

SISCO/MoEFCC/20-21 / 2608

Date: 30.11.2020



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CIN No.: L27100MH1984PLC034003
GSTIN NO.: 27AACCS3376C1ZH

To,
The Additional Director,
Ministry of Environment, Forests & Climate Change,
Regional Office (WCZ), Ground Floor,
East Wing, New Secretariat Building,
Civil Lines,
Nagpur - 440 001

Subject : Submission of Six Monthly Compliance Report of the Environmental Clearance(EC) for Period from 1st April 2020 to 30th September 2020.

Reference : 1) MoEF, Govt. of India, Environmental Clearance Letter No.
J-11011/355/2004-IA II (I) dated 21.02.2006.

2) MoEF & CC, Govt. of India, Environmental Clearance Letter No.
J-11011/355/2004-IA II (I) dated 02.05.17.

Dear Sir,

With reference to above EC letter ref no.1 & 2, we are submitting herewith the status of progress & compliance of stipulated conditions (i.e. Six monthly EC Compliance report) of **EC General conditions no. iii & ix of above ref no 1 and EC General conditions no. iii & Xii of above ref no 2**, for the period from 1st April 2020 to 30th September 2020 , stipulated in environmental clearance granted to **M/S Sunflag Iron & Steel Co. Ltd., Village :Eklari (Bhandara Road), Taluka : Mohadi, Distt : Bhandara (M.S.)**

Hope you will find it in order.

Thanking you.

Yours faithfully,

For SUNFLAG IRON & STEEL CO. LTD.

Ramchandra Dalvi
Executive Director (Works)

Encl: As above

Copy to:

1. The Incharge, CPCB, Vadodara, Gujrat
2. The Regional Officer, MPCB, Nagpur
3. Sub-Regional Officer, MPCB, Bhandara

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SIX MONTHLY COMPLIANCE REPORT

PART I : DATA SHEET

1	Project Type: River-valley / Mining / Industry / Thermal / Nuclear / Other (Specify)	Integrated steel Plant
2	Name of the Project	M/s Sunflag Iron & Steel Co.Ltd, Located near Village Eklari, Warthi, Taluka : Mohadi, Bhandara District of Maharashtra
3	Clearance Letter (s) / OM No. and date	1) J-11011/355/2004- IA.II (I) dated 21.02.2006 2) J-11011/355/2004- IA.II (I) dated 02.05.2017
4	Location	
	a. District (s)	Bhandara
	b. State (s)	Maharashtra
	c. Latitude / Longitude	21°14'5" North / 79°37'50" East
5	Address for correspondence	Executive Director (Works),
	Address of concerned Project Chief Engineer (with Pin Code & Telephone / Telex / Fax Numbers) :	M/s Sunflag Iron & Steel Co. Ltd., Village – Warthi, Tah.- Mohadi, District – Bhandara , Pin :441905 Maharashtra Ph. 07184 – 285551 to 285555 Fax – 07184 – 285570
6	Salient features	

	a. Of the Project	<p>M/s Sunflag Iron & Steel Co. Ltd. Is integrated Steel Plant having capacity @1.0 Million Tonnes per Annum of high quality special steel in the form of rolled steel products using iron ore. Coal & Coke as basic inputs. The plant has a Direct Reduction Plant (DRP) to produce sponge iron & Mini Blast Furnace (MBF) to produce hot metal for captive consumption in the Steel Melting Shop(SMS). Further liquid metal is converted to Steel Billets & Blooms at Continuous Casting Machine (CCM). The steel billets are taken to Bar & Section Mill (BSM) & Alloy Steel Mill (ASM) and steel Blooms are taken into Blooming mill to produce rolled steel products. The 30 MW Captive Power Plant (CPP) is also installed along with other ancillary/utility plants in the factory.</p> <p>Sunflag Steel caters to the demands of various core sector industries like Automobiles, Railway Defense, Agriculture Engineering Industry etc.</p> <p>Sunflag Steel is located at 21°14'05" North latitude and 79°37'50" East longitude. The mean height of the plant site is 273 meters above MSL, Plant is located near Bhandara Road railway station at a distance of 53 km to the E-NE direction of Nagpur. More specifically it is located at about 7.5 km as crow flies from Bhandara in S-SE direction.</p> <p>The factory have is certified on ISO 9001:2015, IATF 16949:2016 and TUV-NORD on ISO-14001:2015 and BS OHSAS:45001:2018..</p>
	b. Of the Environmental Management Plan	<p>At DRP air pollution control system provided for producing sponge iron from kiln comprises of waste heat recovery boilers and electrostatic precipitators.,nos.of bag filters also have been provided to control secondary emission.</p> <p>At SMS combined fume/dust extraction and control system (i.e. The Primary and Secondary Fume Extraction System for SMS had been installed for improving the Dust & Fume extraction) comprising of Water cooled ducts, ACGC, reverse air bag house, pulse jet bag house have provided for electric arc furnace (EAF) and ladle heating furnace (LHF) and Stainless steel converter.</p> <p>At CPP, air pollution control system comprising of devices i.e. economizer, air preheater, and electrostatic precipitator have been provided.</p> <p>At MBF, adequate APC system has been provided. from MBF, the dust-laden gas after the dust catcher is cleaned in the GCP. There is two-stage venturi system, first stage provides the pre-cleaning of the gas and the second stage provides the final cleaning of the gas. The Blast Furnace gas after the venturi enters the moisture separator, where the finest water droplets are flung against the</p>

		<p>scrubber shell and run down into the sump and gas free particle leaves the GCP, the cleaned MBF gas is used at Sinter plant, Reheating furnaces of rolling mills and Hardening furnace.</p> <p>At Sinter plant. The system comprises of Suction Ducting, Dust Settling Chamber, Electrostatic Precipitator, ID Fan and Bag Filters.</p> <p>Online continuous ambient air quality monitoring system has been installed at three location.</p> <p>On line continuous monitoring system has been installed in stacks to monitor SPM & SO₂ and connected to CPCB server.</p> <p>Online continuous effluent quality monitoring system has been installed and connected to CPCB server.</p>
7	Breakup of the Project area	
	a. Submergence Area: Forest & Non Forest	Project area is located in non forest land.
	b. Others	---
8	<p>Breakup of the Project affected population with enumeration of those losing houses/dwelling units only, agricultural land only, both dwelling units & both dwelling units & agricultural land & landless laborers/artisan</p> <p>a. SC, ST / Adivasis</p> <p>b. Others</p>	Not Applicable
9	Financial Details	

	a. Project costs as originally planned & subsequent revised estimates and the year of price reference.	Rs.1510 Crores for expansion project, after getting EC vide No.J-11011/355/2004- IA.II (I) dated 02.05.2017. (Total expenditure on entire Sunflag Steel project is Rs.1326.22 crores for existing plant so far) till date the expansion projects completed at cost of Rs.522.23 crores included production units of Pig Iron /Hot Metal, Ingot /Billets, Rolled steel Products and Sinter Plant .
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b. Allocations made for Environmental Management Plan with item wise & year wise breakup.	At present under existing unit following expenditure has already been made towards environmental protection, the same are as follows.			
	S.N.	Environmental Component	Capital Cost incurred so far (Rs. in Lacs)	Recurring Cost per annum
	1.	Air Pollution Control (ESP's, Bag filters, water cooled ducts,GCP, ACGC,Silos, stacks,online monitoring system for ambient and stack)	5651.0	1273
	2.	Water Pollution Control (ETP's, STP, WTP, Neutralization tanks and allied equipments, online effluent monitoring system)	185.0	1030
	4.	Noise Pollution Control (acoustic enclosers,instruments for noise measurement & predictive maintenance, CBM instruments)	25.0	10
	5.	Environment Monitoring and Management (regular monitoring of Environmental parameters as per statutory requirement)	112.0	84
	6	Occupational Health	45	14.74
	7	Green Belt	50.0	33
	8	Online Stack Monitoring System	39.0	20
	9	Online Effluent Monitoring system	11.0	14
	10	Others (Pl. Specify)	20.0	20
	Total		6503	2560.88
c. Benefit Cost Ratio / Internal rate of Return and the year of assessment.	----			

	d. Whether (c) includes the cost of Environmental Management as shown in the above.	-----
	b. Actual expenditure incurred on the Project so far	Rs.1510 Crores approved for expansion project after getting EC vide No.J-11011/355/2004- IA.II (I) dated 02.05.2017. (Total expenditure on entire existing Sunflag Steel project is Rs. 1848.45 i.e.1326.22 crores for existing project + Rs.522.23 Crores for Expansion project included Pig Iron /Hot Metal, Ingot /Billets, Rolled steel Products and Sinter Plant so far) till date expansion project completed at cost of Rs.522.23 crores.
	c. Actual expenditure incurred on the Environmental Management Plan so far	Rs. 66.98 Crores including EMP of expansion project.
10	Forest land requirement	Not Applicable
	a. The status of approval for diversion of Forestland for non-forestry use	Not Applicable
	b. The Status of clearing felling	Not Applicable
	c. The status of compensatory Afforestation if any	Not Applicable
11.	The status of clear felling in non-forest areas (such as submergence area of reservoir, Approach roads), if any with quantitative information	Not Applicable

12.	Status of construction (Actual and/or Planned)	
	a. Date of commencement (Actual and/or Planned)	After got EC vide No.J-11011/355/2004- IA.II (I) dated 02.05.2017, start project activities of following units..Pig Iron/Hot Metal, Ingot/Billets, Rolled steel Products and Sinter Plant.
	b. Date of completion (Actual and/or Planned)	Pig Iron/Hot Metal, Ingot/Billets, Rolled steel Products and Sinter Plant project completed in year 2018-19 and 2019-2020.
13.	Reasons for the delay if the project is yet to start	Not Applicable
14.	Dates of site visits	_____
	a. The dates on which the Project was monitored by Regional Office on previous occasions, if any	
	b. Date of site visit for this monitoring Report	
15.	Details of correspondence with project authorities for obtaining action plan / information on status of compliance to safeguards other than the routine letters for logistic support for site visit.	_____

**EC COMPLIANCE REPORT
&
ENVIRONMENTAL STATUS REPORT
(April-2020 - September- 2020)
of
SUNFLAG IRON & STEEL CO. LTD.**

Located At
**Village – Eklari, Taluka – Mohadi,
Dist. – Bhandara.**

Project Proponent:



**M/S. SUNFLAG IRON & STEEL CO. LTD.
Village – Eklari, Taluka – Mohadi, Dist. – Bhandara, 441905**

1.0 PREAMBLE

1.1 Introduction

Sunflag Iron & Steel Co. Ltd. (Sunflag Steel) has established state-of the-art special Integrated Steel Plant in Bhandara District of Maharashtra State (India) in the year 1989 in technical collaboration with Mannesmann Demag and Krupp, West Germany. This factory is one of the most modern deploying state-of-the-art technologies which won acclaim in the International Exhibition of Steel Plant Equipment & Technology at Dusseldorf (West Germany). Pollution control systems installed for the various sources at the factory are also state-of-the-art. For the last several years, the factory is certified on ISO 9001:2015, IATF 16949:2016 and TUV-NORD on ISO-14001:2015 and BS OHSAS:45001:2018.

Sunflag Steel caters to the demands of various core sector industries like Automobiles, Railways, Defense, Agriculture, Engineering Industry etc.

Sunflag Steel is located at 21⁰14'5" North latitude and 79⁰37'50" East longitude. The mean height of the plant site is 273 meters above MSL. The Sunflag Iron & Steel Co. Ltd. is located near Bhandara Road railway station at a distance of 53 km to the E-NE direction of Nagpur. More specifically it is located at about 7.5 km as crow flies from Bhandara in S-SE direction. In the year 2006, MoEF has granted for the expansion of the existing integrated steel plant from existing 0.20 million TPA to 0.50 Million TPA. In the year 2017 , MoEF has granted for the expansion of the existing integrated steel plant from existing 0.5 million TPA to 1.0 Million TPA

At present, this Integrated Steel Plant has a capacity to manufacture 1.0 Million TPA of high quality special steel in the form of rolled steel products using iron ore, coal & coke as basic inputs. The plant has a Direct Reduction Plant (DRP) to produce sponge iron & Mini Blast Furnace (MBF) to produce hot metal for captive consumption in the Steel Melting Shop (SMS). Further liquid metal is converted to steel billets at Continuous Casting Machine (CCM). The steel billets are taken to Bar & Section Mill (BSM), Alloy Steel Mill (ASM) and Blooming Mill to produce rolled steel products. The 30 MW Captive Power Plant (CPP) is existing along with other ancillary/utility plants in the factory.

The compliance status of the conditions of the MoEF, Govt. of India Environmental Clearances No. J-11011/355/2004-IAII (I) dated 21-02-2006 is given below :

COMPLIANCE STATUS OF CONDITIONS IMPOSED BY MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE VIDES THEIR LETTER NO. F No. J-11015/355/2004-I A II (I) dated 21-02-2006.

Period: From 1st April - 2020 to 30th – September - 2020.

(A) SPECIFIC CONDITIONS:

Sr No	Conditions	Compliance
i)	The gaseous emissions from various process units shall conform to the load / mass based standards notified by this Ministry on 19 th May, 1993 and standards prescribed from time to time. At no time the emission level shall go beyond the prescribed standards. On line continuous monitoring system shall be installed in stacks to monitor SPM and Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit. Coke oven (non-recovery type) shall be used for power generation. Emissions from the Coke oven plant shall be within permissible limits of CPCB.	<p>Adequate pollution control systems are provided at the existing sources which are in regular operation and modernization of the same is carried out from time to time. The gaseous emissions from various existing process units confirm the load/mass based standards notified by the Ministry from time to time. The emissions from the stacks meet the prescribed standards.</p> <p>Air pollution control system for the rotary kilns producing direct reduced iron comprises of waste heat recovery boilers and electrostatic precipitators. The cleaned gases after ESP are released to atmosphere through a 55 m & 60 m high forced draft chimney.</p> <p>Two separate fume/dust extraction and control system (i.e. The Primary and Secondary Fume Extraction System for SMS was installed & commissioned on July 2012 for further improving the Dust & Fume extraction) comprising of reverse air bag house, pulse jet bag house & common chimney of height 43 m are provided for 50 T capacity electric arc furnace (EAF) and ladle heating furnace (LHF).</p> <p>At CPP, air pollution control system comprising of devices i.e. economizer, air preheater, and electrostatic precipitator are designed for the full production capacity of FBC Boiler. The discharge of the electrostatic precipitator is through a stack of height 55 m with tops diameter 1.6 m. The discharge meets the norms. The waste heat recovered at WHRBs provided at DRI plant is also used for power generation at CPP.</p> <p>At coal washery, crushed coal is conveyed through conveyor belt for washing. Once the coal is mixed water there is no air pollution at the section. However the conveyor belts carrying crushed coal to coal washery section completely covered from top and both sides.</p>

The Mini Blast Furnace (MBF) (350 M3) is provided with adequate APC system. From MBF, the dust-laden gas after the dust catcher is cleaned in the GCP. There is two-stage venturi system, first stage provides the pre-cleaning of the gas and the second stage provides the final cleaning of the gas. The Blast Furnace gas after the venturi enters the moisture separator, where the finest water droplets are flung against the scrubber shell and run down into the sump and gas free particle leaves the GCP, the cleaned MBF gas is used at Sinter plant, Reheating furnaces of rolling mills and Hardening furnace.

There is an effective air pollution control systems at sinter plant. The system comprises of Suction Ducting, Dust Settling Chamber, Electrostatic Precipitator, ID Fan and Stack. The cleaned gases after ESP are released to atmosphere through forced draft chimney.

Online continuous ambient air quality monitoring system has been installed at three locations.

On line continuous monitoring system has been installed in stacks to monitor SPM & SO₂.

The emissions from the stacks and various units meet the prescribed standards results.

Please refer **Annexure -1 (A)**

ii)	<p>In plant control measures for checking fugitive emission from all the vulnerable sources like spillage/raw materials/coal handling etc. shall be provided. Further, specific measures like provision of dust suppression system consisting of water sprinkling, suction hoods, fans and bag filters etc. shall be installed at material transfer points, blast furnace stock house and other enclosed raw material handling areas.</p> <p>Centralized De-dusting system i.e. collection of fugitive emission through suction hood and subsequent treatment through bag filter or any other device and finally emitted through a stack of appropriately designed height conforming to the standards for induction furnaces existing in the industry and proposed induction and are furnaces. Fugitive emissions shall be regularly monitored and records maintained.</p>	<p>At the vulnerable fugitive emission sources like spillage/raw materials/coal handling etc., in plant centralized de-dusting facility provided. The plant has provided dust suppression system consisting of water sprinklers, suction hood, Covered shed and conveyer, bag filters at various points such as material transfer points, and other enclosed raw material handling areas in the existing plant.</p> <p>Fugitive emissions are being regularly monitored and maintained the records as per guidelines.</p>
iii)	<p>The company shall install Waste Heat recovery Boilers (WHRB) to recover the waste heat and generate power from the steam produced by the WHRB. Char shall be used in the power plant. The particulate emissions from the WHRB and Direct Reduction Iron (DRI) plant shall be controlled by installation of ESP as per the CPCB specifications and particulate emissions shall not exceed 50 mg/Nm³. Further, the company shall install bag filters to control gaseous emissions from the coke oven, wet scrubbers, suction hoods, dust extraction devices and fume extraction system at appropriate places to control gaseous emissions.</p>	<p>At DRP 1 & DRP 2, Waste Heat Recovery Boilers (WHRSG) provided to recover the waste heat from rotary kilns for generation of power from the steam produced by WHRSG at the existing CPP. The exhaust gases from the kiln containing dust, hydrocarbons etc. are burnt in the waste heat recovery Boiler and heat of the gases is recovered in Boiler for steam generation. The gases still containing very fine particulate matter enter the electrostatic precipitator where most of the particulates settle on the electrodes and gases almost free of the dust particles are released to atmosphere at a height of 55 m & 60 m through a chimney.</p> <p>The emissions from various units are within prescribed standard.</p>

iv)	<p>Total requirement of water shall not exceed 12,000 m³/d as per agreement signed with the Govt. of Maharashtra. Out of 3,000 m³/d waste water generated. 2,400 m³/d treated waste water shall be recycled and reused in the process and excess shall be used for gardening and irrigation purpose. The domestic waste water after treatment in STP shall be used for green belt development.</p>	<p>The plant meets its water requirement from Wainganga River. The river flows at a distance of 7.0 Km from the plant. Maximum water requirement for the existing steel plant is 12,000 m³/day. SISCO has been granted permission to draw water from Wainganga River @ 13,200 m³/day.</p> <p>Industrial effluent generation from the existing plant at rated capacity is 2414 m³/day. Existing practice of Boiler blow down recycle, dilution of neutralized DM Plant effluent, cooling tower blow down effluent, disposal for 100 % reuse / recycled in the process; green belt development is continued for the additionally generated effluent as well.</p> <p>Domestic effluent from the plant is conveyed through drains to septic tanks followed by soak pits and sewage treatment plant. Treated domestic effluent is 100 % recycled for firefighting, used for gardening and green belt development.</p>
v)	<p>The solid waste generated shall be in the form of ash, slag, mill scale, dust, sludge and iron scrap, Mill scale, coke breeze, iron ore fines, dust and sludge from Mini blast furnace (MBF), Gas cleaning plant (GCP) shall be reused in the Sinter plant. Iron sponge, iron scrap and grinder waste shall be recycled to SMS section for melting and reuse. DRP ash and dust collected from ESP of gas cleaning system of DRP shall be used in the Boiler of CPP whereas bed ash and MBF slag shall be either used for land filling or sold to cement plants. The entire quantity of fly ash, mill scale and DRP sludge from the scrubber shall be utilized for making brick in company's own brick manufacturing plant. Non-granulated slag shall be used for road making. Dust from dust extraction system shall be recycled to the Sinter plant for reuse. Dust collected from DRI plant shall be reused in sinter plant. Used / spent oil generated shall be used as anti-rusting agent and excess sold to authorized re processors.</p>	<p>The generated solid mill scale, dust, sludge and iron scrap, Mill scale, coke breeze, iron ore fines, dust and sludge from Mini blast furnace (MBF), Gas cleaning plant (GCP) is being reused in the Sinter plant. Sponge iron, iron scrap and grinder waste is being recycled to SMS section for melting and reuse DRP ash and dust collected from ESP of gas cleaning system being used in the FBC Boiler of CPP, whereas bed ash is being used for land filling and MBF slag is being sold to cement plants.</p> <p>The fly ash is being utilized for making brick /Paver blocks at brick manufacturing plant and if balance is used for filling low lying area. Non-granulated slag shall be used for road making and paver block manufacturing at brick plant. Dust from dust extraction system being recycled to the Sinter plant for reuse. Dust collected from DRI plant being reused in sinter plant. Used / spent oil generated being used as anti-rusting agent and excess sold to authorize re processors.</p>

vi)	The solid waste shall be generated in the form of char, kiln accretions, fly ash from ESP and bottom ash etc. Char generated shall be used in FBC Boiler having sufficient capacity to utilize the char expected to be generated after the expansion. Kiln accretions generated presently and the quality further enhanced during expansion project, shall be utilized for filling low lying areas. ETP sludge shall be used in Sinter Plant.	The detail of Solid waste and its utilization is as following-		
		S.N.	Type of Waste	Disposal/ Utilization
		1.	Fly Ash (CPP)	In house for Bricks & Paver blocks Manufacture / Outside bricks manufacture & filling low lying area.
		2.	Bed Ash (CPP)	Landfill
		3.	Dust from Bag Filter (DRP & SMS)	Reused at Sinter Plant.
		4.	DRP Sludge	Reused at Sinter Plant
		5.	Mill Scale (Rolling Mill)	Reused at Sinter Plant
		6.	EAF & SS Refining Converter Slag ((SMS)	Landfill & Reused for manufacturing of Paver Blocks
		7.	Iron/Steel/Scrap/Rejects Billets (SMS/Rolling Mill)	Recycle at SMS
		8.	Grinder Waste (SMS/Rolling Mill)	Recycle at SMS
		9.	Coal Rejected Stone & Shell (Coal Washery)	Landfill
		10.	Granulated MBF Slag	By Sale to Cement manufacture.
		11.	Granulated Residue at MBF Gas Cleaning plant	Reused at Sinter plant.
		12.	Coke Fines (MBF Plant)	Reused at Sinter plants
		13.	Iron Ore Fines & Sinter (DRI & MBF Plant)	Reused at Sinter plants
		14.	Dusts/Sludge (ETP & WTP)	Reused at Sinter plants
		15.	Hot returned ore (Sinter Plant)	Reused at Sinter plants
		16.	Removed Dust (DRI Plant & Sinter Plant)	Reused at Sinter plants

vii)	Mill scale shall be reused in Sinter plant, ESP fly ash shall be made available to the cement plants and brick making plants whereas bottom ash shall be disposed off in a suitably designed landfill as per CPCB guidelines to prevent leaching to the sub-soil and underground aquifer. Solid waste generated in the form of Iron ore fines, blast furnace slag, BF scrap scales from slab caster and scales from steel mill will be sold to the scrap dealers except for BF slag which will be sold to the cement manufacturers.	Mill scale is used in the Sinter plant. Fly ash is used in brick making plants and bottom ash is disposed off at designated landfill. BF Slag is disposed off by sale to cement manufacturers. Iron ore fines, BF Scrap scales from slab caster and scales from steel mill are used at Sinter plant.
viii)	The company shall be developing surface water harvesting structure to harvest the rain water for utilization in the lean season besides recharging the ground water table.	Rain water harvesting ponds are existing in the plant premises and channels are provided for collection of rain water of the plant into the pond. The collected rain water is utilized for various plant activities in lean season. Also it helps in recharge of ground water table.
ix)	Green belt shall be developed in at least 71.5 ha area within and around the plant premises as per the CPCB guidelines in consultation with DFO.	<p>Sunflag Iron & Steel Co. Ltd. has 200 Ha of land covering factory, colony and other amenities. Presently, land available for green belt is about 72 Ha and green belt has covered the maximum portion of land.</p> <p>From the last two decade, factory is regularly carrying out tree plantation and green belt development within the factory and colony premises as per CPCB guidelines. Till date, the factory has planted approx 5,07,758 trees covering 22 varieties such as Neem, Pipal, Casia, Mango, Gulmohor, Eucalyptus, Khair, Chichwa, Shisam, Ashoka, Karanj, Teak, Jamun, Palas, Hiwar, Dhaora, Bamboo, Royal Palm, Coconut, Guahava, etc. and the survival rate is about 96 %. The green belt is spread in and around the plant area.</p>
x)	Occupational health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Medical examinations of workers are carried out regularly. A dispensary with regular medical practitioner and auxiliary nursing facility is available in the plant premises. Additionally, a panel of doctors regularly visits to the factory for checkup the health of workers & staff, the records of same is being maintained.

xi)	The project authorities shall undertake eco-development measures including community welfare measures in and around the project site. An action plan indicating proposed activities under this shall be performed and submitted to the Maharashtra Pollution Control Board (MPCB) within three months from the date of issuing this letter.	Action plan for undertaking eco - development measures including community welfare measures in & around the plant indicating the activities to be performed and undertaken is submitted to Maharashtra Pollution Control Board.
xii)	Recommendations made in the corporate Responsibility for Environment Protection (CREP) for the steel plants shall be implemented and report submitted to the Ministry/CPCB/MPCB.	M/s. Sun-flag Iron & Steel Co. Ltd. is one of the leading Corporate Houses in the country and always emphasizes on its Corporate Responsibility for Environment Protection (CREP) for steel plant. Recommendations made in the CREP for steel plant are implemented by the plant on priority basis and regularly submit the report to Ministry/CPCB/MPCB.

(B) General Conditions

SN	Conditions	Compliance
i	The project authorities must strictly adhere to the stipulations made by the Maharashtra Pollution Control Board (MPCB) and the State Government.	Consent to Operate is obtained from Maharashtra Pollution Control Board for existing set-up and it is valid upto 31-05-2022. Compliance of the stipulations indicated in the MPCB Consent to Operate, are regularly complied.
ii	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	Factory will not carry out further expansion or modification in the plant without prior approval of Ministry of Environment and Forests.
iii	At least four ambient air quality monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO ₂ and NO _x are anticipated in consultation with the MPCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional office at Bhopal and MPCB/CPCB once in six months.	Factory has an established Four Ambient Air Quality Monitoring Stations in consultation with MPCB. Factory is regularly monitoring and analyzing pollution sources. The programme includes stack sampling, ambient air quality monitoring, noise level measurement, fugitive dust monitoring and treated effluent at various locations. The plant is regularly submitting the monitored data to MPCB. Please refer Annexure - 1 (A to E) .

<p>iv</p>	<p>Industrial waste water shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time the treated waste water shall be utilized for plantation purpose.</p>	<p>For the treatment of industrial effluent generated from the existing plant activities, an ETP is provided with flash mixer, clarifier, pH correction tank, sludge storage tank, sludge transfer pump, thickener, sludge drying beds, Vacuum filter etc is provided at steel plant.</p> <p>For CPP effluent, a neutralization pit is provided.</p> <p>At Centralized Pickling Plant, separate effluent treatment plant is provided with units as Collection cum neutralization Tank for Spent Acid, Collection cum Neutralization Tank for Rinse Water, Lime Solution Tank, Gravity Sand Filters, Filter press, Clariflocculator and treated Effluent Tank. Finally treated effluent is being recycle/reused for cleaning of pickling product.</p> <p>At MBF, water is sprayed in venture scrubbers used for cleaning MBF gases. The water from scrubbers is collected in thickener. The clear overflow from the thickener is recycled back for scrubbing. The thickened sludge from the bottom is dewatered in vacuum drier and the disposed water is sent back to the thickener. Dried Sludge is being use in the sinter plant. Effluent discharge from MBF is nil.</p>
<p>v</p>	<p>The project authorities must strictly comply with the provisions made in Manufacture, storage and import of Hazardous chemicals Rules 1989 as amended in 2000 for handing of hazardous chemicals etc. the project authorities must also strictly comply with the rules and regulations with regards to handing and disposal of hazardous wastes in accordance with regard to handing and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management and Handling) Rules, 2003. Authorization from the State Pollution Control Board must be obtained for collection/ treatment/ storage / disposal of hazardous wastes.</p>	<p>Hazardous Chemicals handled in the factory are the Liquid Nitrogen and Liquid Oxygen. Both the chemicals are listed in the List of Hazardous Chemicals of Manufacture, Storage and Import of Hazardous Chemicals (Amendment) Rules, 2000. Both chemicals are stored in separate isolated storage tanks & used through pipeline in the manufacturing process. The necessary permissions for storage of these chemicals from concerned department are taken by the factory. Safety Audit and On-site Emergency Plan are already prepared by the factory and follow it regularly.</p> <p>Oxygen & Nitrogen are stored as per Explosive Rules and all the conditions will be followed meticulously. As per Hazardous Waste (MH & TM) Rules, 2008 of the Environment Protection Act, 1986 and Amendments thereto, the steel plant complies with all the stipulated norms. Membership of Common Hazardous Waste Treatment Storage and Disposal Facility (CHWTSDF), Butibori has been taken, reuse & disposal of hazardous wastes generated at factory is carried as per MPCB directions.</p>

vi	<p>The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time).</p>	<p>Plant has provided noise control measures including acoustic hoods, silencers, enclosures etc. on all noise generating sources to maintain the noise level within the prescribed standards under EPA Rules, 1989.</p> <p>The report of the monitored noise level data please refer Annexure – 1 C.</p>
vii	<p>The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report. Further, the company must undertake socio- economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.</p>	<p>SISCO comply with the recommendations made by the Public Hearing Panel for expansion project. Compliance of the safeguards recommended in the EIA/EMP report is a regular feature of the plant.</p> <p>The company is undertaking socioeconomic development activities in the surrounding villages like community development programmes, educational programmes, Skill development programmes for unemployed youth & women's, drinking water supply, and health checkup camps.</p>
viii	<p>As committed, Project authorities shall provide funds of Rs. 20.54 Crores recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purpose.</p>	<p>In order to implement the conditions stipulated by the Ministry of Environment and Forests, Govt. of India as well as the Maharashtra Government, factory has carried out capital expenditure on pollution control facilities and providing adequate funds for capital & recurring expenditure.</p>
ix	<p>The regional office of this Ministry at Bhopal/ MPCB/ CPCB will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.</p>	<p>Noted. Six monthly EC compliance report is being submitted on regular basis.</p>

x	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the MPCB/ Committee and may also be seen at website of the Ministry of Environment and Forests at http://ensfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office.	Complied.
xi	Project authorities should inform the Regional Office as well as the Ministry the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	The factory has already informed the Regional Office as well as Ministry about the date of financial closure and final approval of the project and the date of commencing the land development work.
5.	The Ministry may revoke or suspend the clearance, if implementation of any of the above condition is not satisfactory	Noted.
6.	The Ministry reserve the right to stipulate additional conditions if found necessary. The company in a time bound manner will be implement these condition.	Noted.
7.	The above condition will be enforced, inter-alia under them provision of the water (Prevention & Control of Pollution) Act 1974, the Air (Prevention & Control of Pollution) Act 1981, The Environment Protection Act 1986, Hazardous wastes (Management and handling) Rules 2003 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.	Noted and Implemented.

COMPLIANCE STATUS OF CONDITIONS IMPOSED BY MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE VIDE THEIR LETTER NO. J-11011/355/2004-IAII (I) dated 02-05-2017

Period: From 1st April - 2020 to 30th – September - 2020.

(A) SPECIFIC CONDITIONS :

i)	The project proponent shall install 24x7 air monitoring devices to monitor air emissions, as provided by the CPCB and submit report to Ministry and its Regional Office.	Complied.
ii)	The canal passing through the project site should be fenced on both the sides, leaving a passage for maintenance related activities by the concerned department. No effluent should be discharged into the canal. No water from the canal should be abstracted without permission.	Complied.
iii)	The natural drainage passing through the site should not be disturbed or diverted and no solid waste or liquid effluent should be discharged into the drain.	Complied.
iv)	A statement on carbon budgeting including the quantum of equivalent Co ₂ being emitted by the existing plant operations, the amount of carbon sequestered annually by the existing green belt and the proposed green belt and the quantum of equivalent Co ₂ that will be emitted due to the proposed expansion shall be prepared by the project proponent and submitted to the Ministry and the Regional Office of the Ministry. This shall be prepared every year by the project proponent. The first such budget shall be prepared within a period of 6 months and subsequently it should be prepared every year.	Complied, Report for 2017-18 already submitted vide letter No. SF: Utility :Pollution: 2392 dtd. 27.10.2017. Report for 2018-19 also submitted vide letter no.MoEFCC/18-19/2466A dtd 24.10.2018. Report for 2019-20 is also attached herewith as per Annexure-3

v)	For the employees working in high temperature zones falling in the plant operation areas, the total shift duration would be 4 hrs or less per day where the temperature is more than 50°C. Moreover, the jobs of these employees will be alternated in such a way that no employee is subjected to working in high temperature area for more than 1 hr continuously. Such employees would be invariably provided with proper protective equipments, garments and gears such as head gear, clothing, gloves, eye protection etc.	Complied.
vi)	Continuous stack monitoring facilities for all the stacks shall be provided and sufficient air pollution control devices viz. Electrostatic precipitator (ESP), bag house, bag filters etc. shall be provided to keep the emission levels below 50 mg/Nm ³ and installing energy efficient technology.	Complied.
vii)	Efforts shall further be made to use maximum water from the rain water harvesting sources. Use of air cooled condensers shall be explored and closed circuit cooling system shall be provided to reduce water consumption and water requirement shall be modified accordingly. All the effluent should be treated and used for ash handling, dust suppression and green belt development. A revised water balance statement should be submitted by the Project Proponent with the 6 monthly compliance report.	Complied as per guidelines, the effluent is treated and reused as per guidelines, Revised water balance statement was already submitted vide Annexure-2 of letter No.SF:Utility : Pollution : 2392 dtd 27.10.17.
viii)	All the coal fines and char shall be utilized within the plant and no char shall be used for briquette making or disposed off anywhere else. Scrap shall be used in steel melting shop (SMS) and SMS slag and kiln accretions shall be properly utilized. All the other solid waste including broken refractory mass shall be properly disposed off in environment-friendly manner.	Complied .

ix)	All internal roads shall be black topped/Concretized/Paver blocked or shall be any other type of pucca road. The roads shall be regularly cleaned with mechanical sweepers. A 3-tier avenue plantation using native species shall be developed along the roads. Facilities for parking of trucks carrying raw coal from the linked coalmines shall be created within the Unit.	Complied.
x)	The Standards issued by the Ministry vide G.S.R. No. 277(E) dated 31st March, 2012 regarding integrated iron and steel plant shall be followed.	Standard followed as per MoEFCC /SPCB Guidelines.
xi)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed.	Standard followed as per MoEFCC / SPCB Guidelines.
xii)	Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry vide G.S.R. 414(E) dated 30th May, 2008 and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.	Emission level controlled within latest permissible limits as per MoEFCC/CPCB Guidelines.
xiii)	Vehicular pollution due to transportation of raw material and finished product shall be controlled. Proper arrangements shall also be made to control dust emissions during loading and unloading of the raw material and finished product.	Complied, arrangement has been made to control dust emission during loading & Unloading of trucks.
xiv)	'Zero' effluent discharge shall be strictly followed and no waste water shall be discharged outside the premises. The calculations to this effect shall be submitted.	Complied, achieved zero effluent discharge.

xv)	Regular monitoring of in-fluent and effluent surface, sub-surface and ground water shall be ensured and treated waste water shall meet the norms prescribed by the State Pollution Control Board (SPCB) or described under the E(P) Act whichever are more stringent.	Complied, regular monitoring of effluent & water is carried out as per guidelines, treated waste water is within norms of prescribe standard of SPCB & reuse in the process of plant..
xvi)	Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/hazardous waste shall be submitted to the Ministry's Regional Office, SPCB and CPCB.	Complied.
xvii)	A time bound action plan shall be submitted to reduce solid waste generated due to the project related activities, its proper utilization and disposal.	Complied.
xviii)	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 1999 and subsequent amendment in 2003 and 2009. All the fly ash shall be provided to cement and brick manufacturers for further utilization and Memorandum of Understanding shall be submitted to the Ministry's Regional Office at Chennai.	At present there is no fly ash generation, as Power plant has not been installed against approval in EC 02.05.2017. Hence this condition will be full filled after installation & commissioning of new Captive Power Plant.
xix)	A Risk and Disaster Management Plan shall be prepared and a copy submitted to the Ministry's Regional Office, SPCB and CPCB within 3 months of issue of environment clearance letter.	Already submitted within three month from issue date of EC, vide letter No.SF:UTI:Pollution : 2374 dtd. 26.07.2017.
xx)	Green belt shall be developed in at least 33% of the project area by planting native and broad leaved species in consultation with local DFO and local communities as per the CPCB guidelines.	Complied .

xxi)	At least 5 % of the total cost of the project shall be earmarked towards the Enterprise Social Commitment based on locals need and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office. Implementation of such program shall be ensured by constituting a Committee comprising of the proponent, representatives of village Panchayat and District Administration. Action taken report in this regard shall be submitted to the Ministry's Regional Office.	Complied, Enterprise Social Commitment work has been taken based on local need as per requirement of Gram / Village panchayat and District administration
xxii)	The proponent shall prepare a detailed CSR Plan for every year for the next 5 years for the existing-cum-expansion project, which includes village-wise, sector-wise (Health, Education, Sanitation, Health, Skill Development and infrastructure requirements such as strengthening of village roads, avenue plantation, etc) activities in consultation with the local communities and administration. The CSR Plan will include the amount of 2% retain annual profits as provided for in Clause 135 of the Companies Act, 2013 which provides for 2% of the average net profits of previous 3 years towards CSR activities for life of the project. A separate budget head shall be created and the annual capital and revenue expenditure on various activities of the plan shall be submitted as part of the Compliance Report to RO. The details of the CSR Plan shall also be uploaded on the company website and shall also be provided in the annual report of the company.	<p>The Budget for spending under CSR activities for the year 2019-20 was approved by the Board of Directors of the Company at its meeting held on 21st May, 2019 of Rs. 3,04,05,526/- as per the CSR Policy of the Company.</p> <p>The details of CSR expenditure incurred has been published in the Annual Report 2019-20.</p> <p>As per Section 135 of the Companies Act, 2013, the amount required to be spent on Corporate Social Responsibility (CSR) activities for the financial year is derived by formula i.e. 2% of the average net profits of the Company for immediately three (3) preceding financial years.</p> <p>As per this clause xxii, the CSR budget for the future five (5) years is required, which at this point of time is neither possible nor permitted to be arrived at as this is a future event. However, the same can be furnished on the yearly basis after adoption of the Audited Annual Accounts by the Board of Directors of the Company, which may kindly be noted.</p> <p>Please refer Annexure 2</p>

xxiii)	<p>The Company shall submit within three months their policy towards Corporate Environment Responsibility which shall inter-alia address</p> <p>(i) Standard operating process/procedure to being into focus any infringement/deviation/violation of environmental or forest norms/conditions,</p> <p>(ii) Hierarchical system or Administrative order of the Company to deal with environmental issues and ensuring compliance to the environmental clearance conditions and</p> <p>(iii) System of reporting of non-compliance/violation environmental norms to the Board of Directors of the company and/or stakeholders or shareholders.</p>	Complied, Already submitted policy towards Corporate Environment Responsibility within three month from EC issue date along with quarterly compliance report vide letter No. SF: UTI: Pollution: 2374 dtd 26.07.2017.
xxiv)	The project proponent shall provide for solar light system for all common areas, street lights, villages, parking around project area and maintain the same regularly.	Partly Complied .
xxv)	The project proponent shall provide for LED lights in their offices and residential areas.	Complied.
xxvi)	The project proponent shall install bio gas plant for kitchen waste utilization generated in their plant canteen and township (If any). The generated gas shall be utilized in their canteen and manure shall be used in their garden.	Complied, Instead of Bio Gas plant, we make manure from Kitchen waste through composting machine & manure is being used for Nursery / Garden.
xxvii)	Provision shall be made for the housing of construction labours within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, Safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied.

xxviii)	Public health center of the factory should be strengthened and also extend medical facilities to the villagers inhabiting surrounding areas. A report in this regard to be submitted along with the 6 monthly compliance report.	Complied .
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(B) General Conditions : -

S.No.	Conditions	Compliance
i)	The project authorities must strictly adhere to the stipulations made by the Maharashtra Pollution Control Board and the State Government.	Noted and complied.
ii)	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests and Climate Change (MoEF & CC).	Noted
iii)	At least four ambient air quality monitoring stations should be established in the downward direction as well as where maximum ground level concentration of PM10, PM2.5 SO2 and NOx are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional office at Nagpur and MPCB/CPCB once in six months.	Complied.
iv)	Industrial waste water shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time the treated waste water shall be utilized for plantation purpose.	Complied. Industrial waste water collected and treated at ETP, maintained parameters within permissible limit of CPCB & SPCB.

v)	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time).	Complied.
vi)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Complied .
vii)	The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	Complied. Rain water harvesting ponds are made in the plant premises and channels are provided for collection of rain water of the plant into the pond. The collected rain water is utilized for various plant activities in lean season. Also it helps in recharge of ground water table.
viii)	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report. Further, the company must undertake socioeconomic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	<p>Complied, SISCO comply with the recommendations made by the Public Hearing Panel for expansion project. Compliance of the safeguards recommended in the EIA/EMP report is a regular feature of the plant.</p> <p>The company is undertaking socioeconomic development activities in the surrounding villages like community development programmes, educational programmes, Skill development programmes for unemployed youth & women's, drinking water supply, and health checkup camps.</p>
ix)	Requisite funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change (MoEFCC) as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Nagpur. The funds so provided shall not be diverted for any other purpose.	Refer Annexure 2

x)	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.	Complied. Already submitted along with quarterly compliance report vide letter No. SF: UTI: Pollution: 2374 dtd. 26.07.2017
xi)	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEFCC at Nagpur. The respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM10, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	Complied.
xii)	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEFCC, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Nagpur / CPCB / SPCB shall monitor the stipulated conditions.	Noted & Complied as per guidelines. Six monthly EC compliance report is being submitted on regular basis.
xiii)	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MOEFCC at Nagpur by e-mail.	Complied.

xiv)	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment, Forests and Climate Change (MoEFCC) at http://envfor.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office at Nagpur.	Complied , already submitted along with quarterly compliance report vide letter No. SF: UTI: Pollution: 2374 dtd. 26.07.2017.
xv)	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	<p>The company have approached prospective lenders for tie-up of funding the proposed projects and have received part sanction. However, the sanction formalities are yet to be Complied.</p> <p>Accordingly, financial closure for the entire projects are yet to be completed.</p> <p>Partially expansion project of granted EC has been completed. After start of balance project financial closure date and date of commencing of land development work will be submitted.</p>
1.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Noted
2.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.	Noted

3.	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management, Handling and Trans boundary Movement) Rules 2008 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.	Noted.
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ANNEXURE-1. (A)**STACK EMISSION STATUS****Location :S-3 (BSM)**

Stack Identity	S-3 (BSM)
Stack attached to	Reheating Furnace of Bar & Section Mill
Material of construction	Mild Steel
Stack height above ground level	65.0 mtr.
Stack shape at top	Circular
Stack diameter	1.5 mtr
Type of fuel	Furnace Oil & BF Gas

Results of Analysis

Sr. No.	Date of Monitoring	Temp (°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)	SO ₂ (kg/day)	NO _x (mg/Nm ³)
1	04-06-2020	298	10.5	34112.7	39.3	1272.8	390.0
2	10-06-2020	305	10.1	32232.5	37.8	1133.4	327.7
3	15-06-2020	314	10.2	32053.4	31.2	1537.7	343.9
4	06-07-2020	320	10.6	32970.7	41.4	1478.6	341.6
5	13-07-2020	309	11.3	36001.0	44.2	2050.9	350.7
6	20-07-2020	307	10.8	34567.4	28.6	1192.1	325.1
7	27-07-2020	312	10.5	33327.9	36.6	972.1	318.5
8	09-08-2020	302	10.3	33007.5	38.3	1281.6	316.7
9	16-08-2020	312	10.5	33169.4	31.4	995.2	364.9
10	23-08-2020	322	11.2	34690.3	36.7	1080.2	329.9
11	06-09-2020	307	10.4	33071.4	32.8	814.3	297.7
12	13-09-2020	314	10.4	32742.1	29.5	596.0	248.3
13	20-09-2020	310	11.1	35022.7	34.2	774.0	286.9
14	27-09-2020	302	10.7	34292.5	35.3	985.3	312.7
Method	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009	IS 11255 (Part 2): 1985 RA 2014	IS 11255 (Part 7): 2005 RA 2017	

Norms: Total Particulate Matter (PM)-100 mg/Nm³.**Sulphur Dioxide – 2916 Kg/Day.**

STACK EMISSION STATUS**Location:-SMS-Secondary**

Stack Identity	SMS-Secondary
Stack attached to	EAF & LHF of Steel Melting Shop through Bag Filters
Material of construction	Mild Steel
Stack height above ground level	36.75 mtr.
Stack shape at top	Circular
Stack diameter	4.3 mtr
Type of fuel	Type of Fuel Electricity & O ₂ is used for melting

Results of Analysis

Sr. No.	Date of Monitoring	Temp (°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)
1	05-06-2020	92	9.39	389925.0	27.4
2	10-06-2020	94	9.75	402678.7	24.4
3	17-06-2020	87	9.96	419327.6	26.6
4	03-07-2020	91	8.92	371420.6	34.5
5	15-07-2020	84	10.6	453831.3	31.7
6	27-07-2020	79	10.0	430603.4	43.4
7	02-08-2020	86	12.2	517141.0	38.6
8	09-08-2020	94	12.0	497142.4	37.6
9	16-08-2020	82	11.7	502442.2	39.4
10	23-08-2020	90	11.8	495086.2	36.6
11	06-09-2020	87	11.2	472751.4	40.2
12	13-09-2020	92	10.7	444299.5	37.4
13	20-09-2020	98	11.7	479937.1	35.7
14	27-09-2020	95	11.4	469874.3	42.6
Method	IS 11255 (Part 3): 2008 RA 2008	IS 11255 Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009	

Norms: Total Particulate Matter (PM)-100 mg/Nm³.

STACK EMISSION STATUS**Location:-S-2 (CPP-FBC Boiler)**

Stack Identity	S-2 (CPP-FBC Boiler)
Stack attached to	FBC Boiler of CPP through ESP
Material of construction	Mild Steel
Stack height above ground level	55 mtr.
Stack shape at top	Circular
Stack diameter	1.6 mtr
Type of fuel	Coal Fines, DRI Ash, ESP Dust

Results of Analysis

Sr. No.	Date of Monitoring	Temp(° C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)	SO ₂ (kg/day)	NO ₂ (mg/ Nm ³)
1	06-06-2020	116	7.81	42136.6	28.5	1664.0	548.5
2	09-06-2020	109	7.83	43019.2	43.9	1577.4	584.0
3	15-06-2020	110	7.88	43179.7	27.2	1493.2	471.5
4	22-06-2020	124	8.00	42290.8	26.7	1586.1	558.7
5	08-07-2020	130	8.19	42651.2	36.5	2254.5	592.4
6	15-07-2020	134	8.61	44396.5	33.7	2368.3	616.7
7	22-07-2020	144	9.05	45544.4	43.8	2341.3	684.6
8	02-08-2020	152	8.77	43305.7	39.7	2261.0	717.4
9	09-08-2020	144	8.91	44842.3	42.0	2360.6	652.3
10	16-08-2020	147	8.90	44472.6	36.5	2472.8	696.4
11	23-08-2020	137	9.47	48472.5	38.3	2616.5	708.4
12	06-09-2020	157	8.96	43721.2	45.4	2878.0	795.0
13	13-09-2020	147	9.08	45372.1	47.0	3290.9	790.8
14	20-09-2020	142	8.91	45059.1	41.6	2924.4	708.9
15	27-09-2020	127	9.22	48372.0	39.3	2741.8	691.4
	Method	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009	IS 11255 (Part 2):1985 RA 2014	IS 11255 (Part 7):2005 RA 2017

Norms: **Total Particulate Matter (PM)-100 mg/Nm³.****Sulphur Dioxide – 4100 Kg/Day.**

STACK EMISSION STATUS**Location:-S-10 (MBF Stoves)**

Stack Identity	S-10 (MBF Stoves)
Stack attached to	MBF Gas Fired Hot Blast Burner Stoves
Material of construction	Mild Steel
Stack height above ground level	45.0 mtr.
Stack shape at top	Circular
Stack diameter	2.0 mtr
Type of fuel	MBF Cleaned Gas & Coke

Results of Analysis

Sr. No.	Date of Monitoring	Temp (°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)	SO ₂ (kg/day)	NO _x (mg/Nm ³)
1	06-06-2020	158	12.8	97823.3	48.5	1197.2	395.1
2	09-06-2020	162	12.3	93009.6	46.5	1166.9	376.0
3	15-06-2020	154	12.1	93138.5	37.2	618.5	324.3
4	06-07-2020	164	12.7	95436.3	47.3	1529.5	368.3
5	15-07-2020	152	12.3	95583.8	28.2	1375.3	362.1
6	20-07-2020	143	12.9	101667.2	30.4	1048.6	329.7
7	27-07-2020	168	13.3	99469.5	40.4	1424.5	361.4
8	02-08-2020	148	12.4	96954.0	30.2	1355.8	386.2
9	09-08-2020	147	12.6	98440.5	42.4	992.6	369.0
10	16-08-2020	140	13.1	103756.6	34.6	1183.4	377.4
11	23-08-2020	150	13.3	102999.2	32.2	1149.2	378.9
12	06-09-2020	158	14.2	108235.8	36.2	1430.5	384.6
13	13-09-2020	138	12.3	98436.8	31.5	1434.3	408.1
14	20-09-2020	142	12.2	96623.0	34.6	1379.4	371.3
15	27-09-2020	148	12.5	97264.2	29.7	1409.9	397.0
Method	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009	IS 11255 (Part 2): 1985 RA 2014	IS 11255 (Part 7): 2005 RA 2017	

Norms: **Total Particulate Matter (PM)-100 mg/Nm³.**
Sulphur Dioxide – 1620 Kg/Day.

STACK EMISSION STATUS

Location:-S-23 (Sinter Plant)

Stack Identity	S-23 (Sinter Plant)
Stack attached to	Head ESP at Sinter Plant
Material of construction	Mild Steel
Stack height above ground level	50.0 mtr.
Stack shape at top	Circular
Stack diameter	3.0 mtr
Type of fuel	Coke Breeze/Fines

Results of Analysis

Sr. No.	Date of Monitoring	Temp(°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)	SO ₂ (kg/day)	NO _x (mg/Nm ³)
1	08-06-2020	172	19.1	317241.2	68.4	232.9	164.2
2	16-06-2020	168	18.6	311731.3	62.1	209.6	256.9
3	24-06-2020	146	12.1	212327.5	72.4	253.5	184.2
4	10-07-2020	178	18.3	300379.6	66.4	213.0	194.4
5	17-07-2020	164	17.4	294131.8	63.1	267.2	190.7
6	24-07-2020	174	18.2	300906.6	53.7	219.3	239.1
7	29-07-2020	157	15.7	270827.4	61.9	239.2	255.0
8	02-08-2020	177	19.0	311501.7	66.5	263.4	256.6
9	09-08-2020	168	17.9	299490.5	68.3	245.8	238.3
10	16-08-2020	157	17.6	303199.3	53.4	220.6	227.1
11	23-08-2020	172	16.1	267484.7	61.8	258.4	244.6
12	06-09-2020	168	13.7	230314.5	53.5	253.6	261.8
13	13-09-2020	156	13.0	223695.7	54.6	254.5	248.5
14	20-09-2020	174	14.2	234470.9	59.3	242.6	237.5
15	27-09-2020	178	14.3	233542.5	61.7	260.3	291.0
Method		IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009	IS 11255 (Part 2): 1985 RA 2014	IS 11255 (Part 7): 2005 RA 2017

Norms: **Total Particulate Matter (PM)-100 mg/Nm³.**
Sulphur Dioxide – 272 Kg/Day.

STACK EMISSION STATUS

Location:-S-24 (Sinter Plant)

Stack Identity	S-24 (Sinter Plant)
Stack attached to	Tail ESP at Sinter Plant
Material of construction	Mild Steel
Stack height above ground level	40.0 mtr.
Stack shape at top	Circular
Stack diameter	2.376 mtr
Type of fuel	Coke Breeze/Fines

Results of Analysis

Sr. No.	Date of Monitoring	Temp(°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)	SO ₂ (kg/day)	NO _x (mg/Nm ³)
1	08-06-2020	164	11.5	122805.9	45.8	77.0	125.1
2	16-06-2020	157	10.9	118102.4	46.1	81.3	162.6
3	24-06-2020	140	8.47	95284.6	52.2	68.7	121.3
4	10-07-2020	144	8.57	95480.9	55.9	83.0	184.3
5	17-07-2020	150	8.96	98407.4	59.6	74.9	154.2
6	24-07-2020	157	8.98	97020.2	49.2	75.2	144.6
7	29-07-2020	142	8.52	95377.4	66.8	79.4	175.2
8	02-08-2020	147	9.14	101106.8	57.8	76.7	190.7
9	09-08-2020	156	9.31	100824.1	63.9	77.9	183.9
10	16-08-2020	138	9.43	106600.5	72.3	82.9	172.1
11	23-08-2020	142	9.24	103437.5	56.3	75.0	148.1
12	06-09-2020	152	9.33	101984.7	73.7	85.3	196.2
13	13-09-2020	148	8.86	97771.4	73.8	79.2	176.5
14	20-09-2020	143	9.21	102858.0	69.4	73.8	167.2
15	27-09-2020	154	9.38	102062.1	74.6	82.1	188.8
Method	IS 11255 (Part 3):	IS 11255 (Part 3):	IS 11255 (Part 3):	IS 11255 (Part 3):	IS 11255 (Part 1):	IS 11255	IS 11255 (Part

	2008 RA 2008	RA 2008	RA 2008	1985 RA 2009	(Part 2):1985 RA 2014	7):2005 RA 2017
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Norms: **Total Particulate Matter (PM)-100 mg/Nm³.****Sulphur Dioxide – 92 Kg/Day.****STACK EMISSION STATUS****Location:-S-1A (ASM)**

Stack Identity	S-1A (ASM)
Stack attached to	Reheating Furnace of Alloy Steel Mill
Material of construction	Mild Steel
Stack height above ground level	30.0 mtr.
Stack shape at top	Circular
Stack diameter	1.1 mtr
Type of fuel	Furnace Oil & BF Gas

Results of Analysis

Sr. No.	Date of Monitoring	Temp(° C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)	SO ₂ (kg/day)	NO _x (mg/Nm ³)
1	04-06-2020	172	6.02	13421.4	36.2	311.5	275.5
2	08-07-2020	187	6.64	14320.7	41.2	295.3	280.9
3	13-07-2020	198	6.10	12849.2	39.3	267.9	291.3
4	22-07-2020	176	5.55	12263.3	42.0	212.0	269.6
5	09-08-2020	174	5.70	12650.9	28.9	262.6	293.1
6	16-08-2020	187	5.97	12875.6	34.9	159.7	269.5
7	23-08-2020	220	6.68	13442.3	36.7	254.1	295.0
8	06-09-2020	198	6.55	13796.2	32.6	146.5	283.1
9	13-09-2020	172	6.72	14981.0	38.6	216.2	259.2
10	20-09-2020	186	6.84	14783.8	30.8	205.9	266.9
Method	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009	IS 11255 (Part 2):1985 RA 2014	IS 11255 (Part 7):2005 RA 2017	IS 11255 (Part 7):2005 RA 2017

Norms: **Total Particulate Matter (PM)-100 mg/Nm³.****Sulphur Dioxide – 720 Kg/Day.**

STACK EMISSION STATUS

Location:-S-34 Blooming Mill

Stack Identity	S-34 Blooming Mill
Stack attached to	Reheating Furnace Blooming Mill
Material of construction	Mild Steel
Stack height above ground level	70.0 mtr.
Stack shape at top	Circular
Stack diameter	2.0 mtr
Type of fuel	Furnace Oil

Sr. No.	Date of Monitoring	Temp (°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm³/hr)	Total Particulate Matter (PM) (mg/Nm³)	SO ₂ (kg/day)	NO _x (mg/Nm³)
1	05-06-2020	317	9.97	55414.2	45.3	1738.5	444.5
2	09-06-2020	310	9.90	55687.3	40.6	744.0	326.5
3	10-07-2020	302	10.0	57373.1	47.1	893.3	387.8
4	13-07-2020	318	10.3	57646.2	36.7	1837.5	430.4
5	20-07-2020	294	10.1	58817.2	46.7	1112.0	391.7
6	02-08-2020	297	10.2	58793.7	27.4	1067.6	375.7
7	09-08-2020	284	10.1	59928.0	28.0	839.0	363.8
8	06-09-2020	302	10.5	60105.7	33.3	966.1	388.7
9	13-09-2020	320	11.2	61763.2	28.6	903.0	373.7
10	20-09-2020	298	10.8	62023.2	25.7	915.8	390.4
11	27-09-2020	286	10.0	58897.2	34.5	1062.4	394.8
Method	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009	IS 11255 (Part 2): 1985 RA 2014	IS 11255 (Part 7): 2005 RA 2017	

Norms: **Total Particulate Matter (PM)-100 mg/Nm³.**
Sulphur Dioxide – 5490 Kg/Day.

STACK EMISSION STATUS

Location:- 30 Ton BELL Furnace-1

Stack Identity	30 Ton BELL Furnace-1
Stack diameter	0.38 meter

Results of Analysis

Sr. No.	Date of Monitoring	Temp(°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)
1	10-06-2020	142	11.3	3234.3	5.15
2	13-07-2020	147	11.4	3212.7	7.86
3	02-08-2020	127	10.2	3021.5	8.68
4	16-08-2020	124	10.6	3187.3	9.33
5	13-09-2020	122	10.8	3204.1	8.31
6	20-09-2020	128	11.7	3456.3	7.22
7	27-09-2020	116	11.2	3395.7	8.20
Method		IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009

Norms: **Total Particulate Matter (PM)-100 mg/Nm³.**

STACK EMISSION STATUS

Location:- Flux Screening (Sinter Plant)

Stack Identity	Flux Screening (Sinter Plant)
Stack diameter	1.1 meter

Results of Analysis

Sr. No.	Date of Monitoring	Temp(° C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm³/hr)	Total Particulate Matter (PM) (mg/Nm³)
1	08-06-2020	45	6.06	18909.6	30.6
2	16-06-2020	42	6.14	19342.5	26.2
3	24-06-2020	44	5.89	18437.7	30.3
4	10-07-2020	46	5.74	17855.2	29.6
5	17-07-2020	48	5.67	17527.3	35.3
6	24-07-2020	44	5.64	17655.1	36.4
7	29-07-2020	47	5.76	17862.4	29.4
8	02-08-2020	45	5.49	17130.3	38.3
9	09-08-2020	42	5.39	16979.2	42.5
10	16-08-2020	37	4.62	14787.3	44.9
11	23-08-2020	44	6.13	19188.2	35.6
12	06-09-2020	46	6.47	20127.1	40.4
13	13-09-2020	48	6.74	20836.4	38.2
14	20-09-2020	43	6.04	18967.1	35.8
15	27-09-2020	44	5.60	17529.6	32.7
Method		IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009

Norms: **Total Particulate Matter (PM)-100 mg/Nm³.**

STACK EMISSION STATUS

Location:-Flux Crusher Sinter Plant

Stack Identity	Flux Crusher Sinter Plant
Stack diameter	1.1 mtr

Results of Analysis

Sr. No.	Date of Monitoring	Temp(°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)
1	08-06-2020	38	4.32	13781.7	24.8
2	16-06-2020	36	4.46	14320.0	22.8
3	24-06-2020	37	4.50	14402.1	21.6
4	10-07-2020	40	4.35	13788.1	32.0
5	17-07-2020	43	4.00	12558.9	24.1
6	24-07-2020	38	3.86	12314.3	32.3
7	29-07-2020	36	3.89	12490.0	29.0
8	02-08-2020	37	3.96	12673.9	23.6
9	09-08-2020	36	4.27	13710.2	26.7
10	16-08-2020	34	3.81	12313.1	25.1
11	23-08-2020	35	3.89	12530.9	33.3
12	06-09-2020	35	3.87	12466.2	27.1
13	13-09-2020	40	4.39	13914.9	26.7
14	20-09-2020	38	4.67	14897.8	28.8
15	27-09-2020	40	4.60	14581.2	24.4
Method	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009

Norms: Total Particulate Matter (PM)-100 mg/Nm³.

STACK EMISSION STATUS

Location:- Reheating Furnace (Ingot)

Results of Analysis

Sr. No.	Date of Monitoring	Temp(°C)	Velocity of Flue Gas (m/sec)	Volume of Flue Gas (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)	SO ₂ (kg/day)	NO _x (mg/Nm ³)
1	23-06-2020	87	6.87	170377.5	29.7	694.1	386.5
Method		IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 3): 2008 RA 2008	IS 11255 (Part 1): 1985 RA 2009	IS 11255 (Part 2):1985 RA 2014	IS 11255 (Part 7):2005 RA 2017

Norms: **Total Particulate Matter (PM)- 100 mg/Nm³.**

Sulphur Dioxide – 720 Kg/Day.

ANNEXURE - 1 (B)**AMBIENT AIR QUALITY STATUS****1.0 Location:- A - 1 (Eklari Gate)**

Sr. No.	Month	Date of Monitoring	PM ₁₀	PM _{2.5}	SO ₂	NO _x
			µg/m ³	µg/m ³	µg/m ³	µg/m ³
1	Apr--20	07-04-2020 to 07-04-2020	31.4	16.7	6.67	12.5
2		07-04-2020 to 08-04-2020	30.9	15.7	7.20	10.3
3		08-04-2020 to 08-04-2020	24.9	14.5	6.61	7.10
4	Jun--20	04-06-2020 to 05-06-2020	63.2	27.5	9.32	17.3
5		05-06-2020 to 06-06-2020	70.7	32.1	9.19	18.1
6		08-06-2020 to 09-06-2020	71.2	33.2	9.10	19.5
7		09-06-2020 to 10-06-2020	65.6	31.4	9.69	18.6
8		15-06-2020 to 16-06-2020	64.7	30.9	9.56	18.8
9		16-06-2020 to 17-06-2020	65.7	31.1	9.82	19.2
10		22-06-2020 to 23-06-2020	70.1	34.8	9.14	17.2
11		23-06-2020 to 24-06-2020	59.3	27.2	9.60	16.1
12		01-07-2020 to 02-07-2020	70.3	31.7	9.44	15.3
13		03-07-2020 to 04-07-2020	67.9	28.4	9.38	15.9
14	July-20	06-07-2020 to 07-07-2020	81.2	38.6	11.6	17.7
15		10-07-2020 to 11-07-2020	76.5	35.9	10.6	17.3
16		13-07-2020 to 14-07-2020	69.4	32.6	10.2	16.7
17		17-07-2020 to 18-07-2020	72.9	34.9	10.4	17.2
18		20-07-2020 to 21-07-2020	63.2	29.3	9.80	15.7
19		24-07-2020 to 25-07-2020	66.3	31.4	9.67	15.5
20	Aug-20	02-08-2020 to 03-08-2020	67.4	29.1	10.3	15.5
21		03-08-2020 to 04-08-2020	68.2	30.9	10.5	16.2

22		09-08-2020 to 10-08-2020	69.1	30.8	11.1	16.4
23		10-08-2020 to 11-08-2020	73.2	32.5	11.4	16.6
24		16-08-2020 to 17-08-2020	68.8	30.8	11.6	16.5
25		17-08-2020 to 18-08-2020	64.7	28.3	10.3	16.5
26		23-08-2020 to 24-08-2020	69.1	31.8	11.1	16.1
27		24-08-2020 to 25-08-2020	71.7	32.4	11.5	17.2
28	Sept-20	06-09-2020 to 07-09-2020	72.8	34.3	12.4	17.4
29		07-09-2020 to 08-09-2020	76.8	37.5	12.7	17.8
30		13-09-2020 to 14-09-2020	81.3	39.0	14.1	20.2
31		14-09-2020 to 15-09-2020	78..6	37.1	13.7	19.6
32		20-09-2020 to 21-09-2020	73.8	34.5	12.2	18.2
33		21-09-2020 to 22-09-2020	74.6	35.1	12.1	18.3
34		27-09-2020 to 28-09-2020	74.2	34.5	12.0	18.1
35		28-09-2020 to 29-09-2020	72.5	34.6	11.7	17.9
NAAQM Standard			100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80(24 hrs)

• All Concentrations are in microgram per cubic meter

2.0 Location :- Pump House (Near Water Reservoir (A-2)

Sr. No.	Month	Date of Monitoring	PM ₁₀	PM _{2.5}	SO ₂	NO _x
			µg/m ³	µg/m ³	µg/m ³	µg/m ³
1	Apr--20	07-04-2020 to 07-04-2020	38.2	19.9	7.04	13.8
2		07-04-2020 to 08-04-2020	34.7	18.5	6.79	12.3
3		08-04-2020 to 08-04-2020	30.4	16.0	6.08	7.54
4	Jun--20	04-06-2020 to 05-06-2020	69.7	31.7	9.79	18.6
5		05-06-2020 to 06-06-2020	72.5	33.5	9.74	17.4
6		08-06-2020 to 09-06-2020	67.4	28.9	10.2	18.8
7		09-06-2020 to 10-06-2020	76.7	33.2	10.5	18.2
8		15-06-2020 to 16-06-2020	68.9	32.1	10.8	19.1
9		16-06-2020 to 17-06-2020	70.0	33.9	11.5	19.2
10		22-06-2020 to 23-06-2020	66.5	28.9	9.28	17.4
11		23-06-2020 to 24-06-2020	64.1	26.7	9.45	17.1
12	July-20	01-07-2020 to 02-07-2020	69.2	29.8	9.28	15.6
13		03-07-2020 to 04-07-2020	73.4	32.2	9.88	16.1
14		06-07-2020 to 07-07-2020	72.6	31.5	9.94	16.5
15		10-07-2020 to 11-07-2020	66.6	28.8	9.52	16.0
16		13-07-2020 to 14-07-2020	65.3	29.1	9.81	16.3
17		17-07-2020 to 18-07-2020	70.5	31.2	10.1	16.8
18		20-07-2020 to 21-07-2020	67.8	29.7	9.39	16.0
19		24-07-2020 to 25-07-2020	63.4	27.1	9.15	15.6
20	Aug-20	02-08-2020 to 03-08-2020	67.1	31.5	10.9	16.1
21		03-08-2020 to 04-08-2020	75.9	33.3	11.4	16.2
22		09-08-2020 to 10-08-2020	78.7	35.8	11.8	17.8

23		10-08-2020 to 11-08-2020	79.1	35.7	12.5	17.6	
24		16-08-2020 to 17-08-2020	82.3	38.2	13.2	18.4	
25		17-08-2020 to 18-08-2020	84.7	37.7	14.2	19.0	
26		23-08-2020 to 24-08-2020	85.4	37.1	15.3	20.3	
27		24-08-2020 to 25-08-2020	85.7	37.8	15.7	20.3	
28		Sept-20	06-09-2020 to 07-09-2020	80.3	37.0	14.9	20.6
29			07-09-2020 to 08-09-2020	84.3	39.5	15.5	21.6
30			13-09-2020 to 14-09-2020	82.9	37.7	15.2	21.5
31			14-09-2020 to 15-09-2020	78.1	35.6	14.7	21.0
32			20-09-2020 to 21-09-2020	79.7	36.4	14.8	21.0
33	21-09-2020 to 22-09-2020		78.2	36.4	14.7	20.9	
34	27-09-2020 to 28-09-2020		80.4	36.5	14.9	21.3	
35	28-09-2020 to 29-09-2020		83.7	38.2	15.2	21.8	
NAAQM Standard			100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80(24 hrs)	

• All Concentrations are in microgram per cubic meter

3.1 Location : STP (A-3)

Sr. No.	Month	Date of Monitoring	PM ₁₀	PM _{2.5}	SO ₂	NO _x
			µg/m ³	µg/m ³	µg/m ³	µg/m ³
1	June--20	04-06-2020 to 05-06-2020	60.3	26.4	8.46	16.9
2		05-06-2020 to 06-06-2020	57.3	21.1	9.33	17.3
3		08-06-2020 to 09-06-2020	69.7	30.6	8.85	19.6
4		09-06-2020 to 10-06-2020	64.4	28.9	9.53	17.9
5		15-06-2020 to 16-06-2020	63.1	27.9	9.45	18.1
6		16-06-2020 to 17-06-2020	61.5	26.4	9.05	17.8
7		22-06-2020 to 23-06-2020	62.4	21.3	8.95	16.4
8		23-06-2020 to 24-06-2020	65.8	24.5	8.74	17.0
9	July--20	01-07-2020 to 02-07-2020	61.7	24.3	8.40	15.6
10		03-07-2020 to 04-07-2020	63.6	24.4	8.32	15.7
11		06-07-2020 to 07-07-2020	64.4	23.9	8.51	15.8
12		10-07-2020 to 11-07-2020	68.3	26.5	8.69	16.2
13		13-07-2020 to 14-07-2020	57.9	23.8	8.49	15.1
14		17-07-2020 to 18-07-2020	64.2	26.4	8.92	15.7
15		20-07-2020 to 21-07-2020	62.9	23.2	8.69	15.9
16		24-07-2020 to 25-07-2020	60.3	21.8	8.55	15.2
17	Aug--20	02-08-2020 to 03-08-2020	62.9	25.2	8.79	16.0
18		03-08-2020 to 04-08-2020	63.9	26.1	8.57	16.7
19		09-08-2020 to 10-08-2020	64.7	27.3	9.72	16.2
20		10-08-2020 to 11-08-2020	66.8	28.6	9.64	17.3
21		16-08-2020 to 17-08-2020	65.4	28.1	9.49	16.8
22		17-08-2020 to 18-08-2020	65.1	27.4	9.55	16.7
23		23-08-2020 to 24-08-2020	65.2	30.7	9.56	17.3

24		24-08-2020 to 25-08-2020	64.1	27.9	10.8	17.1
25	Sept-20	06-09-2020 to 07-09-2020	68.6	31.2	10.8	17.5
26		07-09-2020 to 08-09-2020	65.2	29.5	10.6	16.6
27		13-09-2020 to 14-09-2020	67.4	30.7	11.2	17.2
28		14-09-2020 to 15-09-2020	64.0	28.6	10.2	16.6
29		20-09-2020 to 21-09-2020	64.2	29.8	10.2	16.8
30		21-09-2020 to 22-09-2020	68.2	32.1	11.6	18.0
31		27-09-2020 to 28-09-2020	67.1	30.1	11.3	17.6
32		28-09-2020 to 29-09-2020	69.1	30.3	11.9	18.6
NAAQM Standard			100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80(24 hrs)

- All Concentrations are in micro gram per cubic meter.

4. Location : Guest House (A-4)

Sr. No.	Month	Date of Monitoring	PM ₁₀	PM _{2.5}	SO ₂	NO _x
			µg/m ³	µg/m ³	µg/m ³	µg/m ³
1	Apr--20	07-04-2020 to 07-04-2020	28.4	13.9	6.12	11.5
2		07-04-2020 to 08-04-2020	26.1	13.5	6.0	9.66
3		08-04-2020 to 08-04-2020	23.2	11.4	6.0	7.4
4	Jun--20	04-06-2020 to 05-06-2020	60.4	23.2	8.62	18.4
5		05-06-2020 to 06-06-2020	62.7	22.9	8.69	19.2
6		08-06-2020 to 09-06-2020	61.5	20.8	8.15	18.7
7		09-06-2020 to 10-06-2020	58.1	20.2	8.68	17.7
8		15-06-2020 to 16-06-2020	60.4	26.6	8.50	17.9
9		16-06-2020 to 17-06-2020	55.8	24.7	8.41	16.5
10		22-06-2020 to 23-06-2020	66.5	28.2	8.34	17.3
11		23-06-2020 to 24-06-2020	59.2	24.6	8.64	16.3
12	July-20	01-07-2020 to 02-07-2020	61.9	24.3	8.53	15.7
13		03-07-2020 to 04-07-2020	63.8	24.7	8.41	15.7
14		06-07-2020 to 07-07-2020	58.9	21.3	8.18	15.2
15		10-07-2020 to 11-07-2020	64.2	25.9	8.82	16.1
16		13-07-2020 to 14-07-2020	67.3	29.2	9.20	16.8
17		17-07-2020 to 18-07-2020	65.8	29.0	9.11	16.1
18		20-07-2020 to 21-07-2020	59.3	22.7	8.31	15.5
19		24-07-2020 to 25-07-2020	57.9	21.1	8.19	15.1
20	Aug - 20	02-08-2020 to 03-08-2020	61.2	23.7	8.86	16.1
21		03-08-2020 to 04-08-2020	64.1	25.8	8.72	16.2
22		09-08-2020 to 10-08-2020	66.7	26.6	8.44	16.3
23		10-08-2020 to 11-08-2020	67.4	26.9	9.09	17.4

24		16-08-2020 to 17-08-2020	68.3	26.3	10.1	18.8
25		17-08-2020 to 18-08-2020	67.1	26.1	10.4	18.7
26		23-08-2020 to 24-08-2020	66.4	27.9	10.1	18.4
27		24-08-2020 to 25-08-2020	65.4	26.4	10.2	17.1
28	Sept-20	06-09-2020 to 07-09-2020	69.3	30.8	10.7	17.4
29		07-09-2020 to 08-09-2020	72.5	32.4	11.0	18.0
30		13-09-2020 to 14-09-2020	64.7	28.1	10.2	16.5
31		14-09-2020 to 15-09-2020	66.1	28.8	10.4	17.0
32		20-09-2020 to 21-09-2020	69.2	31.1	10.8	18.1
33		21-09-2020 to 22-09-2020	72.5	32.5	10.6	18.2
34		27-09-2020 to 28-09-2020	64.4	27.5	10.3	16.9
35		28-09-2020 to 29-09-2020	66.4	28.4	10.5	17.1
NAAQM Standard			100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80(24 hrs)

- All Concentrations are in microgram per cubic meter

ANNEXURE-1. (C)**Ambient Noise Quality Status**

June-2020	Hourly Average Noise Level dB (A)							
Location	1 st		2 nd		3 rd		4 th	
	06.06.2020		10.06.2020		17.06.2020		24.06.2020	
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
N-1 (Eklari Gate)	70.5	60.0	73.3	63.1	71.4	59.1	68.4	57.3
N-2 (Pump House-2) Near Water Reservoir	72.1	61.7	71.7	63.4	71.6	62.7	68.8	57.8
N-3 (STP)	52.6	49.2	53.0	47.4	53.7	49.0	51.2	46.8
N-4 (Guest House)	63.4	52.6	64.2	53.2	62.9	52.6	57.8	50.6
Norms	75	70	75	70	75	70	75	70

July-2020	Hourly Average Noise Level dB (A)									
Location	1 st		2 nd		3 rd		4 th		5 th	
	03-07-2020		10-07-2020		17-07-2020		24-07-2020		29-07-2020	
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
N-1 (Eklari Gate)	70.6	58.9	73.3	63.1	70.6	63.3	70.6	59.3	71.5	60.0
N-2 (Pump House-2) Near Water Reservoir	72.1	61.7	72.2	63.4	72.3	63.4	71.8	61.8	74.0	63.3
N-3 (STP)	53.9	46.5	52.6	49.2	53.7	46.3	53.0	47.5	52.5	48.8
N-4 (Guest House)	65.1	53.1	63.4	52.6	62.9	53.1	64.3	53.3	63.6	52.9
Norms	75	70	75	70	75	70	75	70	75	70

Aug-2020		Hourly Average Noise Level dB (A)							
Location	1 st		2 nd		3 rd		4 th		
	02-08-2020		09-08-2020		16-08-2020		23-08-2020		
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	
N-1 (Eklari Gate)	70.6	59.1	71.0	58.5	70.1	59.4	70.5	59.2	
N-2 (Pump House-2) Near Water Reservoir	71.3	61.5	73.2	63.5	73.9	63.8	72.3	63.4	
N-3 (STP)	52.9	45.8	54.7	46.5	53.3	46.7	52.6	49.2	
N-4 (Guest House)	60.5	52.1	65.1	53.1	63.9	53.1	63.4	52.6	
Norms	75	70	75	70	75	70	75	70	

Sept-2020		Hourly Average Noise Level dB (A)							
Location	1 st		2 nd		3 rd		4 th		
	06-09-2020		13-09-2020		20-09-2020		27-09-2020		
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	
N-1 (Eklari Gate)	70.6	59.3	73.3	63.1	70.1	59.4	73.2	63.2	
N-2 (Pump House-2) Near Water Reservoir	72.3	63.4	71.7	61.7	73.9	63.8	72.3	61.7	
N-3 (STP)	52.6	49.0	53.7	46.3	52.5	49.0	53.7	49.2	
N-4 (Guest House)	63.6	52.6	62.9	53.1	63.5	52.9	60.7	52.2	
Norms	75	70	75	70	75	70	75	70	

ANNEXURE-1. (D)**FUGITIVE DUST EMISSION MONITORING STATUS**

Sr. No.	LOCATION	Month	SPM ($\mu\text{g}/\text{m}^3$)	RSPM ($\mu\text{g}/\text{m}^3$)
1	Sinter Plant (Near Main Control Room Building)	April - 2020	--	--
		May -2020	--	--
		June – 2020	890.8	363.9
		July – 2020	683.1	289.1
		Aug. – 2020	1263.6	588.3
		Sept. - 2020	990.3	428.1
2	Raw Material Handling Area (Near Transfer Point)	April - 2020	--	--
		May -2020	--	--
		June – 2020	1237.1	594.0
		July – 2020	815.9	283.5
		Aug. – 2020	588.3	953.3
		Sept. - 2020	1195.6	618.7
3	SMS (Steel Melting Shop) (Near Ladle Heating Furnace)	April - 2020	--	--
		May -2020	--	--
		June – 2020	618.7	263.2
		July – 2020	591.7	254.5
		Aug. – 2020	682.8	338.6
		Sept. - 2020	899.9	430.7
4	MBF (Near Mini Blast Furnace)	April - 2020	--	--
		May -2020	--	--
		June – 2020	737.8	386.5
		July – 2020	649.0	315.0

		Aug. – 2020	638.2	295.9	
		Sept. - 2020	801.6	472.4	
5	Raw Material Feed Area Mixing Area)	(Near	April - 2020	--	--
			May -2020	--	--
			June – 2020	1280.8	597.0
			July – 2020	982.7	408.4
			Aug. – 2020	865.4	325.9
			Sept. - 2020	1150.1	652.6
6	MBF Stock yard		April - 2020	--	--
			May -2020	--	--
			June – 2020	1060.6	475.8
			July – 2020	708.0	291.2
			Aug. – 2020	516.2	167.5
			Sept. - 2020	531.3	203.9
Norms			2000		

Annexure- 1.(E)**TREATED EFFLUENT QUALITY STATUS****1. Location : E-2 STP Outlet**

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-20	May-20	Jun-20	July-20	Aug-20	Sept-20	
1.	Total Suspended Solids	mg/l	--	--	32.0	12.0	4.0	12.0	50
2.	Biochemical oxygen demand(BOD at 27°C for 3 days)	mg/l	--	--	24.0	18.0	10.0	8.2	300

1.1 Location : E-1 (DRP Drain Effluent)

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-20	May-20	June-20	July-20	Aug-20	Sept-20	
1.	pH value	-	--	--	8.30	8.20	7.0	7.3	5.5 to 9.0
2.	Total Suspended Solids	mg/l	--	--	4.00	28.0	76.0	26.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	--	--	3.40	6.80	4.60	5.0	100
4.	Chemical oxygen demand (COD)	mg/l	--	--	68.8	133.0	80.0	86.9	250
5.	Oil & Grease	mg/l	--	--	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	--	--	330.0	672.0	540.0	1382.0	2100
7.	Chloride (as Cl)	mg/l	--	--	56.5	40.4	33.6	171.3	600
8.	Sulphate (as SO ₄)	mg/l	--	--	72.6	219.4	224.2	244.1	1000
9.	Iron (as Fe)	mg/l	--	--	0.30	0.38	0.34	0.39	3.0

1.2 Location : E-2 (Wastewater Tank) In Front of Raw Water Treatment Plant

Sr. No.	Test Parameter	Measurement Unit							Limit as per Consent Conditions
			Apr-20	May-20	June-20	July-20	Aug-20	Sept-20	
1.	pH value	-	--	--	7.80	8.70	7.6	7.5	5.5 to 9.0
2.	Total Suspended Solids	mg/l	--	--	30.0	16.0	2.0	12.0	100
3.	Biochemical oxygen demand(BOD at 27°C for 3 days)	mg / l	--	--	6.60	5.80	3.8	4.4	100
4.	Chemical oxygen demand (COD)	mg / l	--	--	93.1	112.9	84.0	102.7	250
5.	Oil & Grease	mg / l	--	--	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	--	--	230.0	214.0	140.0	232.0	2100
7.	Chloride (as Cl)	mg / l	--	--	70.7	54.7	26.9	69.0	600
8.	Sulphate (as SO ₄)	mg/l	--	--	49.5	28.6	22.4	37.5	1000
9.	Iron (as Fe)	mg/l	--	--	0.15	0.18	0.12	0.14	3.0

1.3 Location : E-3 (Coal Washery)

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-20	May-20	June-20	July-20	Aug-20	Sept-20	
1.	pH value	-	--	--	8.10	8.20	7.2	7.4	5.5 to 9.0
2.	Total Suspended Solids	mg/l	--	--	42.0	24.0	80.0	94.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg / l	--	--	5.20	4.6	4.9	6.2	100
4.	Chemical oxygen demand (COD)	mg / l	--	--	121.4	112.9	136.0	158.1	250
5.	Oil & Grease	mg / l	--	--	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	--	--	504.0	492.0	660.0	524.0	2100
7.	Chloride (as Cl)	mg / l	--	--	106.1	71.4	62.5	107.1	600
8.	Sulphate (as SO ₄)	mg/l	--	--	118.8	97.6	108.3	165.2	1000

9.	Iron (as Fe)	mg/l	--	--	0.20	0.24	0.21	0.26	3.0
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1.4 Location : E-4 ETP Main Outlet (Utility)

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-20	May-20	June-20	July-20	Aug-20	Sept-20	
1.	pH value	-	--	--	6.70	8.2	7.4	7.6	5.5 to 9.0
2.	Total Suspended Solids	mg/l	--	--	12.0	22.0	6.0	12.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	--	--	5.80	7.40	4.0	5.4	100
4.	Chemical oxygen demand (COD)	mg/l	--	--	72.8	169.3	76.0	114.6	250
5.	Oil & Grease	mg/l	--	--	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	--	--	236.0	278.0	290.0	372.0	2100
7.	Chloride (as Cl)	mg/l	--	--	54.2	52.3	49.0	92.8	600
8.	Sulphate (as SO ₄)	mg/l	--	--	33.4	51.8	61.6	48.0	1000
9.	Iron (as Fe)	mg/l	--	--	0.14	0.15	0.12	0.14	3.0

1.5 Location : E-5- Pickling ETP Outlet

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-20	May-20	June-20	July-20	Aug-20	Sept-20	
1.	pH value	-	--	--	6.70	8.0	7.6	7.7	5.5 to 9.0
2.	Total Suspended Solids	mg/l	--	--	10.0	14.0	2.0	4.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	--	--	3.60	2.80	3.0	4.4	100
4.	Chemical oxygen demand (COD)	mg/l	--	--	105.2	149.1	88.0	98.8	250
5.	Oil & Grease	mg/l	--	--	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	--	--	412.0	186.0	218.0	190.0	2100
7.	Chloride (as Cl)	mg/l	--	--	169.7	33.7	69.2	85.6	600
8.	Sulphate (as SO ₄)	mg/l	--	--	30.2	16.4	10.7	13.2	1000

9.	Iron (as Fe)	mg/l	--	--	0.34	0.36	0.29	0.33	3.0
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1.6 Location : E-6 Pickling Nala

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-20	May-20	June-20	July-20	Aug-20	Sept-20	
1.	pH value	-	--	--	7.10	7.40	7.7	7.4	5.5 to 9.0
2.	Total Suspended Solids	mg/l	--	--	74.0	82.0	2.0	8.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	--	--	7.80	6.60	2.0	<2.0	100
4.	Chemical oxygen demand (COD)	mg/l	--	--	234.8	242.9	208.0	185.7	250
5.	Oil & Grease	mg/l	--	--	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	--	--	748.0	1988.0	1242.0	1504.0	2100
7.	Chloride (as Cl)	mg/l	--	--	344.2	552.2	336.4	447.4	600
8.	Sulphate (as SO ₄)	mg/l	--	--	33.1	206.6	79.6	38.5	1000
9.	Iron (as Fe)	mg/l	--	--	0.40	0.43	0.23	0.28	3.0

1.7 Location : E-7 MBF ETP Outlet

Sr. No.	Test Parameter	Measurement Unit							Limit as per Consent Conditions
			Apr-20	May-20	June-20	July-20	Aug-20	Sept-20	
1.	pH value	-	--	--	7.20	7.4	7.1	7.3	5.5 to 9.0
2.	Total Suspended Solids	mg/l	--	--	32.0	48.0	62.0	76.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	--	--	6.80	7.20	4.6	5.4	100
4.	Chemical oxygen demand (COD)	mg/l	--	--	121.4	169.3	116.0	126.4	250
5.	Oil & Grease	mg/l	--	--	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	--	--	1872.0	1402.0	1648.0	1464.0	2100
7.	Chloride (as Cl)	mg/l	--	--	528.1	361.7	471.0	409.3	600



8.	Sulphate (as SO ₄)	mg/l	--	--	196.2	105.8	170.4	109.8	1000
9.	Iron (as Fe)	mg/l	--	--	0.25	0.26	0.25	0.28	3.0

Annexure- 2

Sl. No.	CSR Activity	Actual Expenditure during the financial year 2019-20 and during 2020-21 (up to 30.09.2020)	Budget allocation for the next 5 years
		(Rs. in lakh)	(Rs. In lakh)
A	Promotion of Health Care	89.33	
B	Education - Training & Skill Development	36.08	
C	Rural Development:-		
i	Construction of Rural Roads	12.14	
ii	Drinking Water and Sanitation	37.84	
iii	Environment Sustainability and protection of Flora & Fauna	17.51	
iv	Social Welfare Activities :- Participation in Swachh Bharat, Promoting Sports and Cultural activities	17.23	
D	Disaster Management - Relief under COVID 19 Pandemic	34.04	
TOTAL (*)		244.17	

(*) - Details given below

Details of CSR Expenditure for the year 2019-20 and for the first 2 Quarters of 2020-21**(AMOUNT IN Rs.)**

Particulars	2019-20	During Quarter ended 30th June, 2020	During Quarter ended 30th Sep. 2020	Total
Health care	3933570	5000000	0	8933570
Education - Training & Skill Development	3132006	294433	181694	3608133
Rural Development:-				
(i) Drinking Water and Sanitation	3552807	231020	0	3783827
(ii) Construction of Rural Roads	862029	0	351489	1213518
(iii) Environment Sustainability & protection of Flora and Fauna	1709516	0	41646	1751162
(iv) Participation in Swatch Bharat, Promoting Sports and Cultural activities	1647745	10000	64813	1722558
Disaster Management - Relief under COVID 19 Pandemic	0	3384949	19000	3403949
	14837673	8920402	658642	24416717

ANNEXURE - 3

Quantification and reporting
of Greenhouse Gas
emissions and removals for
Sunflag Iron and Steel Co.
Ltd.
(FY 2019-20)



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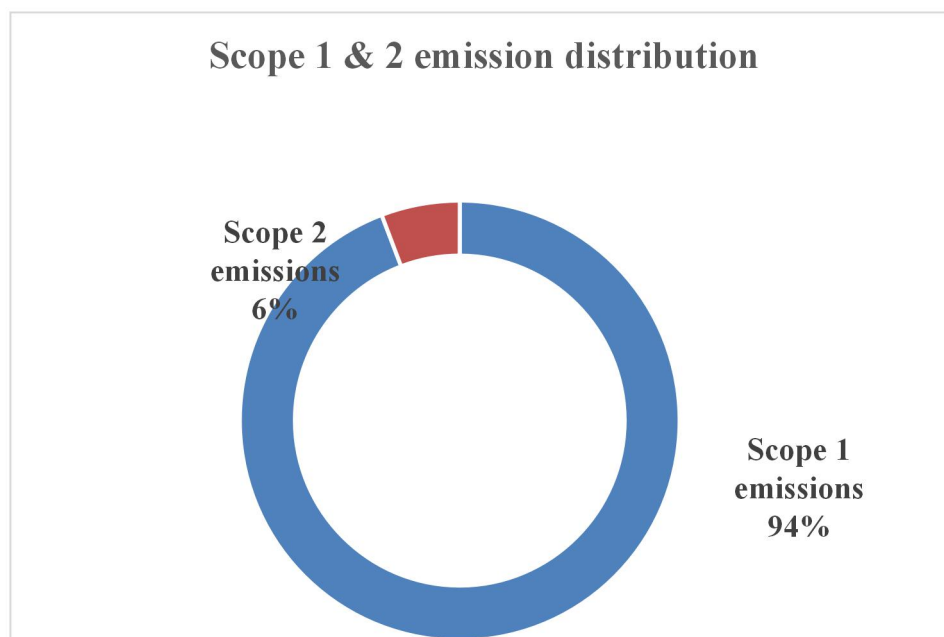
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Executive Summary

A GHG emission inventory as per the ISO 14064 was carried out by Sunflag Iron and Steel Co. Ltd. (referred as Sunflag Steel further in this document) for its facility at Bhandara for the purpose of accounting of the company's GHG emissions. The total GHG emissions of Sunflag Steel was accounted to 12,50,482 tCO₂e for FY 2019-20. The major contributors to the GHG emissions were following.

- 1) Coal and coke consumption as fuel and reducing agent in steel production– 11,78,863 tCO₂e
- 2) Electricity consumption – 72,268 tCO₂e
- 3) other raw materials consumed – 1,29,127 tCO₂e
- 4) Other minor sources in Scope 1 –6,569 tCO₂e

The detailed quantification of total emissions is provided in report.



This report specifically highlights the GHG emissions taking place at existing steel production facility at Bhandara of Sunflag Steel. Emissions associated with facility's business services and activities were identified and analyzed in this report briefly. Based on the GHG emission calculations, it was observed that the total GHG emissions of facility for the FY19-20 were 12,50,482 tCO₂e. The other indirect emissions were not calculated for this year.

The Environment Health & Safety (EHS) Department will conduct such studies in future to assess and improve the carbon footprint of the facility. The GHG footprint of existing production capacity is extrapolated for the proposed plant expansion as well. This is done to respond to a related query from MoEF-CC.

General Details

Sunflag Steel, Bhandara facility has prepared its first GHG emissions report to facilitate GHG emission disclosure and participate in a voluntary GHG disclosure programmes. The content of this report is made in accordance with the clauses of ISO 14064 especially in line with clause 7.3 of ISO 14064-1:2012.

Purpose and objective of GHG reporting

Sunflag Steel, a leading steel company, has understood the importance of environmental concerns in its policy and simultaneously continues to take various pro-active measures for protection of environment and ecosystem around its projects. It has declared an environmental policy to address environmental concerns and maintain ecological balance around its facility. One of the long term objective of Sunflag Steel is to reduce their environmental impact and strive for sustainable development by adopting best practices in operations and management. It has already implemented and planned various initiatives to reduce GHG emissions such as energy efficiency improvement, green belt development within its facility etc.

In its endeavor to mitigate climate change and promote sustainable development, one of the initiatives Sunflag Steel planned was undertaking a carbon footprint study wherein it quantifies and reports its GHG emissions and removals for its facility as a first step towards developing an action plan to managing its footprint.

Intended use and intended user of the report

Sunflag Steel as the intended user will use this report as a basis for framing an action plan that will guide decision making in key areas of its facility that enable study in gradual reduction of its footprint as also inform external users and internal users and participate in voluntary GHG disclosure programs. The emission has been quantified and reported in this report by the Sunflag Steel's facility at Bhandara.

Overall and specific responsibilities for preparing and producing the report

Sunflag Steel is responsible over all for preparation of the report. Mr. Sunil Lanjewar (Section Head, Environment & Utility) and Mr. V.B. Deshmukh from Sunflag Steel's EHS Department have initiated the process under the guidance of Mr. R.V. Dalvi (Executive Director, Works) The EHS Department team has been responsible for facility level data collection and documentation. It has engaged with its various departments such as Production, Engineering, EHS, HR & Admin, Technical Cell etc. to establish and maintain procedures for document retention and data keeping of its GHG inventory to facilitate GHG inventory verification for every reporting year.

Format of the report

Sunflag Steel has prepared the report in accordance with the requirements of ISO

14064 – 1. The format of report is in keeping with the same.

Frequency of GHG report

In keeping with the environment policy and objectives, one such being mapping and reducing of its GHG emissions, Sunflag Steel has prepared its first GHG emissions report for the facility at Bhandara. Sunflag Steel will use the GHG inventory period viz.

2016 -17 as the base year. Sunflag Steel will attempt to report its GHG emission details and performance improvement data at appropriate periodicity .

Data and information of the report

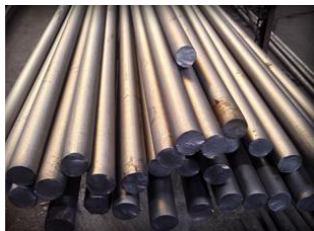
All necessary energy and GHG related information of the facility are captured in this report as per the requirements of ISO 14064:2012.

Products include

Flats: The spring steel that goes into the automobile and railway suspension. The grades include Silico Manganese, Chrome, Moly, Vanadium steel.



Rounds: In carbon, free-cutting, spring, CHQ, alloy, bearing and stainless steel. In specifications like: DIN, SAE/AISI, BS et cetera. In sizes from 15 mm to 160 mm in diameter. For the forging, automobile, spring industries.



Round Cornered Squares (RCS): In carbon, free-cutting and alloy steels. In specifications like: DIN, SAE/AISI, BS et cetera. In sizes from 50 mm to 160 mm. For the forging, automobile industries.

HEX : In carbon, free-cutting, alloy steel. In sizes from 13.5 mm to 38.5 mm. For the forging, automobile and industries.

Coils : In carbon, free-cutting, spring, CHQ, alloy, bearing and stainless steel . In specifications like: DIN, SAE/AISI, BS et cetera. In sizes from 5.5 mm to 38 mm in diameter. For the forging, automobile, spring industries.

1.Organization Profile

Sunflag Iron and Steel Co. Ltd. is a prestigious unit of the SUN FLAG GROUP¹. The plant is located in the central part of India at Bhandara, Maharashtra & it is 70 kms from Nagpur. The plant has a capacity to produce 7,50,000 tonnes per annum of high quality special steel using liquid pig iron and sponge iron as basic inputs.

The main processes at the plant are,

- Iron making (Mini Blast Furnace, Sponge Iron Plant, Sinter plant).
- Steel Making
- Continuous Casting
- Rolling Mills
- Heat Treatments
- Bright Bar Making
- Inspection
- Quality Assurance

Started as a Spring Steel producer, the company today produces variety of steels. Carbon Steels, Alloy steels, Free & semi free cutting steels, Micro-alloyed steels, Stainless Steels, Spring Steels, Valve Steels, Bearing Steels, Cold Heading Quality Steels, Tool Steels, etc.

The profiles are Round Bars, Round Cornered Square, Round & Hexagonal wire Rods, Hexagonal straight bars, Flats, Bright Bars (Peeled/Drawn/Ground bars) etc.

Sunflag Steel produces majority of the Steel for Automobile use in Engine, Drives,

Transmissions, Suspensions etc. applications. Sunflag Steel also supplies steel to Indian Railways, Ordnance Factories, General Engineering & Power sectors.

Apart from catering to the Domestic steel requirements, Sunflag Steel also exports to South East, Middle East, European countries, United States etc.

The Steel is produced using 100% Iron ore as a basic raw material input.

The steel has very low tramp element contents & free from Radioactive or other harmful & hazardous contamination.

Sunflag Steel is ISO 9001:2015, IATF 16949:2016 and TUV-NORD on ISO-14001:2015 and BS OHSAS:45001:2018., AD-2000-Merkblatt WO certified & ISO/IEC 17025 approved. Testing laboratories by NABL.

Sunflag is actively engaged in *Pollution Control* and accredited by EMS Certification.

¹ http://www.sunflagsteel.com/sunflag_iron_and_steel_files/steel.html

Corporate Environment, Health and Safety Policy

Sunflag Steel understands the importance of responsible environment management to achieve growth profitability and long-term success and strives to make continuous efforts to protect environment and ecosystem around its facilities. In addition to addressing environmental concerns maintaining ecological balance, it has also installed environmental management systems and encouraging employee involvement for improving environmental, health & safety aspects. It has also proactively declared its environmental policy which focuses on adoption of best practices in their operations, resource conservation, waste reduction, developing harmony with nature and reducing carbon footprint due to its operations.

Corporate Environment Health and Safety Policy



2. GHG INVENTORY – Roles & Responsibility

Team members of both the Corporate and Bhandara plant level EHS Department are responsible for development of the GHG inventory.

Mr. Sunil Lanjewar (Section Head, Environment & Utility) will undertake and manage the overall GHG activity in coordination with the Sunflag Steel's core EHS team.

Reporting period

This GHG report is prepared for the period from 01 April 2019 to 31 March 2020.

3. Principles followed in GHG reporting

The GHG report is in accordance with ISO 14064-1:2012. As described in the standard, Sunflag, Bhandara Steel production facility has followed the five principles i.e. **Relevance, Completeness, Consistency, Accuracy and Transparency** ensuring that the GHG related information is a true and accounted fairly.

Relevant GHG sources and sink in the facility are identified for the purpose of GHG reporting and quantified based on appropriate methodology which is explained in the Chapter 4 of this report. In case of any uncertainty or lack of available data, appropriate assumptions are taken based on the information available publicly on various websites to reduce the uncertainty and associated risk in GHG accounting.

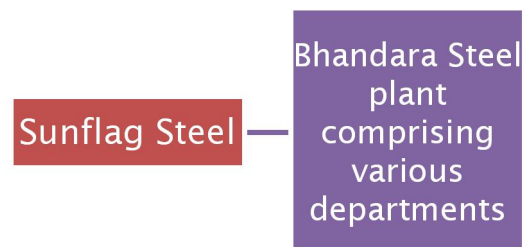
The data collected for the quantification of GHG emission is from the records maintained by various departments of the facility in their logbooks and EMS systems. Gathering of sufficient and appropriate GHG related information will enable the intended users to make decisions with reasonable confidence and will also enable creation of a road map to mitigate its GHG emissions. Since this is the first attempt at inventorisation, it will also enable comparisons going forward. Sunflag Steel as a part of its environment policy, has taken a commitment to reduce overall and its site specific GHG emissions based on the GHG quantification in this report and it has disclosed GHG related information in a transparent manner.

4. GHG Inventory Design & Development

4.1. Organization Boundary for Steel production facility

Organization boundary needs to be defined for the purpose of reporting GHG emissions of Sunflag Steel, Bhandara. In accordance with section 4.1 of ISO 14064-1:2012, Sunflag Steel shall consolidate its facility level GHG emission and removals by the control approach.

Sunflag Steel has its operational and financial control over its steel production plant, which includes its process plant comprising various departments. Hence, Sunflag Steel has decided to quantify the GHG emission of this facility and report the same.



The facility shall consolidate and account for all quantified GHG emissions and/or removals as per the organizational boundary outlined above, Sunflag Steel in turn will consolidate and account emissions with respect to its manufacturing site.

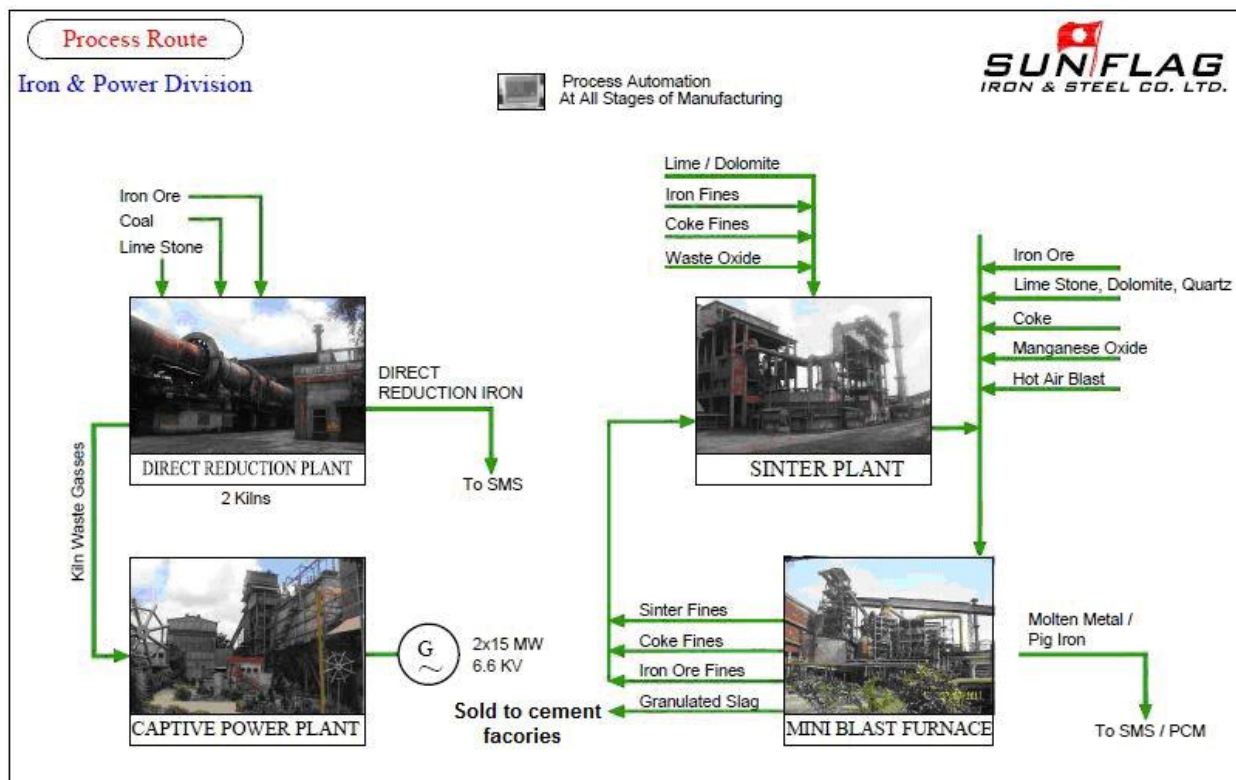
4.2. Operational Boundary

Operational boundary establishment includes identifying GHG emission and removals associated with the Sunflag Steel's operations. The GHG emission and removals is categorized in to direct emissions (Scope 1), energy indirect emissions (Scope 2).

4.2.1 Establishing the operational boundaries

GHG emissions emanate largely from fossil fuels, reducing agents and raw materials consumption in the steel production process; purchased electricity consumption; diesel consumption in DG sets; refrigerant gas consumption in chillers and air conditioning units of company. Energy efficiency projects and plantation within the facility's organizational boundary may act as carbon sinks.

The following process layout gives processes involved and material flows in the steel production plant at Sunflag Steel.



Configuration of existing and proposed units

Steel Plant Units	SP. KWH/T	Existing Capacity (TPA)	Power Req'd. (MWH)	Proposed Capacity (TPA)	Power req'd. (MWH)	Total Capacity (TPA)	Total Power req'd. (MWH)
DRI	160.7	280,000	44,996	720,000	115,704	1,000,000	160,700
MBF	129.0	250,000	32,250	350,000	45,150	600,000	77,400
SMS	571.82	525,000	300,205	500,000	285,910	1,025,000	586,115
Rolling Mill	123.5	500,000	61,750	500,000	61,750	1,000,000	123,500
Sinter	53.65	250,000	13,412	600,000	32,190	850,000	45,602
Total	-		452,614	-	540,704	-	993,318
CPP – GEN	-	30 MW /HR	237,600	60 MW/HR	504,000	-	741,600

Products	Existing Capacity	Proposed Capacity	Total Production after Expansion
Direct Reduced Iron	0.28 Million TPA (1x350 TPD and 1x500 TPD Kilns)	0.72 Million TPA (3x350 TPD & 3x500 TPD Kilns)	1.0 Million TPA
Pig Iron / Hot Metal	0.25 Million TPA (0.3 Million TPA MBF)	0.35 Million TPA (0.30 Million TPA MBF + 0.05 Million TPA Existing Capacity Utilization)	0.60 Million TPA
Ingots / Billets	0.525 Million TPA (1x50/60 TPH EAF & 75 TPH AOD)	0.5 Million TPA (2x25 TPH IF & 1x50 TPH EAF)	1.025 Million TPA
Rolled Steel Products	0.5 Million TPA (1x70 TPH, 1x60 TPH, 1x14 TPH)	0.5 Million TPA (1x70 TPH, 1x60 TPH, 1x14 TPH)	1.0 Million TPA
Sinter	0.25 Million TPA (0.48 Million TPA Sinter Plant)	0.60 Million TPA (0.40 Million TPA Sinter Plant + 0.20 Million TPA existing capacity utilization)	0.85 Million TPA
Electricity	30 MW CPP (WHRB and FBC based boilers)	60 MW (4x15 MW CPP)	90 MW
Coke	--	0.25 Million TPA (Coke Oven Plant)	0.25 Million TPA
Oxygen / Nitrogen / Argon Plant	45000 TPA	--	45000 TPA
Washery	750 TPD	--	750 TPD

The GHG emission and removal activity of Sunflag Steel, Bhandara facility is presented in the table below:

Activity	GHG Activities	Scope
Activity 1	Coal, LPG, FO, LDO, diesel consumption	Scope 1
Activity 2	Coke and other reducing agents and raw materials consumption	Scope 1
Activity 3	Electricity purchased from grid	Scope 2
Activity 4	Diesel Consumption in DG Sets	Scope 1
Activity 5	Fugitive emissions from chillers	Scope 1
Activity 6	Leakage from CO ₂ type fire extinguishers	Scope 1
Activity 7	CO ₂ type fire extinguishers refilled	Scope 1
Activity 8	Methane emissions from septic digesters	Scope 1

In the future years, if any additional GHG emissions and GHG removals are identified within the organizational boundary, facility will account those activities in its GHG report and shall provide the explanation for changes to its operational boundaries.

4.2.2 Direct GHG emissions and removals

The direct GHG emissions for the Sunflag Steel is mainly from use of fossil fuels and reducing agents, raw materials used in the steel production process i.e. coal, coke, LPG, diesel consumption etc.

Apart from the above mentioned direct GHG emission sources, CO₂ emissions from the extinguisher; diesel consumption in DG sets; methane emissions from septic digester are also accounted.

Direct GHG emissions quantified 11,78,863 tCO₂e and quantification of direct emission is explained in the below section.

4.2.3 Energy indirect GHG emissions

The consumption of purchased electricity from the grid i.e. electricity generated from outside the organizational boundary contributes to the indirect GHG emission for the steel production facility. Electricity is the major form of energy utilized for its operations and administrative purposes.

GHG emissions due to purchased electricity in Sunflag Steel, Bhandara is 72,268 tCO₂e and its quantification is explained in the sections below.

4.2.4 Exclusions

The plant contracts external manpower for small civil and other maintenance, assembling works. The vehicles used for these works, welding-cutting gas consumed etc. is also excluded from the GHG calculations here.

4.2.5 Other indirect GHG emissions

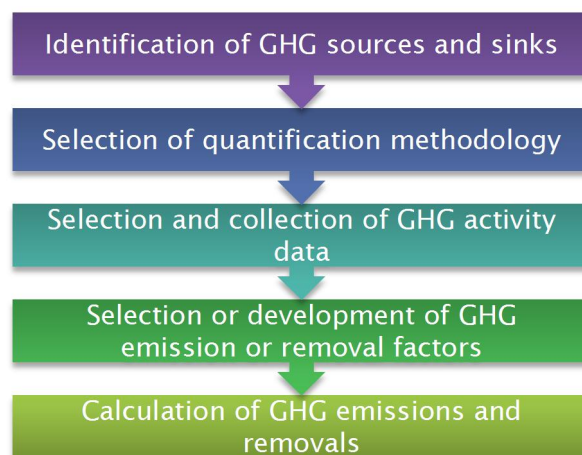
The scope 3 emissions from major inbound raw materials transport and employee commute for business is calculated at 22,730 tCO₂e.

4.3 Quantification of GHG emissions and removals

Suflag Steel has quantified and documented its emissions from different sources based on its emission activity data, selected quantification methodology and emission factor.

4.3.1 Quantification steps

Suflag Steel has quantified and documented the GHG emissions and removals within the organizational boundary applying following steps:



4.3.2 Identification of GHG sources and sinks

Suflag Steel has identified its GHG sources and sinks according to scope of emissions i.e. Scope 1, Scope 2 from its organization boundary which are categorized as follows:

Scope	GHG Activities	GHG Source and Sinks
Scope 1	Fuels, reducing agents, few raw materials combustion in process, DG Sets etc.	GHG emissions resulted from combustion of coal, coke, LPG, diesel etc.
Scope 1	Emissions due to Freon-22 and other refrigerants' refill	GHG emissions from chillers
Scope 1	Emissions from fire extinguishers	CO ₂ emissions from CO ₂ based fire extinguishers refilled in the reporting year
Scope 1	Emissions due to human waste	Methane emissions in septic digester
Scope 2	Consumption of purchased electricity	Grid emission source as power procured from grid
Scope 3	Inbound raw materials transport	CO ₂ emissions from fuel and electricity used in transportation (railways and road transport)
Scope 3	Employee commute for business	Contracted and personal vehicles used by employees for daily commute to work and return, other business travel outside plant

Suflag Steel is procuring power from the grid. In case, it procures imported electricity from another supplier, the same will document the supplier separately as per the accounting standard.

As required by the ISO 14064-1:2012, Suflag Steel has separately identified and documented the GHG sources contributing to its GHG emissions in the above table.

4.3.3 Selection of quantification methodology

Sunflag Steel has quantified its GHG emissions by calculation based on:

- Use of emission calculation tool
- GHG activity data multiplied by GHG emission factor

It is economically an unviable option to directly measure the GHG emissions from the identified GHG emission activity/source by means of instruments or investing in measurement technologies. Hence, Sunflag Steel opted to use the calculations to quantify its GHG emissions at Sunflag Steel. However, for some activities the information is collected by recording the readings (like electricity) from the meters available on the site;

The methodologies used in the tool are based on factors presented in the World Resources Institute's (WRI) Corporate Protocol Standard for organizations estimating GHG emissions as well as methodologies and factors presented by the Intergovernmental Panel on Climate Change's (IPCC) 2006 Guidelines for National Greenhouse Gas Emission Inventories. For the purpose of accounting the GHG emissions from GHG activities like fossil fuel combustion process operations; electricity consumption; Sunflag Steel has used the calculation "GHG activity data multiplied by GHG emission factor".

4.3.4 Selection and collection of GHG activity data

GHG activity data used to quantify GHG emissions is selected as per the quantification methodology described above and collected by Sunflag Steel.

As per clause 2.11 of ISO 14064-1:2012, GHG activity data is defined as *"quantitative measure of activity that results in a GHG emission or removal. GHG activity data include the amount of energy, fuels or electricity consumed, material produced, service provided or area of land affected."*

Brief description on selection of activity data is presented below:

Scope 1

a. Use of fossil fuel in process/operations

Selected quantification methodology = Activity data x GHG emission factor

Selected activity data = Consumption of coal/NG/diesel

The activity data i.e. amount of energy consumed in the process/operations is calculated from the fuel consumption records. The fuel consumption is maintained and collected by concerned department of Sunflag Steel.

b. Fugitive emission from chillers and Air-conditioning units

Selected quantification methodology = Activity data x GHG emission factor

Selected activity data = Refrigerant recharged

The activity data i.e. refrigerants recharged is being collected from the Stores department which is maintained in the EMS.

c. Emissions from CO₂ type fire extinguisher re-filled

Selected quantification methodology = Activity data x GHG emission factor

Selected activity data = Total number of CO₂ based fire extinguishers refilled

d. Tree plantations

Selected quantification methodology =
Activity data x kg of carbon
sequestered/year x Carbon to CO₂
conversion factor

Selected activity data = Number of trees of
each type x Maturity period x Survival rate

The activity data of species wise plantation
details/year along with the survival rate is
maintained by Environment Department.
Based on the research studies, it is
considered that every tree sequesters on an
average 1 kg of CO₂/year till the maturity
period.

e. Methane emissions from septic digester

Selected quantification methodology =
Activity data x conversion factor

Selected activity data = Number of
permanent employees of the Sunflag Steel x
Number of working days in reporting year

The activity data of number of permanent
employees and working days is maintained
in the HR files.

Scope 2

a. Consumption of purchased electricity in operations

Selected quantification methodology =
Activity data x GHG emission factor
Selected activity data = amount of electricity
consumed

Consumption of electricity is measured by
electricity meter and the data is collected
from electricity bills of the Sunflag Steel in
operations of all departments.

As per the 'GHG Protocol Scope 2
Guidance, An amendment to the GHG

Protocol Corporate Standard' pg. 45², if any
'energy-consuming facilities located in areas
where grid customers can be provided with
product or supplier-specific data in the form
of certificates, contracts with generators or
suppliers for specified source electricity,
supplier labels, supplier emission rates,
green tariffs, contracts, residual mixes, or
other contractual instruments' condition is
not met, then location based emission factor
(grid average) has to be used.

4.3.5 Selection or development of GHG emission or removal factors

In order to quantify the GHG emissions,
Sunflag Steel has selected the GHG
emission factor from recognized origins.
The GHG emission or conversion factor is
mainly selected from four major guidelines
which are published by:

- Intergovernmental Panel on Climate
Change (IPCC): "Guidelines for
National Greenhouse Gas Inventories,
2006"
- Central Electricity Authority, Ministry
of Power, Government of India:
"Baseline Carbon Dioxide Emission
Database"

The emission factors have been selected
from the above listed guidelines/publications
appropriate for the GHG source or sink
concerned. Latest version of GHG emission
factor guidelines are used to compute the
GHG inventory of Sunflag Steel and GHG
emission factor details are presented below:

²

http://www.ghgprotocol.org/scope_2_guidance

S.No	Parameter	Value	Unit	Remark/Source
1	CO ₂ emission factor of diesel	74.1	tCO ₂ /TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, 2006 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html), Table 1.4 - Default CO ₂ emission factors for combustion
2	CH ₄ Default emission for diesel	3	kgCO ₂ /TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, 2006 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html) Table 2.2 - Default emission factors for stationary combustion in the energy industries
3	N ₂ O Default emission for diesel	0.6	kgCO ₂ /TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, 2006 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html) Table 2.2 - Default emission factors for stationary combustion in the energy industries
4	Effective CO ₂ emission factor of coal	95.8	tCO ₂ /TJ	CEA Baseline CO ₂ database for Indian Power Sector (http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver10.pdf)
5	CH ₄ Default emission for coal	1	kgCO ₂ /TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, 2006 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html) Table 2.2 - Default emission factors for stationary combustion in the energy industries
6	N ₂ O emission factor for coal	1.5	kgCO ₂ /TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, 2006 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html) Table 2.2 - Default emission factors for stationary combustion in the energy industries
7	CO ₂ emission factor of Natural Gas	56.1	tCO ₂ /TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, 2006 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html) Table 1.4 - Default CO ₂ emission factors for combustion
8	CH ₄ Default emission for Natural Gas	1	kgCO ₂ /TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, 2006 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html) Table 2.2 - Default emission factors for stationary combustion in the energy industries
9	N ₂ O emission factor for Natural Gas	0.1	kgCO ₂ /TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, 2006 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html) Table 2.2 - Default emission factors for stationary combustion in the energy industries
10	Electricity factor of Grid	0.82	t-CO ₂ /MWh	The Central Electricity Authority, "Baseline Carbon Dioxide Emission Database"
11	Emissions from septic digester	25.50	gCO ₂ /capita.d	Page 15, Table ES-1, Evaluation of GHG emissions from septic systems (http://www.geoflow.com/wastewater/w_pdfs/WERF%20Report.pdf)

12	Emission factor of iron	0.172	tCO ₂ /ton	World Steel Association, CO ₂ emissions data collection, User Guide, ver. 7, Appendix 4 - Direct emission factors, Pg. 14
13	Emission factor of dolomite	0.471	tCO ₂ /ton	
14	Emission factor of lam coke	3.257	tCO ₂ /ton	
15	Emission factor of limestone	0.44	tCO ₂ /ton	
16	GWP of R-22	1,760	tCO ₂ /ton	http://www.ghgprotocol.org/sites/default/files/ghp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
17	GWP of R-134a	1,300	tCO ₂ /ton	

In case of any modifications/ changes in GHG emission factor used by the organization, Sunflag Steel will provide explanation where appropriate (like in consequent year GHG reporting or recalculation of base year GHG inventory).

4.3.6 Calculation of GHG emission and removals

Sunflag Steel has calculated the GHG emissions and removals in accordance with the quantification methodology that minimizes uncertainty and calculated in a manner intended to yield accurate and reproducible result for its identified Scope 1, Scope 2 under the organizations GHG inventory. The calculation is based on GHG activity data multiplied by GHG emission or

removal factors, the detailed computation of the

Sunflag Steel GHG emissions is provided in Annexure (Annexure 1- WRI Based Emission Calculation Tool).

5. GHG Inventory Components

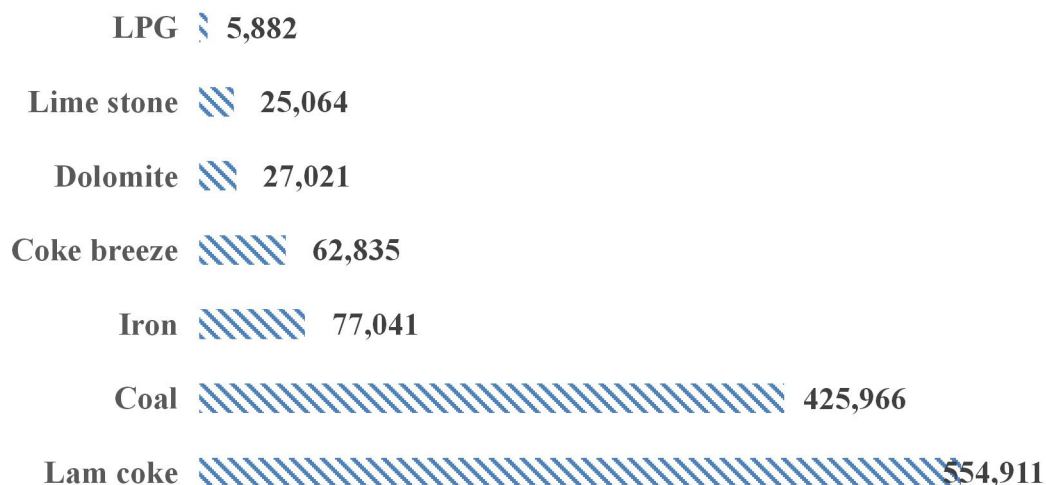
GHG emissions of the Sunflag Steel from the selected organizational and operational boundaries are discussed under this section.

5.1. GHG emissions and removals

Sunflag Steel has quantified its emission in accordance with clause 4 of ISO 14064-1:2012 same is presented below:

Scope	GHG Activity	GHG Emission (tCO ₂ e)
Scope 1	Coal, LPG, FO, LDO, diesel consumption	4,31,341
Scope 1	Coke and other reducing agents and raw materials consumption	7,46,224
Scope 2	Electricity purchased from grid	72,268
Scope 1	Fugitive emissions from chillers	644
Scope 1	CO ₂ type fire extinguishers refilled	2.91
Scope 1	Methane emissions from septic digesters	2.31
	Total	12,50,482

Major Scope 1 emissions



5.2 Organizational activities to reduce GHG emission or increase GHG removals

Measures have been identified by Sunflag Steel to enable its facility to mitigate the GHG emissions based on the quantification performed. GHG emission is maximum due to scope 1 activities.

5.2.1 Directed actions

Awareness programmes

Sunflag Steel has been conducting programmes at its facility to create awareness amongst employees on the factors leading to increase in carbon emission and global warming. These programmes aim towards educating the employees on ways and means of reducing GHG emissions for ensuring sustainable development.

Energy

The directed action of Sunflag Steel includes energy management initiatives.

Energy Efficiency

To minimize the energy consumption as per the energy and environmental policy of corporation, proactive measures are taken like computer power management, energy saving devices and low power consuming lighting devices.

5.3 Base-year GHG inventory

5.3.1 Selection and establishment of base year

Sunflag Steel is reporting its GHG emission inventory for the first time in the year 2016-17 and, therefore, the same year is selected as base year. It has quantified its base year GHG emission with the complete single financial year data i.e. 01 April 2019 to 31 March 2020.

Sunflag Steel may choose to change its single base year to multi-year average or rolling year average. In that case, it will explain the reason for base year change in the respective GHG reporting.

5.3.2 Recalculation of GHG inventory

Sunflag Steel is reporting its GHG inventory for the first time in this report. The base year inventory will be revised and recalculated if organizational and/or operational boundary of the GHG inventory changes in future years.

Sunflag Steel has made certain assumptions. The assumption data are described below and the uncertainties in each data are reported.

These activity data will then be used to compute the GHG inventory in the subsequent reporting year.

5.4 Assessing and reducing uncertainty

S.No	Parameter	Value	Unit	Remark/Source	Parameter Uncertainty potential status (Y/N)
1	Electricity emission factor	5	%	As discussed on pg. 14, the emission factor of a large grid is used in absence of clarity on specific power plants that supplied electricity	Y
2	Emission factors for reducing agents	5	%	Used default from WSA	Y
3	NCV of fuels	5	%	has not used weighted average	
4	Usage factor of washroom per day	10	%	Assumption	Y

Uncertainty Potential Assessment

GHG Inventory Quality Management

For the purpose of maintaining accuracy in GHG inventory, Sunflag Steel has established the quality management system for the GHG data which is briefed in the subsequent section.

6.1 GHG Information Management and procedure

GHG Management team and GHG Inventory

The team members of the EHS Department are assigned to estimate the emissions inventory of the Sunflag Steel. The management shall periodically review the responsibility and authority of those responsible for GHG inventory development by internal reviews.

Training for Inventory development team members

- (a) Sunflag Steel shall be responsible for providing training to inventory development team
- (b) Training shall be offered internally or through third party.
- (c) Concerned employee has been imparted training for Carbon footprint measurement methodology.

Identification and Review of organization boundaries

- (a) Sunflag Steel shall identify its organization boundary as per the requirements of ISO 14064-1:2012.
- (b) Sunflag Steel shall report the changes in organization boundary with necessary documentation and justification.

GHG sources and sinks

- (a) Sunflag Steel shall identify its GHG sources and sinks as per ISO 14064 requirements.
- (b) All Scope 1, Scope 2 emission sources and sinks within the boundary shall be identified on accounting the GHG emission in the selected organization boundary. If any of the GHG source is not considered for accounting, the reason for not considering the GHG source or sink within the scope shall be explained.
- (c) Additional GHG source or sink shall be identified and accounted within the organization boundary

Quantification methodologies, GHG activity data and GHG emission and removal factors

- (a) Quantification of the GHG emission within its organization boundary shall be conducted following the methodology established by ISO 14064, UNFCCC, IPCC and other relevant standards/mechanisms.
- (b) Sunflag Steel shall use the appropriate, relevant and updated methodologies to quantify its GHG emission.
- (c) Sunflag Steel shall periodically review on methodologies carried out and shall

explain any changes to quantification methodologies previously used by the organization.

- (d) Sunflag Steel shall select its activity data as per Scope 1, Scope 2 within organization boundary.
- (e) Sunflag Steel shall use the appropriate, relevant and updated GHG emission and removal factors from UNFCCC publications, IPCC publications, host country emission data publications, another relevant climate change bodies to quantify its GHG emission.
- (f) Periodic review on emission and removal factor data publications shall be carried out by Sunflag Steel in order to use updated emission factors or removal factor.

Review of the application of quantification methodologies to ensure consistency across multiple facilities

- (a) Sunflag Steel shall maintain consistency by using appropriate quantification methodologies of GHG emissions for multiple facilities published/discussed by UNFCCC or IPCC or ISO 14064 standard or other relevant standards/mechanisms.

Use, maintenance and calibration of measurement equipment

- (a) Records shall be maintained related to operation and maintenance of all equipment (like electricity meter etc.), related to measurement of data's for GHG emission accounting.
- (b) The facility shall maintain the records of calibrated equipment to ensure error free operation.

Development and maintenance of a robust data-collection system

- (a) Data collection system shall be established by following the standard format for data collections related to GHG emission accounting.

Regular accuracy checks

- (a) Sunflag Steel shall review the quality of data annually and establish the data collection system to achieve accuracy.
- (b) Sunflag Steel shall do calibration of meters used annually for GHG emission accounting data collection.

Periodic internal audits and technical reviews

- (a) Sunflag Steel shall conduct an internal audit on quality and accuracy of GHG emission information by checking evident documents and technical reviews.

Periodic review of opportunities to improve information management processes

- (a) Technical review and internal audits shall be conducted periodically to identify opportunities improving information management process.

6.2 Document retention and record keeping

Documentation supporting the design, development and maintenance of the inventory is retained to support the verification process and provide a historical record. In determining what information needs to be retained the following principles are applied:

- 1) At any point in time, all past emissions inventories should be able to satisfy an audit.
- 2) At any point in time, any past emissions inventory should be able to be recalculated from the retained records.

Following methods can be used to maintain the relevant data:

- EMS/SAP system to retrieve the GHG related data for computing GHG inventory.
- Standard format for GHG data collection are established and data is periodically entered into the customized format.

Following information are required to be retained:

- The procedures, processes, and methodologies used to estimate the emissions inventory and relevant sources.

- All emission factors and their sources.
- All activity data, activity data models, and their sources.
- All models.
- All supporting documentation and sources.
- The emissions inventory, reported at the facility level.

GHG Information monitoring and procedure

The following GHG activity data are required to be monitored for establishing GHG inventory for Sunflag Steel:

- Annual electricity purchased
- Amount of fuels, other reducing agents and raw materials consumed
- Amount of diesel consumed in on-site DG sets
- Amount of refrigerant gas refilled in air conditioning units (chillers and window - split ACs, centralized) and water coolers; Type of refrigerants gas used.
- Total number of CO₂ type fire extinguisher with their capacity, Number of CO₂ type fire extinguisher refilled with their capacity.
- Total manpower of the facility (regular/ permanent staff).
- Number of working days in the reporting period.

Annex I

Extension of carbon footprint to the expansion project

Based on the material balance for present capacity and total capacity after expansion, a theoretical carbon footprint and process wise emission intensity is studied. The results of study are summarized as below.

1) DRI

Parameter	Present capacity	After expansion
Production capacity (million TPA)	0.25	1.00
Total GHG emission (tCO ₂)	2,760,743	772,778
Emission intensity (tCO ₂ / ton product)	2.76	2.76

2) MBF

Parameter	Present capacity	After expansion
Production capacity (million TPA)	0.25	0.60
Total GHG emission (tCO ₂)	1,530,019	637,508
Emission intensity (tCO ₂ / ton product)	2.55	2.55

3) Sinter

Parameter	Present capacity	After expansion
Production capacity (million TPA)	0.25	0.85
Total GHG emission (tCO ₂)	448,103	131,795
Emission intensity (tCO ₂ / ton product)	0.53	0.52

4) Power Plant

Parameter	Present capacity	After expansion
Production capacity	30 MW; (452,614 MWh)	90 MW (993,318 MWh)
Total GHG emission (tCO ₂)	229,189	866,707
Emission intensity (tCO ₂ / MWh)	0.51	0.87

5) Power from grid

Parameter	Present capacity	After expansion
Electricity purchase from grid (MWh)	215,014	251,718
Total GHG emission (tCO ₂)	206,409	176,311
Emission intensity (tCO ₂ / ton product)	0.82	0.82

As can be seen from the above GHG footprint calculations, the CO₂ emission intensity will remain same in each of the steel production processes after plant expansion.