated and soaked to desired rolling temperature level of 1200°C.

M. S. Ingots/Billets will be first rolled in the roughing mill train by following to & fro rolling using both bottom and top passes as per requirements, the bar will be then allowed to pass through intermediate mill train over repeater located between stands. The bar coming out of 4^{th} stand of intermediate mill shall be allowed to enter to the first finishing mill train. 8mm hot rolled deformed bar will be finished from the last stand of continuous mill train. 10 and 12 mm diameter bars will be produced from preceding stands. The hot rolled deformed will be then allowed to pass through special water cooling pipe section for production of TMT bar. The bar thus produced will be cut to suitable length by shear and will be received at cooling bed in straight length. The bars from cooling bed shall be subsequently sheared to definite commercial length for storage/shipment.

6.0 Existing Baseline Environment Scenario :

Baseline environment data for all the components has been collected during the period Dec'2020 – Feb'2021. The detail findings are here as under;

[i] *Meteorology :*

The daily average temperature was recorded to be in the range of 16.7 – 18.5 ºC during the study period. The maximum reading was found to be 31.0 during Feb'2021 and the minimum was found to be 5.4 ºC during Jan.'2021. The average value of temperature was computed to be 17.5 ºC.

During the study the average relative humidity was found to be in the range of 65 – 73%. The minimum values and maximum value was found during Feb'2021. The average value of Relative Humidity was computed to be 69.3%.

No rainfall was observed during the study period.

The wind is predominantly blowing from W & WNW direction. The wind speeds are of the range of 1– > 6 m/sec. and the calm condition is 13.3 % during the study period. The seasonal wind rose diagrams have been provided in Figure 3.10. in Chapter-3

[ii] *Demographic Profile*

Total population in the Bihta CD Block in accordance to the 2011 census data is 840265 persons, in 137142 number of households. The total male population is 442406 and total female population is 397859. It is mainly dominated by the rural population.

The Scheduled Caste (SC) population is 143252, out of which 74676 are males and 68576 females. The Scheduled Tribe (ST) population is 792, out of which 446 are males and 346 females. The total Scheduled Tribes population is very less.

The prevailing sex ratio in the study area is 899 females per 1000 males.

[iii] *Socio Economic Profile*

Agriculture is the one of the main sources of income in the study area. About 56.2% of the total population is farmer. 18.9 % of the total population has been found to be working as agricultural labourers. About 12.2 % of the total population has been in to trade and commerce**.**

[iv] *Topography and Land Use*

Topography of the study area is more or less flat to uneven, with surface level variation of about 1 m. The average height of the ground surface at the proposed plant site is about 53 m. above mean sea level (MSL). Project site falls under Gangetic plains, which is a typical fore deep basin formed due to collision of India and China plates. The present pediogenic and sedimentation processes in this basin are essentially the continuation of those prevailing since Mid Miocene.

[v] *Water Quality*

8 ground water samples & 2 surface water samples were collected & analyzed from the study area.

Ground Water Quality

All the water samples were bearing an agreeable taste. The colour of all the water samples was found to be <5 Hazen unit. Odour of all the water was unobjectionable.

The water samples were found to be free from contaminations due to Fluoride & Boron. The dissolved solids level in the water samples were found in the range of 398– 460 mg/l., which is very much in the permissible limits. The water sample from *Vill. Sadisopur was* having the minimum TDS while maximum dissolved solids were found at Maner.

The chlorides were found to be in the range of 18.0 – 34.0 mg/l. The Sulphates were found in the range of 14.6 – 34.8 mg/l. Total hardness values in the range of 272 – 324 mg/l. It is very much within the permissible limits of IS 10500:2012. Total Alkalinity values were in the range of 292– 352 mg/l.

Values of Iron are in range of 0.15 – 0.29 mg/l. & values for Zinc are in range of 0.27 – 0.67 mg/l.

In the study area at two places namely, Maulanagar & Maner, Conc$^{n.}$ of Arsenic in ground water is found to be higher than the standards of Drinking Water as per IS 10500:2012.

All other parameters have been found to be within the permissible limits prescribed under the IS : 10500 :2012 for drinking water.

Surface Water Quality

The surface water can be best used for Irrigation and domestic purposes.

[vi] *Ambient Air Quality :*

To ascertain the baseline Ambient Air Quality status of the study area, monitoring of AAQ was conducted at 8 locations around the project area. Summary results are as under ;

Stn. No.	Location Name	24-hourly average concentration (µg/m^3)									
		PM_{10}		$PM_{2.5}$		SO_2		NO_X		CO	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
A 1	Project Site	51.8	83.1	33.9	54.6	12.1	16.5	29.8	40.2	392.3	864.5
A 2	Bihta	66.2	112.6	41.1	66.1	16.2	24.8	38.3	56.6	215.7	1091.0
A 3	Vill. Sadisopur **(Downwind Direction)**	60.2	88.8	35.6	52.5	8.6	14.1	26.2	43.4	210.4	720.4
A 4	Vill. Maulanagar	35.1	64.1	20.7	37.8	7.8	11.6	23.0	37.4	26.9	130.5
A 5	Maner	56.2	104.1	36.4	66.9	7.8	12.4	33.3	49.3	183.3	927.4
A 6	Vill. Katesar	41.8	66.2	25.0	39.6	8.4	13.2	16.4	29.9	32.4	140.2
A 7	Vill. Lakshmantola	37.6	58.2	22.0	34.0	6.4	10.2	21.1	34.0	42.9	208.1
A 8	Vill. Dariyapur	45.7	64.7	20.1	38.7	6.8	10.4	18.7	28.4	39.7	192.6

It can be observed from the above table the AAQ status around the project area is well within the limits of NAAQS, 2009 except at 2 locations due to various industrial operations in Bihta, heavy traffic movement in study area and operation of brick kilns at Maner.

[vii] *Ambient Noise Quality :*

Noise level readings were recorded in eight locations spread over, in the 10 km radius centering the proposed unit.

Noise levels were recorded by the use of a digital noise level meter. The instrument was calibrated before and after each set of readings. The monitoring was carried out on 24-hourly basis and the hourly Leq values were derived and reported.

The maximum average daytime L_{eq} was found at Project Site i.e. 62.8 dB(A) and maximum average night time L_{eq} was also found at Project Site i.e. 48.8 dB(A). The maximum values may be attributed towards the nearby commercial activities and traffic movements. The minimum average value for day time and night time was found at *Vill. Dariyapur* i.e. 35.3 dB(A) and night time 24.5 dB(A) at Lakshmantola respectively.

[viii] *Soil Quality :*

Soil samples from 5 locations covering a radius of 10 km were collected and analyzed. The study was designed to assess the existing soil quality around the proposed site. The texture of soils are predominantly sandy loam with clay loam at places with low to medium nutrient status. The pH and conductivity of all the soil samples are within the acceptable range.

Sensitive Ecosystem:-

No ecologically or otherwise sensitive areas like historical places, archaeological monuments, wetlands, hill resorts, beach resorts, health resorts, biosphere reserves, national parks and wildlife sanctuaries are present within 10 km radius of the project site. No endangered species of plants and animals are found in the study area.

7.0 Environmental Impacts of Proposed Expansion Project ;

There are two sources from which the environment of the area can be affected if suitable control measures are not strictly applied. These are, discharge of waste water either on land or in surface water bodies and emissions from the stack. Both these two aspects have been taken into consideration while envisaging the proposed expansion project. After proposed expansion new industrial waste water will be generated or discharged outside project premises. Domestic wastewater will be discharge through septic tank followed by soak pits inside the project premises.

New Induction Furnace & re-rolling mills will be equipped with fume extraction system with Dust collection system for minimizing air pollution load.

However, Air Quality Impact prediction shows that after proposed expansion predicted incremental GLCs of Pollutants due to proposed expansion project is not found to be significant to add up on the existing ambient air quality. However, the existing & proposed air pollution control systems will also improve the existing ambient air quality and help in bringing down the concentrations in ambient air quality.

Moreover, existing green belt will be made more extensive with plantation of additional Dust controlling species for controlling dust emissions.

8.0 Solid Waste Generation and Management

Solid Waste Generation	*Generation (TPA)*	*Management*

Solid Waste Generation	*Generation (TPA)*	*Management*
Induction Slag	15000	40-50% of generated slag will be crushed in slag grinding unit inside the premises and reused in induction furnace and balance slag will be sold to brick manufacturing units.
End Cuttings	5445	End Cuttings from re-rolling mills will be recycle & reuse in MS Billet production within premises.

9.0 Impact on Socio Economic Status

Proposed expansion project may change socio economic condition of the nearby areas. As there will be flow of financial and material resources, there remains a large possibility of growth of population in the business, trade, commerce and service sector. The large inflow of financial and material resources would contribute towards changing the socioeconomic environment of the areas as this would introduce a mixed culture emphasizing urban traits in place of traditional, prevalent rural customs. The economic, cultural and technological changes are likely to induce social stress and ethical changes. All these would change the local life style.

10.0 Environmental management plan

A comprehensive Environmental Management Plan has been prepared under which the unit will be adopting measures in preserving the environment from degradation. Important among those are Green Belt Development Plan which would act as Noise damper also. The environmental monitoring program on all components of environment has been drawn and indicated in the EMP in detail which is a part of EIA.

BCPL has adopted all measures for better environmental management. Fume Extraction system with dust collection system is installed with existing furnaces for better air environment, because man needs inhalation every moment, so also is Flora and Fauna dependent on it. BCPL has developed & maintaining green belt all around the project premises for better environmental management.

An amount of Rs. 40 lakhs have been allocated for Environment Management after proposed expansion. Approx. Rs. 16.00 lakhs will spend on CSR activities in phase wise manner after proposed expansion.

11.0 Occupational Health and Safety

BCPL will adopt all precautionary measures to reduce the risk of exposure of employees to occupational safety and health hazards. Pre & post medical check-ups will be done of all the employees. Employees will be regularly examined and the medical records will be maintained for each employee.

12.0 Rainwater Harvesting

Keeping in mind the importance of water, it is proposed or being conserve water by rainwater harvesting by which the subsoil water condition / moisture content is maintained / improved to a great extent. Also it is proposed or being harness rainwater from the roof area by collecting the same in a rainwater collection tank of suitable capacity and will be recharged to ground water aquifers.

13.0 Conclusion

- No additional land is being acquired for the proposed expansion project.
- No Industrial Waste water will be generated due to operation of proposed expansion project.
- Ground water characteristics are also well within the limits of IS 10500:2012.
- Emissions from Stacks of existing furnaces are within the limits of E(P) Rules.
- Average Ambient Air Quality within the project premises are within the National Ambient Air Quality Standards (Nov.'2009).
- Ambient Noise Level of the project area is also well within the limits for Industrial Area.
- Generated solid wastes (Induction Slag) from project operation is being re-utilized at the source end.
- Good green belt & landscaping is being maintained within the premises.

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