

Compliances to points raised in 4th meeting of EAC, industry-I during EC presentation of M/s Shakambhari Ispat & Power Ltd.

i) The project consultant M/s Mecons should be invited for providing details on the technical aspects of the project during consideration of the project.

M/s Mecon has been requested and they have agreed to provide detail technical aspects of the project during consideration.

ii)The subject of project to be changed as this is an integrated steel project.

In fact the proposal is for Integrated Steel Project. It has been written on cover page of EIA & EMP report but somehow it has been slipped to mention in PPT presentation. The Proposed expansion of M/s SIPL is for 0.5 MTPA Integrated steel project out of which 0.3 MTPA will be converted to TMT bars & 0.2 MTPA will be sold as billets.

iii) Details regarding Electric load list and power consumption reduction per unit production should be submitted.

Electricity consumption per unit production has been considered as follows.

UNIT	Electric load list & power consumption
DRI	80 kwh/T of DRI
MBF	30 kwh/T of hotmetal
Ferro-alloy	2900 kwh/T of Fe-Mn 4000 Kwh/T of Si-Mn
Induction Furnace	594 kwh/T of liquid steel
Pellet plant	32 kwh/T of pellet
Sinter Plant	100 kwh/T of sinter
Coal washery	15kwh/T of feed coal
IO Beneficiation Plant	35 kwh/T of beneficiated ore
C C M Plant	40 kwh/T of billet
Lime Plant	24 kwh/T of feed
Hot Rolling mill	150 kwh/T of finished product

Following power/energy reduction measures have been proposed for the proposed expansion project.

- i. In DRI kiln waste heat recovery has been proposed to generate 34 MW power so that draw from outside will be reduced. To increase power generation through WHRB provision has been made to burn carry over carbon and carbon monoxide

from DRI kiln in After Burning Chamber by injecting air, thereby pollution is also controlled.

- ii. Medium frequency coreless IF has been proposed to take less time to melt the charge so that at least 10 heats per day can be achieved there by power consumption per ton of hot metal will be reduced.

Over heating of melt to be avoided by using proper level of charge and monitoring of temperature similarly switching on furnace without charge or with less charge to be avoided so that power consumption is not increased.

- iii. In MBF top gas pressure recovery turbine has been proposed which can generate up to 35kw power per ton of hot metal produced (p-57 EIA report).

Pulverised Coal injection through and burning of BF gas of MBF stoves will save coke and power.

MBF slag granulation through high pressure water jet on red hot slag will save power needed for crushing it for cement plant.

- iv. Direct HM charging to IFS shall save >100 kwh per ton of production.
- v. 100% continuous cast to be feed to hot rolling mill so that reheating can be avoided and energy can be saved. There by about 10kwh per ton of Rolled product shall be saved.
- vi. Solar lighting on internal roads LED bulbs and solar heating of water and rain water harvesting steps have been taken to reduce power consumption.
- vii. In AFBC air consumption has to be reduced to minimum so that 6% Oxygen maximum in flue gas can be maintained and sensible heat through flue gas can be reduced. This will save power consumption of air blower.
- viii. Air cool condenser for power plant has been proposed for which water consumption there by reduction of power cost will be achieved.
- ix. Variable Frequency Drive ID fans and blowers can give maximum output with low power consumption. There by overall 1% power shall be saved.
- x. Recycling of about 98% waste water after cleaning has been proposed to reduce fresh water pumping cost from river thus power consumption can be reduced.
- xi. Silicon-controlled rectifier will be used to dimmer high voltage of ESPs.
- xii. By installing Capacitor Bank power factor to be increased to 0.99

Energy balance for various units based on mass balance is as follows.

Material Balance for Existing & expansion 3x100 TPD & 4x350TPD DRI:

Input in TPA	Output in TPA
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Pellet	5,82,000	DRI	5,44,000
Iron ore lumps	2,06,800	Char + accretion	81,600
Coal	6,52,800	Ash	2,37,040
Air injection & combustion	17,78,880	Flue gas	24,04,480
Total	32,53,120	Total	32,53,120

DRI kiln energy balance per ton of DRI produced (20°C to 1065°C)

F grade coal with 30%C, 30% VM and GCV-3.0 G.cal/T is considered

INPUT in G.cal	OUTPUT in G.cal	
Heat from VM of coal – 0.800	1) Heat loss with Flue gas	1.108
Heat from reduction - 0.758	2) GCV with char	0.240
Heat from excess coal- 0.300	3) Sensible heat with char & ash	0.116
	4) Loss to vaporise moisture in coal	0.074
	5) Surface radiation, convection and loss through door leakage	0.180
	6) Sensible heat with DRI	0.124
	7) Un identified balance heat loss	0.016
Total 1.858	Total	1.858

Electrical energy consumption per ton of DRI 80x2500 ~ 0.2Gcal

Pellet consumed per ton of DRI 580000/540000 = 1.07T

Energy consumed per ton of DRI through pellet 1.07x0.292= 0.312 Gcal

Total energy in one ton DRI =**2.37 Gcal**

Material balance of 1x20m² Sinter plant

Input in TPA		Output in TPA	
S.G Iron ore fines	1,80,000	Sinter	1,94,800
Coke breeze	13, 860	Sinter return	83,228
Dolo/lime & lime dust	24,300	LOI	23,360
Return Sinter	83,228		
Total	3,01,388	Total	3,01,388

Energy consumption per ton of sinter

Coke breeze 13,860/1,94,8000 @ 7.0 Gcal/T = 0.49 Gcal

Electrical energy @100 kwh/T ~ 0.25 Gcal

Total energy with one ton of sinter = **0.74 Gcal**

Input in TPA		Output in TPA	
Beneficiated Iron ore	3,93,375	Pellet	5,82,000
Iron ore dust	2,06,625	Dust	38,600
Coke breeze/coal	12,000	-	-
Bentonite	6,000	-	-
Dolo	12,600	-	-
Total	6,20,600	Total	6,20,600

Energy consumed per ton of pellet

Coke breeze/coal consumed per ton of pellet $12000/582000=0.02T$

Heat energy consumed per ton of pellet @ 6.0Gcal/T = 0.124 Gcal

Electrical energy consumed per ton of pellet @32kwh/T ~ 0.080 Gcal

Energy consumed per ton of Beneficiated Iron Ore @ 35kwh/T ~ 0.0875 Gcal

Total energy consumed per ton of pellet = **0.292 Gcal**

Material Balance for 350m³ MBF:

Input in TPA		Output in TPA	
DRI	2,10,776	Hot metal	3,15,000
Sinter	1,94,000	BF gas	7,35,651
Coke	1,41,120	Moisture as steam	1,70,657
PCI	23,520	BF dust & sludge	1,51,200
Dolo/Lime	35,280	BF slag	94,500
Air + Oxygen+ moisture	4,59,112	-	-
BF gas	4,03,200	-	-
Total	14,67,008	Total	14,67,008

MBF energy balance per ton of hot metal produced from MBF

INPUT in G.cal		OUTPUT in G.cal	
Coke	0.48T, GCV @7.0G.cal/T 3.36	Heat loss with HM	0.26
PCI	0.08T, GCV @3.0G.cal/T 0.24	Heat loss With Slag	0.14
BF gas	1000m ³ ,@ 0.87/1000 m ³ 0.87	Sensible heat with BF gas & dust	0.05
		Heat absorbed by reaction	0.70
		Heat loss with GCV of 2385 m ³ BF gas	2.07
		Heat loss with 5%C in HM	0.35
		Heat loss through Surface radiation & Convection	0.90
Total	4.47	Total	4.47

Net heat energy consumed per ton of HM (4.47-2.07) = 2.40 Gcal

Electrical energy consumed per ton of HM @30kwh/T ~ 0.075 Gcal

Energy consumed per ton of HM through sinter = 0.496 Gcal

Total energy consumed per ton of HM through DRI

$2,10,776/3,15,000 \times 2.37 = 1.586\text{Gcal}$

Total energy per ton of HM = **4.557 Gcal**

Material balance of SMS (1x8T, 2x15T, 2x35T & 4x25T IF)

Input in TPA		Output in TPA	
HM	3,15,000	Liquid steel	5,32,480
DRI	3,33,224	Slag	69,222
Fe-Mn	1,843	Fume	49, 701
Si-Mn	1,336		
Total	6,51,403	Total	6, 51, 403

Energy consumed in SMS

HM used per ton of liquid steel $3, 15,000/5, 32,480 = 0.59\text{T}$

Energy consumed per ton of cs through HM $=4.557 \times 0.59 = 2.688\text{Gcal}$

Energy consumed per ton of cs through DRI $3,33,224/5,32,480 \times 2.37 = 1.48 \text{ Gcal}$

Energy consumed through Ferro=alloys, 0.006T/Tcs

@ avg. 3350kwh/T $\sim 8.37 \text{ Gcal/T} = 0.50 \text{ Gcal}$

Electrical energy consumption in IF is 0.590 MWH/T $\sim 1.475 \text{ Gcal}$

Energy consumed per ton of liquid steel = **6.143 Gcal**

Electrical energy consumption in CCM @ 40kwh/T ~ 0.10 Gcal

Electrical energy consumption per cub.m Oxygen

$1000/225 = 4.4 \text{ kwh/ m}^3 \sim 0.011\text{Gcal}$ & consumption @ $30\text{m}^3/\text{Tcs} \sim \mathbf{0.33\text{Gcal}}$

Hence energy consumption per ton of crude steel billet in proposed steel plant is 6.573 Gcal

Rolling mill energy

Electrical energy consumption in hot rolling mill is 150kwh/T of product $\sim \mathbf{0.375 \text{ Gcal}}$

Hence energy consumed per ton of finished product is estimated to be **6.948 Gcal**

After commissioning of unit and energy audit the consumption can be further reduced.

Energy balance for Power Plant:

AFBC:	Power generation(in MW)
Power from 55.27 TPH Middling from coal washery	48.23
Power from 7.75 TPH Dolchar from DRI kilns	05.07
Power from 14.45 TPH Fines from raw coal	13.13
Total	66.43
Internal Consumption in power plant@ 10% (-)	06.64
Net power available from AFBC	59.70
WHRB:	
4X350 TPD DRI	28.00
AFBC(existing)	06.00
WHRB(existing)	06.00
Total	99.00

After commissioning of unit & energy audit the energy consumption per ton of production will be further reduced.

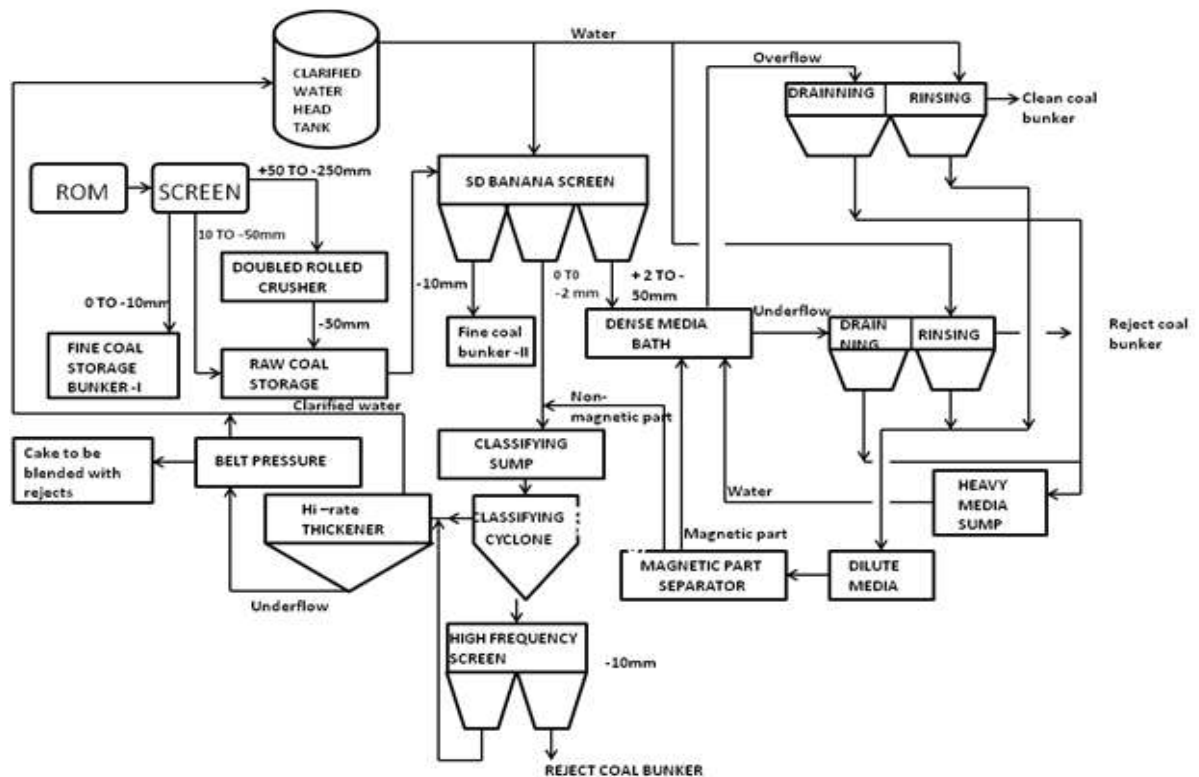
Measures to reduce Fuel energy:

- Periodic repair of DRI refractory to reduce surface heat loss.
- Utilization of char to generate power in AFBCs
- PCI & Oxygen injection in BF to reduce coke consumption.
- Utilisation of BF gas in MBF & Surplus in lime calcinations burner to reduce fuel consumption.
- Recuperate to recover heat from BF gas to heat up air for BF to reduce fuel consumption
- Insulation of steam lines and other hot surfaces like boiler drum, de aerators etc can reduce heat loss and save energy.

iv) A note on Secretarial for Industrial Assistance (SIA) registration.

The SIA registration has been received online and evidential document is attached herewith to be submitted before MoEF as annexure-I

v) Capacity calculations for settling tanks/pond should be furnished.



No settling pond has been envisaged for Coal washery as can be seen from flow sheet given. Hi-rate thickener will receive effluent, flocculent dosing to be done. Solid collected at the bottom of thickener will be pumped to a multi roll belt press for reclamation of water. Dry cake from belt press will be blended with rejects and given for briquette making. Clean water from belt press will join with over flow from thickener and will be recycled to washery. No water will be discharged outside.

Tailing pond for 0.63 MTPA Iron ore beneficiation of M/s SIPL

M/s Shakambhari Ispat & Power Ltd. proposes 0.63 MTPA Iron Ore beneficiation plant. From the wet beneficiation of fine Iron ore of 1968.75 TPD about 738 TPD iron ore tailings with 40.67% of Fe will be generated which requires tailing pond for storage of iron ore tailing or its utilisation.

As fine iron ores from different mine end will be procured for beneficiation process cylinder test or sedimentation test of blended fines has to be done. Without availability of laboratory report a thumb rule minimum 10 Ac/1000TPD tailings has been applied for deciding tailing pond surface area with 5days retention time of tailing in pond; and minimum 4.5 Ha of land has been envisaged to have the tailing pond. As tailing pond Iron will be future source of raw material for steel industries larger area depending on availability of land is preferred so that depth of pond can be minimised from safety point of view.

To minimise water consumption maximum recycling has been proposed by providing tailing thickener before tailing pond. 945m³/day of contaminated water carrying 738 TPD tailings will flow to tailing thickener in which flocculants will be added to facilitate

settling. Overflow from thickener will be recycled to process. Under flow from thickener will flow by gravity to tailing ponds.

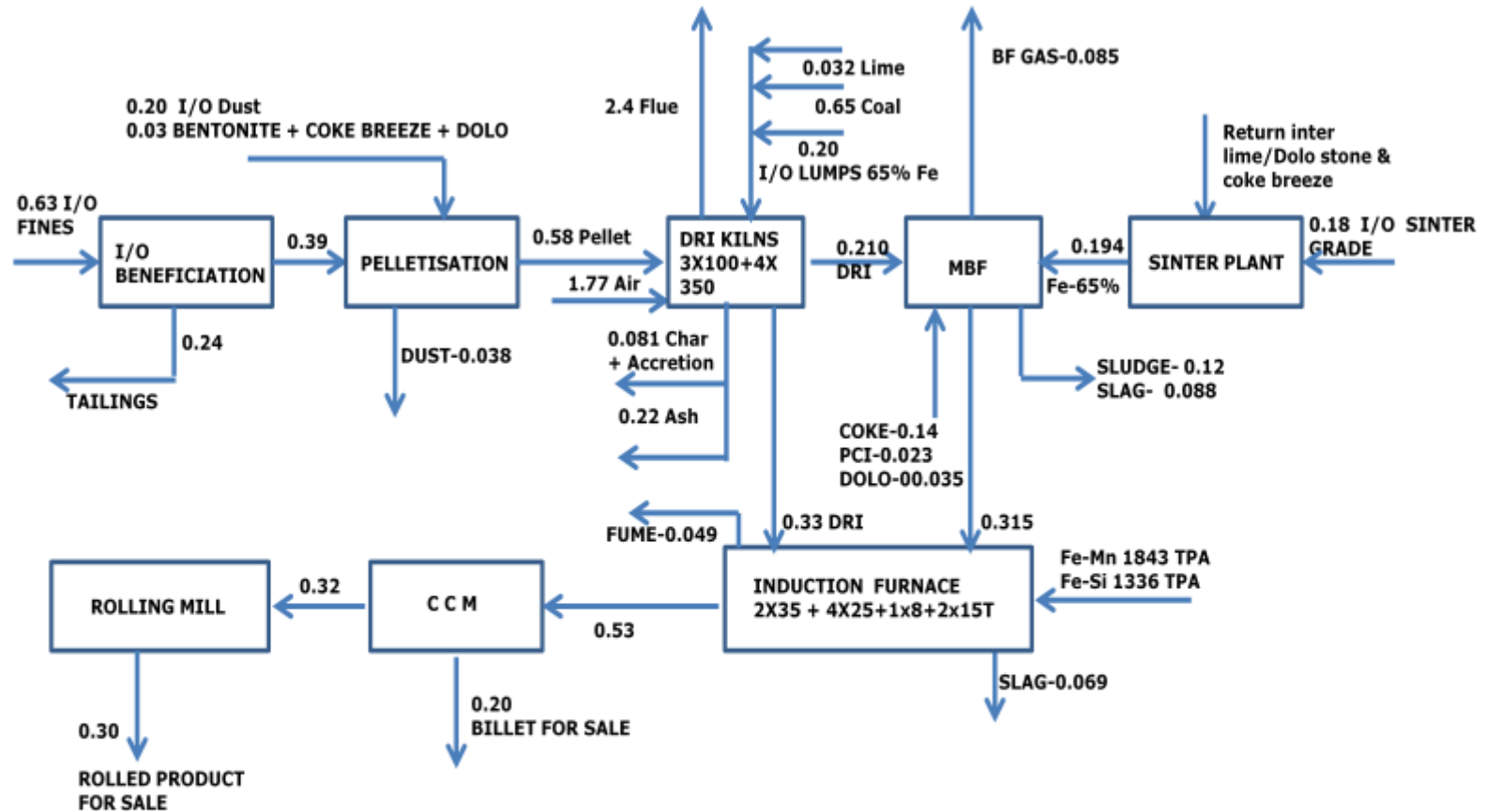
The tailing slime in pond moves in the down gradient direction towards the decantation tower. The coarser particles settle near the inlet point and relatively finer particles settle at larger distances. Channels are made in dry tailings to collect water.

Clean water from Concentrate thickener, Tailing thickener and tailing pond flow by gravity to process water sump from where it is recycled to system of beneficiation. The effluent water contains TSS & Iron and recycled back without any impact. No effluent is discharged to surface water source.

As tailings contain toxic oxides of Mn, Cr, Co, Ni & Zn along with Oxides of Silica and Alumina. Toxic elements leach to contaminate ground water and surface water also, hence low permeable pure clay with bentonite blended with it will be given as bottom layer of tailing pond over which HDPE layer will be given.

At present tailing pond has capacity to store tailing for two years without selling. But the company has plan to sale dry tailings to tile manufacturers so as to keep pond vacant to store tailings for longer period. Getting additional land acquired in future tailing pond area can be extended as tailings with 40% Fe content will be future raw material for steel plant, presently 45% has been the cut off limit.

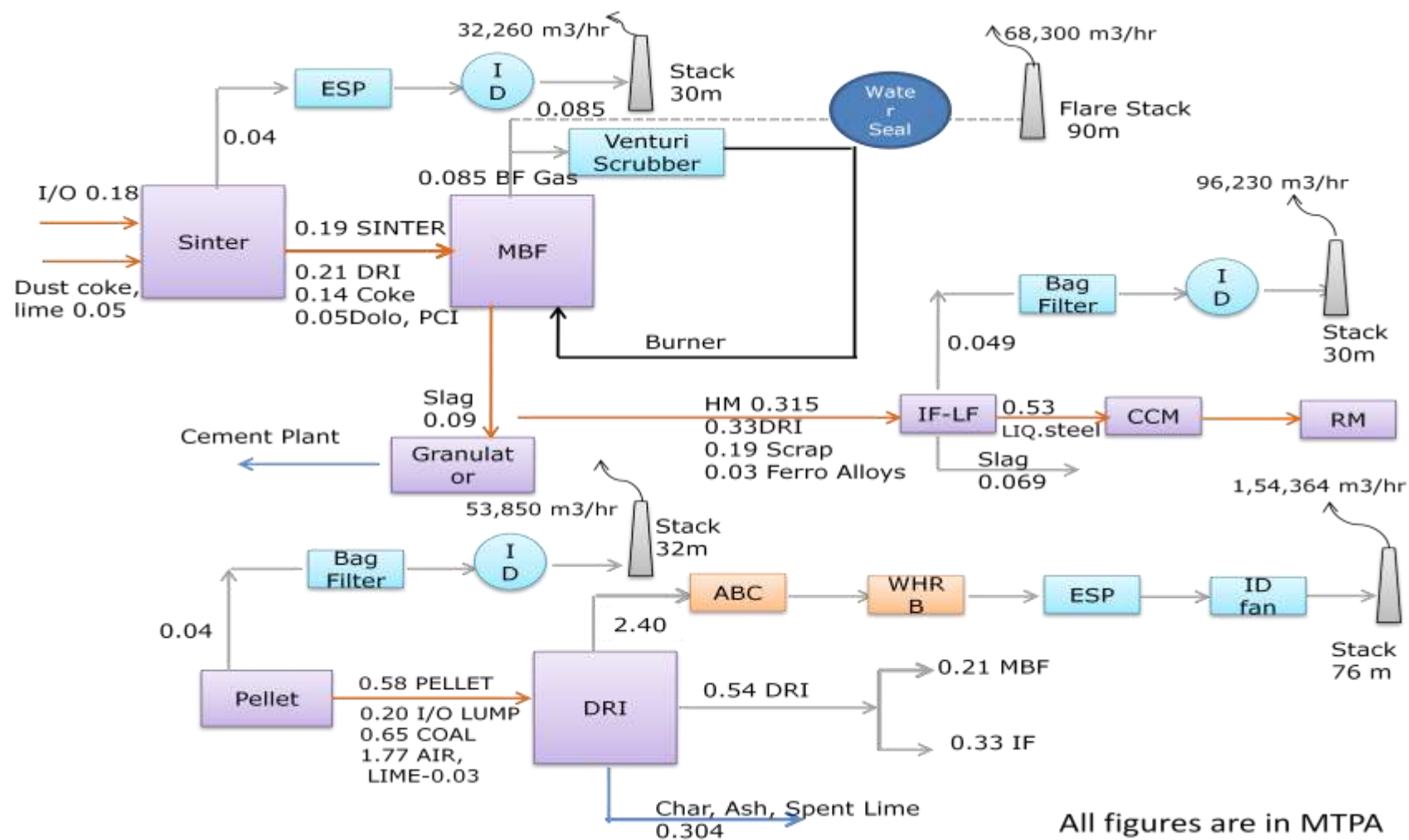
vi) Material balance diagram should be resubmitted

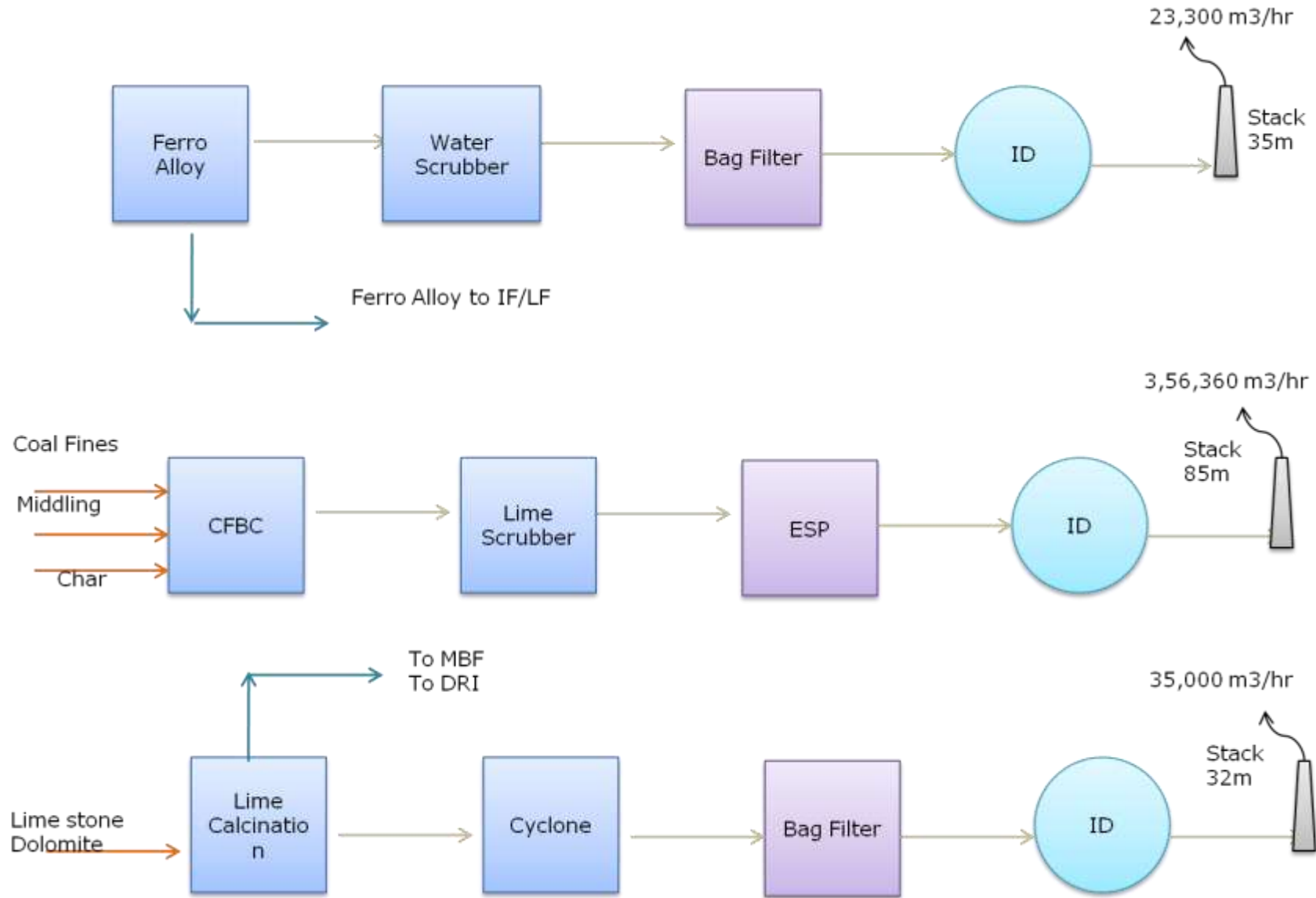


*ALL NUMERICAL FIGURES ARE IN MTPA

MATERIAL BALANCE FLOW SHEET--SIPL

vii) Details regarding proposed pollution control measures for the project along with details on the number of pollution control equipments provided for each unit proposed:





Control measures for PM, SOx and NOx

Air Pollutants						
Plant/Unit	Pollutants	Qty generated kg/day	Method used to Control/ and specifications/attach Separate Sheet to furnish Details	Estimated Post Control Qty of Pollutant		Number of units planned & Capacity
				Per Unit	Per Day	
DRI Kilns 4x350 TPD	Flue dust	725.75	4 nos of 3 field ESPs, 4 nos of ID fans, 2nos. of 76m stacks, bagfilter & 30m stack for material handling	0.1850kg	0.740kg	4
IF 2x35T	Flue dust	231.00	2 nos of bag filters, 2nos ID fans, 30m stack	0.1150 kg	0.230 kg	2
IF 4x25T	Flue dust	331.80	4 nos of bag filters, 4 nos of ID fans, 32m stack	0.0930 kg	0.332 kg	4
Sinter Plant 1x20 sq.m	Flue dust	29.38	one no 3 field ESP, ID fan, 30m stack	0.078 kg	0.078 kg	1
Pellet Plant 1x1870 TPD	Flue dust	907.20	one no. Bag filter, ID fan & 32m stack	0.129 kg	0.129 kg	1
CFBC 36 MW & 23 MW	Flue dust	342.14	One no ESP, ID fan & 85m stack	0.855 kg	0.855 kg	1
	SO2	115	Lime scrubber, 85m stack	0.684 kg	0.684 kg	
350 cu.m MBF	Flue dust	491.66	Ventury scrubber,90m stack			1
Fe-Mn Plant 2x12 MVA	Dirt & fume	41.7	Flame arrester, Bag filter, ID fan and 35m stack	0.028 kg	0.056 kg	2
Si-Mn Plant 2x12 MVA	Dirt & fume	41.7	Flame arrester, Bag filter, ID fan and 35m stack	0.028 kg	0.056 kg	2
Lime calcination Plant 250 TPD	lime dust with SO2 & NOx	75.17	Cyclone, Bag filter, ID fan & 32m stack	0.041 kg	0.041 kg	1

viii) Disposal of the solid waste plan should be submitted.

Solid Wastes utilization & disposal measures

Solid waste	Quantity in TPA	Utilisation/Disposal measure
BF slag	88,200	Granulated & sold to cement plant
BF sludge	1,41,120	Brick, ceramics, Roof tiles & cement clinker as clay substitute.
Iron ore tailings	2,36,250	Sale dry for tile making/land fill
Coal washery rejects	50,000	Briquette making
Fly ash	9,67,354	Brick, sale to refractory and ceramics, cement plant
Fe-Mn slag	31,590	Use in Si-Mn production
Si-Mn Slag	26,011	Sold to cement plant for production of alkali activated cement.
IF slag	49,862	River sand substitute, land fill
Dolchar	59,566	Use in AFBC for power generation
Dust & scrap	-	To be fully consumed in plant

This integrated iron and steel plant will consume huge amounts of ore, minerals, coal, fluxes and other raw materials and hence it will produce considerably large amount of solid waste. The DRI Kilns will produce considerable amount of dust and char. The steel melting shops and other downstream units will produce scrap, slag and dust where as the raw material handling and preparation plant will generate appreciable amount of dust and fines. The total amount of waste generated will be so large and thus if not managed properly, it will cause serious pollution problem.

Solid waste like kiln char shall be **reused** in FBC CPP. Scraps from SMS & Rolling mill and raw material fines shall be **recycled** to IF, EAF, Sinter Plant. Other non-hazardous disposable solid waste like kiln, ESP dust, Scraper sludge and SMS slag shall be disposed in low lying area & used in road making or sold to cement/brick manufacturing plants. The details have been dealt with in the chapter in Environment Management Plan. Thus it can be concluded that with the adequate solid waste management practices, the impact of solid waste on various attributes of environment like; air, water, soil, land, ecology and socio-economic aspects will be marginal.

Fly ash will be utilized in manufacture of Fly ash bricks by B S C refractories and ceramics. Residual iron from blast furnace and induction furnace slags will be **recovered** through magnetic separation and recycled to the process.

In this way the waste from proposed expansion steel plant will be minimized by **reuse/recycle/recover** process.

Solid waste generation of steel plant of the air, water, noise, soil, ecology & socio-economic conditions of the locality. The details have been dealt with in the chapter in Environment Management Plan utilized over a period of 5 years. In this steel plant, the plant will consume only the DRI, PIG iron.

In addition to above stated land permission has been taken from Parbelia colliery of Eastn coal field Ltd. to dump ash generated from sponge iron & CPP unit of 2B & 2C mines of Parbelia village which is about 2km from Project site.

B.S.C REFRACTORIES AND CERAMICS		Mob.: 9434071611 8145812111		
Jamuria Industrial Estate P.O. - Mondalpur, Ward No.- 13, Burdwan (W.B.) Pin - 713336				
AGREEMENT				
Ref. No.	Date			
This agreement hereinafter referred to as ("the Agreement") made on this the first day of May, Two Thousand Fifteen by and M/s. Shakambhari Ispat & Power Ltd., a company incorporated under the companies Act,1956 and having its registered office at Diamond Prestige Building, 41A, A.J.C.Bose Road, 8th Floor, Room No. 801, Kolkata 700017 hereinafter referred to as SIPL (which expression shall unless excluded by or repugnant to the subject or context be deemed to mean and include its successor or successors and permitted assigns) of the ONE Part and M/s B.S.C. Refractories & Ceramics, a partnership firm and having its Office at Jamuria Industrial Estate, P.O. Mandalpur, Ward No. 13, Burdwan - 713336 (which expression shall unless excluded by or repugnant to the subject or context be deemed to mean and include its successor or successors and permitted assigns) of the OTHER Part Whereas, the First Party had offered "Fly Ash" to M/s B.S.C. Refractories & Ceramics generated from the Proposed AFBC Boiler at the Captive Power Plant of SIPL. The rate of the Fly Ash will be decided fortnightly. Whereas M/s B.S.C. Refractories & Ceramics shall arrange to place vehicle for lifting of the Fly Ash on daily basis and will pay the freight to the transporter/truck driver as per lorry receipt and at actual being the charges from Unit of SIPL, Neturia to the unit of M/s B.S.C. Refractories & Ceramics, Jamuria Industrial Estate, Burdwan, Vehicles carrying Fly Ash shall be emptied and release at earliest. M/s B.S.C. Refractories & Ceramics will utilize the Fly Ash towards manufacturing of Fly Ash Bricks at its factory at Jamuria Industrial Estate. Period of Agreement: This agreement shall remain in force for a period of 7 years from the date of Commissioning of the Proposed Captive Power Plant of SIPL. Dispute Resolution: That in the event of any dispute of difference between the parties in respect to this Agreement shall be settled by amicable negotiation between the parties failing which the same shall be decided by Arbitration in accordance with the provision of Arbitration and Conciliation Act,1966. In witness thereof the parties here to have executed this above written Agreement on the first day of May Two Thousand and Fifteen. <table border="0"><tr><td>Signed and delivered by the above B.S.C. Refractories & Ceramics. <i>Kailash Kumar Agarwal</i> Name: Kailash Agarwal Design: Partner Partner M/s B.S.C. Refractories & Ceramics</td><td>Signed and delivered by the above Shakambhari Ispat & Power Ltd. <i>Vinay Kumar Agarwal</i> Name: Vinay Kumar Agarwal Design: Director Director Shakambhari Ispat & Power Ltd.</td></tr></table> In presence of: Witness No. 1: <i>Ayush Agarwal</i> <i>Ayush Agarwal</i> Witness No. 2: <i>Smit Rautas</i>			Signed and delivered by the above B.S.C. Refractories & Ceramics. <i>Kailash Kumar Agarwal</i> Name: Kailash Agarwal Design: Partner Partner M/s B.S.C. Refractories & Ceramics	Signed and delivered by the above Shakambhari Ispat & Power Ltd. <i>Vinay Kumar Agarwal</i> Name: Vinay Kumar Agarwal Design: Director Director Shakambhari Ispat & Power Ltd.
Signed and delivered by the above B.S.C. Refractories & Ceramics. <i>Kailash Kumar Agarwal</i> Name: Kailash Agarwal Design: Partner Partner M/s B.S.C. Refractories & Ceramics	Signed and delivered by the above Shakambhari Ispat & Power Ltd. <i>Vinay Kumar Agarwal</i> Name: Vinay Kumar Agarwal Design: Director Director Shakambhari Ispat & Power Ltd.			

ix) Status of permission for fire and safety.


GOVERNMENT OF WEST BENGAL
OFFICE OF THE DIVISIONAL OFFICER "G" DIVISION
WEST BENGAL FIRE & EMERGENCY SERVICES
CITY CENTRE, DURGAPUR-16.



Memo No. FESG/ 243 /2011 Dated: 22/7 /2011

From : The Divisional Officer, "G" Division,
West Bengal Fire & Emergency Services,
City Centre, Durgapur-16.

To : Shakambhari Ispat & Power Ltd,
Vill: Madandih, P.O. Bartoria,
Dist. Purulia.

Subj: Issue of Final N.O.C. in favour of Shakambhari Ispat & Power Ltd,
Vill: Madandih, P.O. Bartoria, Dist. Purulia.

Ref : This office previous Memo No.233/2011, dated 18/7/2011

With reference to the above the undersigned has no objection to issue this Final N.O.C. in favour of Shakambhari Ispat & Power Ltd., Vill: Madandih, P.O. Bartoria, Dist. Purulia, under Section 11-C of West Bengal Fire Service Act and Rules 1950 (Amended up to date) subject to maintained the following conditions:-

CONDITION APPLIED

1. Maintenance/checking /testing of all fire safety installations shall be checked time to time.
2. Any nominated officer of this deptt. Shall enter and inspect the factory at any time between sunrise and sunset for ascertaining the contravention if any of Fire prevention and fire safety measures.
3. No residential house should be constructed within the factory premises.
4. Green view concept should be maintained as per environment act.
5. Violation of any recommendations which issued from this office vide no as depicted above this final N.O.C. shall be treated as cancelled.


Divisional Officer
"G" Division
West Bengal Fire & Emg. Services

x) Details of area under possession for existing and proposed plant should be submitted. Break up for the existing land use and the proposed usage should be submitted

xi) Acquisition of land along with consent from the land owners should be submitted.

Total Land existing with breakup and proposed land with breakup.

Sl No	Facilities	Area in Ha	Status
1	Existing plant facilities	7.89	Acquired
2	Facilities for Expansion	20.46	2.75 Ha yet to be Acquired
3	Raw materials and finished good storage	3.24	Acquired
4	Railway siding	6.10	yet to be Acquired
5	Raw water storage & Internal roads	2.42	Acquired
6	Waste material dumping yard including tailing pond.	6.20	Acquired
7	Rain water harvesting area	1.70	Acquired
8	Green belt area	23.68	1.35Ha yet to be Acquired
	Total	71.69	

In addition to above stated land, the company has been allotted 10.2 Ha of land out of total area of 247 Ha in Dubeshwari mine area 23⁰ 39'38"N and 86⁰ 49'30"E and 2B & 2C mines of Parbelia area which is again covering 2730 Ha of abandoned mine area, where permission has been obtained from Eastern Coal fields Ltd to dump ash generated from SIPL unit.

xii)Biodiversity data should be presented.

Ecological studies are important aspects of Environmental Impact Assessment with a view to conserve environmental quality and biodiversity as animal and plant communities co-exist in a well organised manner but their natural settings can get disturbed by externally induced activities here the integrated steel expansion project of SIPL and once these setting is disturbed it may be impossible to restore it.

With this in view a detailed study of the area was undertaken in 10km radius area from proposed project site as centre. M/s Global Techno Enviro Experts Pvt, Ltd team visited the site and collected primary data

Panchet 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.

Primary data was collected through:

- Preparing a general check list of all plants encountered in the study area by visual observations

- Phytological studies was made using least count quadrate method and the quadrates of 100m² size was employed for study.
- Bird populations were studied by taking random reading at every location.
- Observing mammals, amphibians and reptiles; noting their cells, droppings, burrows, pugmarks and other signs a list was made.
- Local inhabitants were interviewed about their knowledge on local plants and animals in the area. Enquired about existence of rare and endangered species in the locality.

Secondary data was collected from:

- Local DFO
- Literature Review, Research & published papers

Floral Characteristics

The plants were surveyed, identified and taxonomical characters evaluated. The importance value indexes for identifying the characters were determined. The study included Quadrate method. Authenticated list is annexed.

List of Flora of the Study Area

<i>Local name</i>	<i>Botanical name</i>	<i>Family</i>
	Trees	
Akhatarua	<i>Sapium baccatum</i>	Euphorbiaceae
Amlaki	<i>Emblica officinalis</i>	Euphorbiaceae
Arjun	<i>Terminilia arjuna</i>	Combretaceae
Bahera	<i>Terminalia belerica</i>	Combretaceae
Bankatal	<i>Artocarpus integrifolia</i>	Moraceae
Bhadrasi	<i>Elaeocarpus lanceaefolius</i>	Elaeocarpaceae
Chalta	<i>Dillenia indica</i>	Dilleniaceae.
Chiloune	<i>Schima wallichii</i>	Theaceae
Dhabade	<i>Garuga pinnata</i>	Burseraceae
Dhawli	<i>Premna sp.</i>	Verbenaceae
Gamar	<i>Gmelina arborea</i>	Lamiacea
Gokul	<i>Alianthus grandis</i>	Magnoliopsida
Hatisura	<i>Heliotropium indicum</i>	Boraginaceae
Jalpai	<i>Elaceocarpus floribundus</i>	Elaeocarpaceae
Jam	<i>Syzygium cumini</i>	Myrtaceae

Jarul	<i>Lagerstroemia hirsuta</i>	Lythraceae.
Jeol	<i>Lannea coromandelica</i>	Anacardiaceae
Kadam	<i>Anthocephalus cadamba</i>	Rubiaceae
Kainjal	<i>Bischofia javanica</i>	Phyllanthaceae
Katus	<i>Castanopsis hystrix</i>	Fagaceae
Khair	<i>Acacia catechu</i>	Fabaceae
Kumbhi	<i>Careya arborea</i>	Lecythidaceae
Lahasune	<i>Aphanamixis polystachya</i>	Meliaceae
Lali	<i>Amoora spectabilis</i>	Meliaceae
Lampate	<i>Duabanga sonneratioides</i>	Lythraceae
Maina	<i>Tetrameles nudiflora</i>	Tetramelaceae
Malata	<i>Macaranga sp.</i>	Euphorbiaceae
Pakasaj	<i>Terminalia alata</i>	Combretaceae
Panisaj	<i>Terminalia myriocarpa</i>	Combretaceae
Parari	<i>Sterospermum colais</i>	Bignoniaceae
Sal	<i>Shorea robusta</i>	Dipterocarpaceae
Simul	<i>Bombax ceiba</i>	Bombacaceae
Sirish	<i>Albizia lebbek</i>	Fabaceae
Sissoo	<i>Dalbergia sissoo</i>	Fabaceae
Teak	<i>Tectona grandis</i>	Lamiaceae
Toon	<i>Toona ciliata</i>	Meliaceae
Totola	<i>Oroxylon indicum</i>	Bignoniaceae
Kapasi	<i>Acer campbelli</i>	Aceraceae
Maina	<i>Tetrameles nudiflora</i>	Tetramelaceae
Hartaki	<i>Terminalia chebula</i>	Combretaceae
Sindhuri	<i>Mallotus philippensis</i>	Euphorbiaceae
Mandane	<i>Acrocarpus fraxinifolius</i>	Fabaceae
Kanchan	<i>Bauhinia purpurea</i>	Fabaceae
Kumbhi	<i>Careya arborea</i>	Lamiaceae
Lator	<i>Arthocarpus chaplasha</i>	Moraceae
Chatiwan	<i>Alstonia scholaris</i>	Apocynaceae

Goyelo	<i>Callicarpa arborea</i>	Lecythidaceae
Parari	<i>Sterospermum</i>	Bignoniaceae
Sidha	<i>Lgterstroemia parviflora</i>	Rubiaceae
Kawla	<i>Persea fructiferi</i>	Lauraceae
Tantari	<i>Dillenia pentagyna</i>	Dilleniaceae
Pitali	<i>Trewia nudiflora</i>	Euphorbiaceae
Odal	<i>Sterculia villosa</i>	Malvaceae
Hukuse	<i>Pterygota alata</i>	Sterculiaceae
Chikarasi	<i>Chukrasia tabularis</i>	Meliaceae

Both flora and fauna comprising the terrestrial ecology of the project site as well as buffer zone area were surveyed to assess the ecological status. Available official reports were also verified. The forest in the area is deciduous type with the high density of trees at certain locations. The vegetation pattern in the study area has been studied in detail. Northern part of the project area is covered by forest having low density trees growth predominated by scanty shrubs and bushes. Most of them are dry deciduous type.

Fauna

The undisturbed and stable eco-system normally allows growing a large number of species which are disturbed with a quite equal dominance. If the conditions change here due to some unfavorable factors, a few species tolerant to the factors will tend to become more dominant while the rest will decrease. The total number of species, present in any eco-system will indicate its richness in species, while the number of individual of all the species denotes the dominance. It appears that the eco-system of the forested hillock and settlement area are stable.

List of Faunal Species Present in the Study Area

Scientific name	Common/English name	Schedule
MAMMALS		
<i>Cervus unicolor</i> Kerr.	Sambar	III
<i>Funambulus palmarum</i>	squirrel	IV
<i>Herpestes edwardsi</i> (Geoffray)	Common mongoose	IV
<i>Lepus nigricollis</i> F.Cuvier	Common Indian Hare	IV
<i>Melursus ursinus</i> (Shaw)	Sloth bear	II
<i>Macaca mulata</i>	Monkey	II
<i>Sus scrota</i> Linnaeus	Wild pig	III
<i>Vulpus benghalensis</i>	Wild fox	III
<i>Elephas maximus indicus</i>	Elephant	II
<i>Panther tigris</i>	Tiger	III

<i>Panthera pardus</i>	<i>Leopard</i>	<i>III</i>
Crocodylinae	<i>Crocodile</i>	<i>II</i>
<i>Canis lupus</i>	<i>Wolf</i>	<i>II</i>
<i>Canis auris</i>	<i>Jackal</i>	<i>III</i>
<i>Ailurus fulgens</i>	<i>Red panda</i>	
<i>Axix axis</i>	<i>Deer</i>	<i>II</i>
Capricornis	<i>Serow(goat type)</i>	<i>II</i>
Hemitragus jemlahicus	<i>Tahr(goat type)</i>	<i>I</i>
REPTILES		
<i>Bungarus candidus</i>	<i>Krait</i>	<i>IV</i>
<i>Calotes versicolor</i>	<i>Garden lizard</i>	<i>IV</i>
<i>Hemidactylus sp.</i>	<i>House lizard</i>	<i>IV</i>
<i>Ptyas mucosus (Linn.)</i>	<i>Rat snake</i>	<i>II</i>
<i>Naja naja</i>	<i>Indian cobra</i>	<i>II</i>
<i>Varanus bengalensis (Schneider)</i>	<i>Monitor lizard</i>	<i>II</i>
<i>Vipera russeli</i>	<i>Viper</i>	<i>II</i>
AVIFAUNA		
<i>Achdotheres tristis L.</i>	<i>Indian myna</i>	<i>IV</i>
<i>Athenebrama indica (Franklin)</i>	<i>Spotted owlet</i>	<i>IV</i>
<i>Bubulcus ibis</i>	<i>Cattle egret</i>	<i>IV</i>
<i>Centropus sinensis Stephens</i>	<i>Common crow pheasant</i>	<i>IV</i>
<i>Columbus livibus</i>	<i>Rock pigeon</i>	<i>IV</i>
<i>Corvus splendens Vieillot</i>	<i>House crow</i>	<i>V</i>
<i>Conrvus macrorhynchos Lesson</i>	<i>Jungle crow</i>	<i>V</i>
<i>Cuculus micropterus Gould</i>	<i>Indian cuckoo</i>	<i>IV</i>
<i>Dicrurus adsimilis Bechstein</i>	<i>King crow</i>	<i>IV</i>
<i>Dryocopus javensis (Horsfield)</i>	<i>Woodpecker (Black)</i>	<i>IV</i>
<i>Eudynamys scolapacea</i>	<i>Indian keol</i>	<i>IV</i>
<i>Francolinus pondicerianus Gmelin</i>	<i>Grey partridge</i>	<i>IV</i>
<i>Gallus gallus (Linnaeus)</i>	<i>Jungle fowl</i>	<i>IV</i>
<i>Megalaima merulinus</i>	<i>Indian cuckoo</i>	<i>IV</i>
<i>Milvus migrans (Boddaert)</i>	<i>Common Kite</i>	<i>IV</i>
<i>Passer domesticus</i>	<i>House sparrow</i>	<i>IV</i>
<i>Psittacula eupatria Linnaeus</i>	<i>Large Parakeet</i>	<i>IV</i>
<i>Sturnus pagodarum</i>	<i>Black headed myna</i>	<i>IV</i>
<i>Sarcogyps calvus (Scopoli)</i>	<i>King vulture</i>	<i>IV</i>
<i>Streptopelia chinensis (Gmelin)</i>	<i>Spotted dove</i>	<i>IV</i>
<i>Ardea goliath</i>	<i>Goliath Heron</i>	<i>IV</i>
<i>Houbaropsis bengalensis</i>	<i>Bengal Florican</i>	<i>IV</i>
<i>Buceros bicornis</i>	<i>Great Pied Hornbill</i>	<i>IV</i>
<i>Grus nigricollis</i>	<i>Black-necked Crane</i>	<i>IV</i>
BUTTERFLIES		
<i>Catopsilia sp.</i>	<i>Glassy tiger</i>	<i>IV</i>
<i>Euplo coreea</i>	<i>Grey pansey</i>	<i>IV</i>
<i>Graphium Agamemnon</i>	<i>Lime butterfly</i>	<i>IV</i>
<i>Papilio demoleus</i>	<i>Crimson rose</i>	<i>IV</i>
FISHES		
<i>Labio rohita</i>	<i>Rohu</i>	<i>IV</i>
<i>Cirrhinus mrigala</i>	<i>Mrigle</i>	<i>IV</i>
<i>Catla catla</i>	<i>Katla</i>	<i>IV</i>
<i>C. reba</i>	<i>Kharke Bata</i>	<i>IV</i>
<i>L. bata</i>	<i>Bhangan Bata</i>	<i>IV</i>
<i>Metapeneus spp.</i>	<i>Shrimps</i>	<i>IV</i>
<i>A. mola</i>	<i>Maurala</i>	<i>IV</i>
<i>C. pabda</i>	<i>Pabda</i>	<i>IV</i>

<i>Mystus spp.</i>	Tengra	<i>IV</i>
<i>G. gurius</i>	Bele	<i>IV</i>
<i>C. bacaila</i>	Chela	<i>IV</i>
<i>Barbus app.</i>	Punti	<i>IV</i>
<i>Wallage attu.</i>	Boal	<i>IV</i>
<i>Mystus seenghala</i>	Aid	<i>IV</i>
<i>Palaomen spp.</i>	Galda	<i>IV</i>
<i>E. vacha</i>	Vacha	<i>IV</i>
<i>N. chitala</i>	Chital	<i>IV</i>
<i>N. notopterus</i>	Pholoi	<i>IV</i>
<i>Gadusia chapra</i>	Khaira	<i>IV</i>
<i>E. telara</i>	Fensa	<i>IV</i>
<i>S. silondia</i>	Silon	<i>IV</i>
<i>Sciaena coitor</i>	Bhola	<i>IV</i>

Schedule I to IV indicates the degree of protection in order given to animals

Only 28 T per day and about 1 T per hour scrap will be used. GI scraps will not be used. Out of the required scrap, mostly scrap generated from the unit itself will be consumed, so scrap containing paint will be of negligible amount. In SIPL's semi open IF the pollutant from burning of negligible amount of paint in scraps will be diluted with sucked in air through hood opening & vented through 32 m stack and minimum inversion height of the area being > 40m will not have much of pollution impact.

List of Phytoplankton & Zooplankton Species Identified from Study Area

• Aquatic body	• Phytoplankton	• Zooplankton
River Damodar	Zygnema Species	Kerrratella monospina
	Pandorina sp.	Colpidium colpada
	Microcystis	Actinophyrous sp.
	Amphora sp.	Mesocyclops sp.
	Cymbella sp.	Daphnia sp.
	Facus species	Arcella sp.
	Euglena sp.	
	Pleurosigma sp.	
	Gyrosigma sp.	
	Chlorococcum sp.	

Fisheries

The production of fish in this district is not much encouraging though a large no. of tanks both under Govt. & Private sector are there. If these tanks are utilised properly for

Pisciculture and Duck rearing the production of fish as well as eggs will be increased to a considerable extent thereby increasing the scope of income & employment to the rural people. Total inland area of the district is 71,255 ha. So, there is an ample possibility to bring more area under efficient pisciculture. The details of cultural area covering Govt. and private Tanks are given below:

- Private Culturable water area - 37753.26 Ha.
- Vested tank water area - 9223.24 Ha.
- Dam and Reservoir - 3039.10 Ha.
- Departmental Tank - 62.40 Ha.

Total 1419.10 Ha. water area covered during last three years for pisciculture through distribution of minikit, production of fry/fingerlings, demonstration centre on table fish production, supply of fishing nets and requisits, infrastructural facilities as fishermen village road, community hall, housing etc. and development of different fishermen co-operative sector through pisciculture, training etc. Total 6,807 fishermen were benefited.

xiii)Revised Cost of EMP should be submitted, based on quantitative evaluation of project, Budget allocation

The company will invest Rs 4080 Lakhs (about 4 % of total project cost) as capital investment towards implementation of Environmental Management Plan. The Annual recurring cost will be about Rs 4 crores details are as follows. All Pollution Control Equipments are to be procured along with plant equipments and installed during construction period.

EMP Measures	Capital cost in Rs lakhs	Annual operating cost in Rs Lakhs
Air pollution control	2010	165
Waste water management	1335	80
Sold waste management	100	13
Environmental monitoring	235	15
Occupational health	170	13
Safety & Disaster Management Plan	50	17
Green Belt Development.	140	85
EMS & Training	40	7
Total	4080	395

Details of breakup of APC system is given below:

Plant/Unit	Pollutants	Method used to Control/and specifications/attach Separate Sheet to furnish Details	Budget

DRI Kilns 4x350 TPD	Flue dust	4 nos. of 3 field ESPs, 4 nos. of ID fans, 2nos. of 76m stacks, bag filter & 30m stack for material handling	ESP- 300 lakhs, Bag filter-25 lakhs & stack- 45 lakhs ID fans - 20 lakhs
IF 2x35T	Flue dust	2 nos. of bag filters, 2nos ID fans, 30m stack	Bag filter- 45 lakhs Stack- 10 lakhs, ID fan -10 lakhs
IF 4x25T	Flue dust	4 nos. of bag filters, 4 nos. of ID fans, 32m stack	Bag filter-100 lakhs ID fans-20 lakhs Stack -15 lakhs
Sinter Plant 1x20 sq.m	Flue dust	one no 3 field ESP, ID fan, 30m stack	ESP-75 lakhs, ID fan-5.0 lakhs, Stack- 15 lakhs
Pellet Plant 1x1870 TPD	Flue dust	one no. Bag filter, ID fan & 32m stack	45 lakhs
CFBC 36 MW & 23 MW	Flue dust	One no ESP, ID fan & 85m stack	120 lakhs
	SO2	Lime scrubber, 85m stack	Scrubber-45 lakhs
350 cu.m MBF	Flue dust	Venturi scrubber,90m stack	Scrubber-45 lakhs Emergency flare stack with water seal-20 lakhs
Fe-Mn Plant 2x12 MVA	Dirt & fume	Flame arrester, Bag filter, ID fan and 35m stack	60 lakhs
Si-Mn Plant 2x12 MVA	Dirt & fume	Flame arrester, Bag filter, ID fan and 35m stack	60 lakhs
Lime Calcination Plant 250 TPD	lime dust with SO2 & NOx	Cyclone, Bag filter, ID fan & 32m stack	48 lakhs
Freight, Errection & commissioning		15% of the instrument cost	170 lakhs
Online monitoring & allied activities			500 lakhs
Total			1798 lakhs

xiv) Plan for occupational health and budget should be submitted

The modern definition of Occupational health is "*The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations – total health of all at work*".

what is produced by the enterprise is the result of labor as well as capital. In fact, the owners of capital bear only limited financial risk and otherwise contribute nothing to production while labor contributes a major share of the product.

M/s SIPL understands , "The right to health to a worker is an integral facet of a meaningful right to life - to have not only a meaningful existence but also robust health and vigor without which the worker would lead a life of misery."

M/s SIPL is committed to occupational health & safety of employees, contract and sub-contract workers. The company will document, implement, maintain & periodically

review occupational health & safety management system and comply with relevant occupational health & safety legislative regulations & requirements.

Maintain environmental consciousness amongst employees and give maximum importance to preventive maintenance of equipments so as to keep emissions within limit.

No workmen will be forced to work in stress and in polluting environment.

There will be rotation of work place.

Occupational health is concerned with physical, mental and social well-being in humans in relation to his work and work environment, their adjustment to work and adjustment of work to humans

ILOs' Occupational health services recommendation, 1959 (No. 112) aims with following:

- a. Protecting workers against any health hazard, which may arise out of work or condition in which it is carried on;
- b. Contributing towards workers' physical and mental adjustment, in particular by adaptation of work to workers and assignment to jobs in which they are suitable and;
- c. Contributing to establishment and maintenance of highest possible degree of physical and mental social wellbeing of workers.

Legal Provisions

The Indian Constitution has shown notable concern to workmen in factories and industries as envisaged in its preamble as Directive Principles of State Policy.

- i. For securing the health and strength of workers, men and women
- ii. That the tender age of children is not abused
- iii. That citizens are not forced by economic necessity to enter avocations unsuited to their age or strength
- iv. Just and humane conditions of work and maternity relief are provided and,
- v. That the Government shall take steps, by suitable legislation or in any other way, to secure the participation of workers in the management of undertakings, establishments or other organizations engaged in any industry

The Factories Act, 1948, the Mines Act, 1952, the Dock Workers (Safety, Health & Welfare) Act, 1986 are some of the laws, which contain provisions regulating the health of workers in an establishment. Whereas the Employees State Insurance Act, 1948 and the Workmen's Compensation Act, 1923 are compensatory in nature. These various legal provisions to protect health and safety of the workers are given in Chapter 6. It may be sufficient to indicate at this stage that metallurgical industries are classified as hazardous industry and legal provisions must be adhered to avoid any harm to work force and local residents in the vicinity of the industry.

Plan for occupational health

M/s Shakambhari Ispat & Power Ltd is having a regular health check up programme for its workmen. It has a first aid health centre to meet day to day injuries. Professional doctor periodically visit health centre and check up workers.

After expansion the health centre will be converted to dispensary with permanent doctors to deal with occupational health of its workmen.

Environmental Management Cell working under Works Main Controller (WMC) who is also Organizational Head/Director looks after health and safety.

The routine work of EMC is as follows, which influence occupational health,:

- a. Regular monitoring of stack emission & fugitive emission and report any abnormalities for immediate corrective measures.
- b. Regular monitoring of ambient air quality in and around the plant.
- c. Regular monitoring of re-circulating water quality, water quality of the storage ponds, ground water quality and surface water quality.
- d. Regular noise monitoring of the work zone and surrounding area.

The cell is also responsible for monitoring safety and safety related systems

Various measures have been suggested in the Environmental Management Plan (EMP) for mitigation of impacts. These have to be implemented according to the suggestions and will be monitored regularly to prevent any lapse.

xv) Proforma enclosed herewith at Annexure-XI regarding your project should be duly filled in and submitted.

Submitted as Annexure-II.

XVI) Information on 'disaster management plan' for hazardous like fire, accident and other unforeseen situation should be submitted.

Disaster management plan' for hazardous like fire, accident and other unforeseen situation is given below

ACTION PLAN FOR ON-SITE EMERGENCY

STEP NO	INITIATOR	ACTION TO TAKE
1.	The person noticing the emergency	• Inform the Security Gate, Combat team leader and the concerned Shift-in –charge immediately.
2.	Combat team Leader (CTL)	• Inform site incident Controller (SIC) and rush to spot and organize his team. • Take charge of the situation, arrange for fire fighting and medical first-aid available at site. • To start combating, shut-down equipments, arrest the leakage of gas/fire.
3.	Site Incident Controller (SIC)	• Inform works main controller (WMC) and rush to emergency site. • Discuss with Combat Team Leader (CTL), assesses the

		situation and call the Rescue Team Leader (RTL) & Auxiliary Team Leader (ATL). • Organize the Rescue Team and Auxiliary Team and send the rescue Team to site. • Arrange to evacuate the unwanted persons and call for additional help. • Pass information to the works main controller (WMC) periodically about the position at site.
4.	Works main Controller (WMC)	• Rush to emergency site and observe the ongoing activities. • Take stock of the situation in consultation with the SIC. • Move to Emergency Control Room. • Take decision on declaration of emergency. • Advise Auxiliary Team Leader to inform the statutory authorities and seek help of mutual aid from partners as required. • Decide on declaration of cessation of emergency. • Ensure that the emergency operations are recorded chronologically.
5.	Rescue Team (RTL)	• Consult with Site incident controller (SIC) and organize his team with amenities to arrest fire fighting and medical treatment. • Rush to Emergency Site through safe route along with the team members. • Arrange to set off the fire by fire fighting equipments and hydrant points to arrest the fire or to evacuate the area. • Shift the injured persons to hospital by ambulance after providing necessary first aid. • To inform the auxiliary team Leader for necessary help from mutual aid Partners.
6.	Auxiliary Team (ATL)	• On being directed by works main Controller (WMC) inform about the emergency to statutory authorities. • Seek help of Mutual Aid partners and Coordinate with Mutual Aid partners to render their services. • Arrange to inform the relatives of casualties. • Take care of visit of the authorities to the Emergency site.
7.	Team members	• Each of the team members should follow the instruction of concerned team leader to mitigate the emergency.

SILENT HOUR COMMAND STRUCTURE

- The Senior Officers/ Key Persons of the plant remain during day time i.e. 8am to 8 pm. Hence the timing of 8pm to 8am is considered as silent hour that to 10pm to 8am is the crucial time. Still each and every unit/section of the plant is headed by shift in charge in the rank of Officer, Engineer or Sr. Engineer or Asst. Manager, who shall be responsible for handling the emergency. The other supporting/services and emergency sections like Fire Service, Ambulance, Security, Personnel, Water Supply, Transport departments etc. are also running for 24 hours shift wise with shift in charge and crew to handle emergency during the silent hour till main command personnel arrive. However, most of the key persons of the main command structure reside in nearby area and can reach within minimum time.
- The command structure of the silent hour shall be same as during normal hour, however, during the silent hour, the operation Shift-in charge of the concerned area where the fire or leakage of gas has taken place, shall act as SIC-in - charge, till the arrival of actual designation members.
- Since WMC, SIC, CTL, RTL & ATL may not be available inside the plant; they shall be informed by the SIC-in-charge either by telephone or by sending special messengers to their residences.
- On receiving the information WMC, SIC, CTL, RTL & ATL shall reach the site immediately & simultaneously take actions to ensure the presence of their respective team members.
- Therefore the action plan as well as the role of key person shall be same as the normal hour execution of command structure.

ACTIVATION & CLOSING PROCEDURE FOR ON-SITE EMERGENCY

ACTIVATION PROCEDURE

The person noticing the incident of fire or leakage of gas, shall inform about the location & nature of fire to the combat team Leader (CTL), security Gate and concerned Shift-in-charge.

Combat team Leader (CTL) shall inform site incident controller (SIC) and shall rush to the site immediately. He shall arrange for fire fighting and first aid available at site. He shall arrange to take necessary steps to eliminate the root cause of fire.

Site incident controller (SIC) on getting information shall inform the WMC and reach the site at the earliest. He shall take over the charge and shall direct Rescue Team Leader (RTL)) to carry out rescue operations including fire fighting and medical attention. Site incident controller (SIC) shall co-ordinate with Combat team leader (CTL) to eliminate the root cause of fire.

- Work main controller (WMC), on arrival at site shall take stock of the situation from site incident controller (SIC) and then rush to emergency control room (ECR) to declare emergency on the basis of assessment made by (Site incident controller (SIC). He shall give direction to the security gate/ (Rescue team Leader) RTL to activate siren.

Two Minutes with a pause of five seconds for 3 times for fire Accident.

- Three Minutes with a pause of five seconds for 5 times for leakage of gas.
- Rescue Team Leader (RTL) shall mobilize fire fighting and medical resources to site and shall assist (Site incident Controller) SIC.
- Auxiliary Team Leader (ATL) shall take charge of Emergency Control Room (ECR), shall ensure smooth operation of ECR and shall inform relatives of casualties. Informs mutual Aid partners and ensures their arrival at site if required.
- Auxiliary Team Leader (ATL) informs statutory authorities and district administration regarding emergency suitably and coordinates their visit at site.
- Works main controller (WMC) coordinates and keeps the track of all the activities at site and off the site and arranges the recording of the activities in a chronological manner for review of the Onsite emergency Plan.

Facilities Available for on-site Emergency Plan:

(a.) Assembly Point:

In any emergency it will be necessary to evacuate people from affected zones or the zones likely to be affected, to a safer place. Safer places are identified and designated as Assembly Points. Taking the area and hazard zones into consideration two assembly points have been marked in two different areas i.e. one near administrative building (Assembly Point-1) and other near the SMS Area (Assembly Point-2) Both the points are well connectable to the plant road and facilities like drinking water, temporary shelter and first aid is available there. This has been well marked in the lay out map as well as in the factory.

(b.) Escape routes:

Escape routes are those that, allow reasonably safe passage of persons from the work area to assembly point during emergency situation. These routes would be different depending on wind direction, Fire and explosion scenario. Escape routes are ear marked on the drawings as well as on the routes, which will facilitate all for safe evacuation.

(c.) Emergency Control Room (ECR):

The emergency Control Room is a place from which all emergency management operation are directed and coordinated. Also it is the place from where all communication will be established, with outside agencies and district authority also.

Facilities Available at ECR:

- a. Plant general Layout, ear marked with hazard zone, Assembly points and escape routes.
- b. List of working personnel in various shifts and general shift.
- c. Mobile telephone Nos., of emergency command structure personnel.
- d. Emergency command structure.
- e. Rhythmical siren code for different emergency situation.
- f. Relevant material safety data sheet.
- g. Emergency Control Room Register.
- h. First Aid Box with antidotes.
- i. Required personal protective equipments with self carrying breathing app.

FACILITIES AVAILABLE

- **Fire Hydrant System**

Fire pumps are to be connected to main fire hydrant to maintain a pressure of 7Kg/cm². In case of temporary power failure, the fire pumps are to run through DG. An underground tank supply water to the fire main. A security jeep is stationed at main gate (main control) to meet the emergency.

- **Fire Extinguishers**

Required types of fire extinguishers are to be provided at different locations of the plant.

Fire Buckets

Fire buckets filled with dry sand must be provided in different locations of the plant.

- **Fire Tender**

The company may have a fire tender of its own for major fire fighting operations.

- **Siren**

Company must have Siren/ hooter arrangement, which can be activated manually during fire related emergency.

- **Communication**

Public address system and EPABX telephone is available for effective communication inside the plant. Telephone directory is available in the entire department.

- **Dispensary**

A well organized First-aid centre with ambulance, stretchers, oxygen cylinder etc. shall be located inside the factory. The First-aid centre is manned by one doctor, 4nos. pharmacists, 4 nos. attendants, and one Ambulance with driver. The first-aid center is manned round the clock. In the event of emergency, the doctors and staff attend the first-aid centre. The existing first-aid centre is to be strengthened & well-equipped to meet the emergencies. In case of requirement outside ambulance services are to be contacted.

- **First Aid Box**

Company has provided First Aid boxes with required first aid medicines at different locations inside the plant for any injury. First aid boxes are checked by the pharmacists once in a month & medicines are filled/replaced. The first aid boxes are provided in the following locations:

Blast Furnace, DRI, Coke Oven, Ferro Chrome, Power Plant, Electrical Substation, DG room, Administrative building, SMS, Rolling Mill and Security Office.

No. 1034/SIA/IMO/2015
Government of India
Ministry of Commerce & Industry
Department of Industrial Policy & Promotion
Secretariat of Industrial Assistance
(Industrial Entrepreneurs Memorandum Section)

New Delhi ,31/03/2016

SHAKAMBHARI ISPAT AND POWER LTD.
DIAMOND PRESTIGE,41A,A.J.
C. BOSE ROAD, 8TH FLOOR,R
-801,NONAPUKUR TRAM DEPO
PARK STREET, KOLKATA
WEST BENGAL-700017.

Subject : IEM application of SHAKAMBHARI ISPAT AND POWER LTD. for the
manufacture of PIG IRON

Reference : This Ministry's IEM Acknowledgement No. 1034/SIA/IMO/2015
dated 07/07/2015

Sirs,
I am directed to refer to your letter(s) No NIL dated 10/03/2016 on
above mentioned subject and to say that the following corrections-
modifications/amendments are made in the Ministry's IEM Acknowledgement
No. 1034/SIA/IMO/2015 dated 07/07/2015

	EXISTING	AMENDED
Name of the Company	SHAKAMBHARI ISPAT AND POWER LTD.	
Registered Address	DIAMOND PRESTIGE,41A,A.J. C. BOSE ROAD, 8TH FLOOR,R -801,NONAPUKUR TRAM DEPO PARK STREET, KOLKATA WEST BENGAL-700017.	-
NIC Codes / Items	1. 24101 : PIG IRON Falling under NIC broad description MANUFACTURE OF PIG IRON AND SPIEGELEISEN IN PIGS, BLOCKS OR OTHER PRIMARYFORMS 2. 24101 : SINTER Falling under NIC broad description MANUFACTURE OF PIG IRON AND SPIEGELEISEN IN PIGS, BLOCKS OR OTHER PRIMARYFORMS	-
Proposed Capacity	1. 66000.00 MT	1. 183900.000 MT
Existing Capacity	0.00 MT	66000.000 MT
Total Capacity After Expansion		249900.000 MT

c. Proposed Capacity	2. 133056.00 MT	2. 64944.000 MT
Existing Capacity	0.00 MT	133056.000 MT
Total Capacity		198000.000 MT
After Expansion		

d. Proposed Investment Rs.	639700000.00	Rs.120,00,00,000.00
Existing Investment Rs.	0.00	Rs. 0.00

e. Location	MADANDIH,ASANSOL PUR ULIA ROAD, PS-NETURIA PO BARTORIA PURULIA WEST BENGAL	- - - -
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f. Miscellaneous (any other)	-	-
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2. This may be kept attached with the original Acknowledgement
No. 1034/SIA/IMO/2015 dated 07/07/2015

3. The receipt of this letter may please be acknowledged

Yours faithfully,

R. Mythili

(R. MYTHILI)

UNDER SECRETARY TO THE GOVERNMENT OF INDIA

No. 1001/SIA/IMD/2011
Government of India
Ministry of Commerce & Industry
Department of Industrial Policy & Promotion
Secretariat of Industrial Assistance
(Industrial Entrepreneurs Memorandum Section)

New Delhi ,31/03/2016

SHAKAMBHARI ISPAT & POWER LTD.,
DIAMOND PRESTIGE, 41 A,
A.J.C. BOSE ROAD, 8TH
FLOOR, ROOM NO.801,
KOLKATA-700017.
WEST BENGAL

Subject : IEM application of SHAKAMBHARI ISPAT & POWER LTD., for the
manufacture of SPONGE IRON

Reference : This Ministry's IEM Acknowledgement No. 1001/SIA/IMD/2011
dated 24/03/2011

Dear Sirs,

I am directed to refer to your letter(s) No NIL dated 10/03/2016 on
the above mentioned subject and to say that the following corrections-
modifications/amendments are made in the Ministry's IEM Acknowledgem-
ent No. 1001/SIA/IMD/2011 dated 24/03/20

	EXISTING	AMENDED
Name of the Company	SHAKAMBHARI ISPAT & POWER LTD.,	
Registered Address	DIAMOND PRESTIGE, 41 A, A.J.C. BOSE ROAD, 8TH FLOOR, ROOM NO.801, KOLKATA-700017. WEST BENGAL	-
NIC Codes / Items	1. 3303 : SPONGE IRON Falling under NIC broad description MANUFACTURE OF DIRECT REDUCED IRON AND OTHER SPONGY FERROUS PRODUCTS IN PRIMARY FORMS; OTHER THAN IN THE INTEGRATED STEEL PLANTS 2. 3302 : M.S.INGOT/BI- LLET Falling under NIC broad description MANUFACTURE OF IRON AND STEEL IN JPRIMARY//SEMI-- FINISHED FORMS IN MINI STEEL PLANTS (INCLUDES RE-ROLLING OF IRON AND STEEL SCRAPKS)	-

3. 3302 : ROLLING
PRODUCTS (S.S./M.S.)
Falling under NIC
broad description
MANUFACTURE OF IRON AND
STEEL IN JPRIMARY//SEMI--
FINISHED FORMS IN MINI
STEEL PLANTS (INCLUDES
RE-ROLLING OF IRON AND
STEEL SCRAPKS)

4. 3302 : WASHERY
(COAL/CHAR)
Falling under NIC
broad description
MANUFACTURE OF IRON AND
STEEL IN JPRIMARY//SEMI--
FINISHED FORMS IN MINI
STEEL PLANTS (INCLUDES
RE-ROLLING OF IRON AND
STEEL SCRAPKS)

Proposed Capacity	1. 137000.000 MT	1. 2000.000 MT.
Existing Capacity	415000.000 MT	542000.000 MT.
Total Capacity	552000.000 MT	✓ 544000.000 MT.
After Expansion		
Proposed Capacity	2. 135600.000 MT	2. 88350.000 MT.
Existing Capacity	300000.000 MT	435600.000 MT.
Total Capacity	435600.000 MT	✓ 523950.000 MT.
After Expansion		
Proposed Capacity	3. 60000.000 MT	3. 60000.000 MT.
Existing Capacity	180000.000 MT	240000.000 MT.
Total Capacity	240000.000 MT	✓ 300000.000 MT.
After Expansion		
Proposed Capacity	4. 500000.000 MT	4. 0.000 MT.
Existing Capacity	300000.000 MT	800000.000 MT.
Total Capacity		✓ 800000.000 MT.
After Expansion		

Proposed Investment Rs.	0.00	Rs.319.00,00,000.00
Existing Investment Rs.	0.00	Rs.138.37,00,000.00

Location VILL: MADANDIH
P.O. BARTORIA
PURULIA
WEST BENGAL

Miscellaneous (any other) -

This may be kept attached with the original Acknowledgement
No. 1001/SIA/IMD/2011 dated 24/03/2011

The receipt of this letter may please be acknowledged

Yours faithfully,

R. Mythili

(R. MYTHILI)

UNDER SECRETARY TO THE GOVERNMENT OF INDIA

ANNEXURE-II

Air Pollutants							
Plant/Unit	Pollutants	Qty generated	Method used to Control/ nd specifications /ttach Separate Sheet to furnish Details	Budget	Estimated Post Control Qty of Pollutant		Number of units planned & Capacity
					Per Unit	Per Day	
DRI Kilns 4x350 TPD	Flue dust	725.75 kg/day	4 nos. of 3 field ESPs, 4 nos. of ID fans, 2nos. of 76m stacks, bag filter & 30m stack for material handling	ESP- 300 lakhs, Bag filter-25 lakhs & stack- 45 lakhs ID fans - 20 lakhs	0.1850kg	0.740kg	4
IF 2x35T	Flue dust	231.00 kg/day	2 nos. of bag filters, 2nos ID fans, 30m stack	Bag filter- 45 lakhs Stack- 10 lakhs, ID fan -10 lakhs	0.1150 kg	0.230 kg	2
IF 4x25T	Flue dust	331.80 kg/day	4 nos. of bag filters, 4 nos. of ID fans, 32m stack	Bag filter-100 lakhs ID fans- 20 lakhs Stack - 15 lakhs	0.0930 kg	0.332 kg	4
Sinter Plant 1x20 sq.m	Flue dust	29.38 kg/day	one no 3 field ESP, ID fan, 30m stack	ESP-75 lakhs, ID fan-5.0 lakhs, Stack- 15 lakhs	0.078 kg	0.078 kg	1

Pellet Plant 1x1870 TPD	Flue dust	907.20 kg/day	one no. Bag filter, ID fan & 32m stack	45 lakhs	0.129 kg	0.129 kg	1
CFBC 36 MW & 23 MW	Flue dust	342.14 kg/day	One no ESP, ID fan & 85m stack	120 lakhs	0.855 kg	0.855 kg	1
	SO2	55296kg/day	Lime scrubber, 85m stack	Scrubber-45 lakhs	0.684 kg	0.684 kg	
350 cu.m MBF	Flue dust	491.66 kg/day	Ventury scrubber,90m stack	Scrubber-45 lakhs Emergency flare stack with water seal20 lakhs			1
Fe-Mn Plant 2x12 MVA	Dirt & fume	41.7 kg/day	Flame arrester, Bag filter, ID fan and 35m stack	60 lakhs	0.028 kg	0.056 kg	2
Si-Mn Plant 2x12 MVA	Dirt & fume	41.7 kg/day	Flame arrester, Bag filter, ID fan and 35m stack	60 lakhs	0.028 kg	0.056 kg	2
Lime calcination Plant 250 TPD	lime dust with SO2 & NOx	75.17 kg/day	Cyclone, Bag filter, ID fan & 32m stack	48 lakhs	0.041 kg	0.041 kg	1
Freighth, Errection & commissioning			15% of the instrument cost	170 lakhs			
Online monitoring & allied activities				500 lakhs			
Total				1798 lakhs			