

Poll/Six Mon/FC-2/9-A: 2771
Date 28.11.2022



To,

The Member Secretary (IA-II)
IA Division (Industry I)

Ministry of Environment, Forest and Climate Change
Indira Paryavaran Bhavan, Aliganj
New Delhi - 110 003

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CIN No.: L27100MH1984PLC034003
GSTIN NO.: 27AACCS3376C1ZH

Subject : Six Monthly Compliance Report of the Environment Clearance
(Period 01st April - 2022 to 30th September 2022)

Reference : 1) MoEF, Govt. Of India Environment Clearance No. F.No.
J-11011/355/2004-IA II (I) dtd 21.02.2006.
2) MoEF, Govt. Of India Environment Clearance No. F.No.
J-11011/355/2004-IA II (I) dtd 02.05.2017.
3) MoEF, Govt. Of India Environment Clearance No. F.No.
J-11011/355/2004-IA II (I) dtd 09.11.2020.

Dear Sir,

With reference to above EC letter, we are submitting herewith the status of progress & Six monthly compliance report of the conditions stipulated in environmental clearance granted to **M/s Sun flag Iron & Steel Co.Ltd, Bhandara Road (Warthi)**

Hope you will find it in order.

Thanking you.

Yours faithfully.

For SUNFLAG IRON & STEEL CO.LTD.

Ramchandra Dalvi
Director-Technical

Encls : as above

CC To : 1. The In charge, CPCB, Vadodara, Gujrat
2. The Regional Officer, MPCB, Nagpur
3. The Sub-Regional Office, MPCB, Bhandara
4. The Regional Office, MoEFCC, Nagpur

**EC COMPLIANCE REPORT
&
ENVIRONMENTAL STATUS REPORT
(April - 2022 - September - 2022)
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**

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 at Village Eklari, Warthi & Sirsi, 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 3) J-11011/355/2004- IA.II (I) dated 09.11.2020
4	Location	
	a. District (s)	Bhandara
	b. State (s)	Maharashtra
	c. Latitude	21°13'30" to 21°14'16" North
	d. Longitude	79°37'11" to 79°38'32" East
5	Address for correspondence, Address of concerned Project Chief Engineer (with Pin Code & Telephone / Telex / Fax Numbers) & Address of Executive Project Engineer / Manager (with pin code / fax numbers) :	Director-Technical M/s Sunflag Iron & Steel Co. Ltd., Village – Warthi, Tah.- Mohadi, District – Bhandara , Pin :441905 Maharashtra Ph. 07184 – 285551 to 285555 Fax – 07184 – 2520360 Email : environment@sunflagsteel.com
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, Defence, Agriculture Engineering Industry etc.</p> <p>Sunflag Steel is located at 21°13'30" to 21°14'16" North latitude and 79°37'11" to 79°38'32" 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 02 nos waste heat recovery boilers and 02 nos Electrostatic Precipitator. 07nos.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 pre heater, 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 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	----
	a. Total Plot Area	200 Hectare
	b. Built- Up area (Including Road)	107.46 Hectare
	C. Open space available	20.54 Hectare
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> <p>(Please indicate whether these figures are based on any scientific and systematic survey carried out on only provisional figures, if a survey carried out gives details and year of survey.</p>	<p>Not Applicable, as no population has been affected due to this project.</p> <p>The land required by project had been acquired by The State Industrial & Investment Corporation of Maharashtra (SICOM) and leased to M/s Sunflag Iron & Steel Co.Ltd, Village : Eklari, Tah : Mohadi, Dist : Bhandara, Maharashtra at inception stage, several decades ago.</p>
9	Financial Details	
	a. Project costs as originally planned & subsequent revised estimates and the year of price reference.	<p>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</p>

		<p>Metal, Ingot /Billets, Rolled steel Products and Sinter Plant and Rs. 54.93 crores for Modernization and addition in configuration of integrated steel plant [Modernization-Cryogenic Oxygen plant replaced by VPSA oxygen plant ; Addition- Combustor installation 9.5 MW (asan alternate to 500 TPD DRI Kiln)] without any change in total production of steel, after getting EC vide No.J-11011/355/2004- IA.II (I) dated 09.11.2020, Total expenditure on completion of this Modernization & addition in configuration at cost of Rs.55.02 crores.</p>
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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 (Rs. in Lacs)
	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
c. Benefit Cost Ratio / Internal rate of Return and the year of assessment.	Not Applicable.			
d. Whether (c) includes the cost of Environmental Management as	Not applicable			

	shown in the above.	
	e. 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 and Rs. 54.93 crores approved for Modernization and addition in configuration of integrated steel plant [Modernization-Cryogenic Oxygen plant replaced by VPSA oxygen plant ; Addition- Combustor installation 9.5 MW (as in alternate to 500 TPD DRI Kiln)] without any change in total production of steel, after getting EC vide No.J-11011/355/2004- IA.II (I) dated 09.11.2020, Total expenditure on completion of this Modernization & addition in configuration at cost of Rs.55.02 crores.
	f. Actual expenditure incurred on the Environmental Management Plan so far	Rs. 66.98 Crores including EMP of expansion project.
10	Forest land requirement	Not Required
	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 programme in the light of actual field experience.	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	
	a. Date of commencement (Actual and/or Planned)	After obtaining 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 and after obtaining EC vide No.J-11011/355/2004- IA.II (I) dated 09.11.2020 for Modernization and addition in configuration of integrated steel plant, start project activities in March-2021.

	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 for Modernization and addition in configuration of integrated steel plant, project activities has been completed in June-2021.
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	05.12.2018 and 11.12.2020
	b. Date of site visit for this monitoring Report	24.03.2022
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. (The monitoring report may obtain the details of all the letters issued so far but the letter reports may occur only the letters issued subsequently)	Scientist “C” of IRC, MoEFCC, Nagpur visited on 11.12.2020 for monitoring the status of compliance stipulated in Environment Clearance vide letter No.J-11011/355/2004- IA.II (I) dated 02.05.2017 and submitted report to The Member Secretary, IA Division, (Industry I), MoEFCC, Aligang, Jorbagh Road, NEW DELHI - 110003 and copy to M/s Sunflag Iron & Steel Co.Ltd, Village : Eklari, Bhandara and Scientist “E” & Scientist “D” of IRC, MoEFCC, Nagpur visited on 24.03.2022 for monitoring the status of compliance stipulated in Environment Clearance vide letter No.J-11011/355/2004- IA.II (I) dated 02.05.2017 & 09.11.2020.

**EC COMPLIANCE REPORT
&
ENVIRONMENTAL STATUS REPORT
(Apr-2022 -Sep-2022)**

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 21°14'5" North latitude and 79°37'50" 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, MoEFCC 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, MoEFCC 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 Apr- 2022 to 30th Sept - 2022.

(A) SPECIFIC CONDITIONS:

Sr No	Conditions	Compliance
i)	<p>The gaseous emissions from various process units shall conform to the load / mass based standards notified by this Ministry on 19th 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>	<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 hand lings etc., in plant centralized de-dusting facility provided. The plant has provided dust suppression system consisting of water sprinklers, suction hood, Covered shed and conveyor, 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 form 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 @ 15,098 m³/day.</p> <p>Industrial effluent generation from the existing plant at rated capacity is 2616.50 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-resting 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.			
		S.N.	Type of Waste	Disposal/ Utilization
		1.	Fly Ash (CPP)	Brick manufacturer / sale to cement plant.
		2.	Bed Ash (CPP)	Brick manufacturer / sale to cement plant.
		3.	Dust from Bag Filter (DRP & SMS)	Reused at Sinter Plant.
		4.	DRP Sludge	Reuse as a fuel.
		5.	Mill Scale (Rolling Mill)	Reuse in Sinter Plant
		6.	EAF & SS Refining Converter Slag(SMS)	Brick manufacturer / Landfill.
		7.	Iron/Steel/Scrap/Rejects Billets (SMS/Rolling Mill)	Recycle in Steel Melt Shop.
		8.	Grinder Waste (SMS/Rolling Mill)	Recycle
		9.	Coal Rejected Stone & Shell (Coal Washer y)	Landfill
		10.	Granulated MBF Slag	Reuse / By sale
		11.	Granulated Residue at MBF Gas Cleaning plant	Reuse in Sinter plant.
		12.	Coke Fines (MBF Plant)	Reuse in Sinter plant.
		13.	Iron Ore Fines & Sinter (DRI & MBF Plant)	Reuse in Sinter plant
		14.	Dusts/Sludge (ETP & WTP)	Reuse
		15.	Hot returned ore (Sinter Plant)	Reuse in Sinter plant
		16.	Removed Dust (& Sinter Plant)	Reuse in Sinter plant
		17.	Sinter return fines from Sinter plant	Reuse in Sinter plant
		18.	Hot Scrap	Recycle in Steel Melt Shop
		19.	DRI Ash / Char (By product)	Reuse in Captive Power plant.

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 5,64,758 trees covering various 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 90 %. 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 up to 31-05-2023. 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) .



iv	<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>
v	<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 Handing) 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 Forest 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.</p> <p>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 Apr- 2022 to 30th Sept - 2022.

(A) SPECIFIC CONDITIONS :

Sr No	Conditions	Compliance
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. For year 2021-2022 Annexure-3 attached herewith.

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.
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.	Complied.
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)	<p>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>	<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. 1,48,37,673/- and budget for the year 2020-21 was Rs. 2,65,98,308/- as per the CSR Policy of the Company.</p> <p>The details of CSR expenditure incurred has been published in the Annual Report 2021-2022.</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 bring 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>	<p>Complied.</p>
xxiv)	<p>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.</p>	<p>Partly Complied .</p>

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.
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 .

(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.	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. 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.
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.
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)	<p>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.</p>	Complied.
xv)	<p>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>	<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.	<p>The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.</p>	Noted
2.	<p>The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.</p>	Noted
3.	<p>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.</p>	Noted.

COMPLIANCE STATUS OF CONDITIONS IMPOSED BY MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE VIDE THEIR LETTER NO. J-11011/355/2004-IAII (I) dated 09-11-2020

Period: From 1st Apr- 2022 to 30th Sept - 2022.

A	Specific conditions	Compliance
i	PP shall use low Sulfur coal in the Combustor. Post Combustion control for SO ₂ emission shall be included for coal with sulphur content of 1.2%	Noted, and complied. Low Sulphur coal is using in Combustor. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
ii	CEMS shall be installed on the of Combustor stack,	Complied. CEMS (Continuous Emission Monitoring System) is installed in Combustor stack.
iii	Entire quantity of dolo char generated shall be used for power generation in side steel works itself.	Complied. Entire quantity of dolo char generation is used for power generation in Captive Power Plant (CPP). The dolo char used 5082 MT in CPP for year 2020-2021. and 7770 MT used in CPP for year 2021-2022..
iv	Combustor shall be designed to achieve PM, SO ₂ and NO _x emission norms notified by MoEF&CC in December, 2015	Complied. Combustor has been designed to achieve PM, SO ₂ and NO _x emission norms notified by MoEFCC in December, 2015. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
B	General Conditions	
I	Statutory compliance:	
i	The Environment Clearance (EC) granted to the project/ activity is strictly under the provisions of the EIA Notification, 2006 and its amendments issued from time to time. It does not tantamount/ construe to approvals/ consent/ permissions etc., required to be obtained or standards/conditions to be followed under any other Acts/Rules/Subordinate legislation, etc., as may be applicable to the project	Agreed, we are strictly following the provisions of the EIA Notification, 2006 and its amendments issued from time to time. We have taken all the relevant permissions as applicable to the Project.
II	Air quality monitoring and preservation	

i	The project proponent shall install 24x7 Continuous Emission Monitoring System (CEMS) at process stacks to monitor stack emission as well as Continuous Ambient Air Quality Station (CAAQS) for monitoring AAQ parameters with respect to standards prescribed in Environment (Protection) Rules 1986,- The CEMS and CAAQMS shall be connected to SPCB and CPCB online servers and calibrate these systems from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.	<p>Complied.</p> <p>Sunflag provided 24x7 Continuous Emission Monitoring System (CEMS) at process stacks to monitor stack emission and also provided Continuous Ambient Air Quality Station (CAAQS) for monitoring AAQ parameters with respect to standards prescribed in Environment (Protection) Rules 1986, The CEMS and CAAQMS are connected to SPCB and CPCB online servers, The emissions level are within prescribed limit and calibrate these systems from time to time according to equipment supplier specification through equipment manufacturer /supplier, Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
i	The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through labs recognised under Environment (Protection) Act, 1986	<p>Complied.</p> <p>Fugitive emissions in the plant premises is being monitored in every month through labs recognised under Environment (Protection) Act, 1986 and monthly report submitted to State Pollution Control Board. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
ii	Sampling facility at process stacks and at quenching towers shall be provided as per CPCB guidelines for manual monitoring of emissions.	<p>Complied.</p> <p>Sampling facilities has been provided at process stacks and at quenching towers as per CPCB guidelines for manual monitoring of emissions. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
iii	The project proponent shall provide leakage detection and mechanized bag cleaning facilities for better maintenance of bags.	<p>Complied.</p> <p>Sunflag already provided leakage detection and mechanized bag cleaning facilities for regular maintenance of bags. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
iv	Secondary emission control system shall	Complied.

	be provided at SMS Converters.	Primary and Secondary Fume Extraction cum dust collection system has been provided at SMS Converters, Electric arc furnace(EAF) and Laddle Heat Furnace (LHF) to control the emissions from Steel Melt Shop area. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
v	The project proponent use leak proof trucks/dumpers carrying coal and other raw materials and cover them with tarpaulin.	Complied. Sunflag already using leak proof trucks / dumpers for carrying coal and other raw materials and cover them with tarpaulin. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
vi	Facilities for spillage collection shall be provided for coal and coke on wharf of coke oven batteries (Chain conveyors, land based industrial vacuum cleaning facility)	Not applicable, as we have not installed coke oven plant . However, we have full fledged spillage collection facilities are provided for coal and coke through mechanized mobile equipments like Bobcat, Tata ACE Tipping to collect spillage etc. The industrial vacuum cleaning facility is also provided for road sweeping and plant floor dust collection on daily basis. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
vi	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as a mended subsequently and put on the website of the company.	Complied. Copy of Environmental statement for each financial year in Form-V has been submitted on regular basis to the Maharashtra Pollution Control Board , also submitted to MoEFCC along with Six Monthly compliance report regularly . also put on the website of the company. Form V for last financial year (April-2020 to March-2021) Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022 & also submitted for financial year 2021-2022.
vii	Land-based APC system shall be installed to control coke pushing emissions.	Not applicable, as we have not installed Coke Oven Plant.

viii	Monitor CO, HC and O ₂ in flue gases of the coke oven battery to detect combustion efficiency and cross leakages in the combustion chamber	Not applicable, as we have not installed Coke Oven Plant.
ix	The coke oven gas shall be subjected to desulfurization if the sulphur content in the coal exceeds 1%	Not applicable, as we have not installed Coke Oven Plant.
x	Wind shelter fence and chemical spraying shall be provided on the raw material stock piles.	Complied. Wind shelter fence is provided on raw material stock piles and chemical BT 8080 (Bio Krishi Udyog) is spraying on the raw material stock piles. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
xi	Design the ventilation system for adequate air changes as per prevailing norms for all tunnels, motor houses, Oil Cellars.	Complied. Ventilation system for adequate air changes as per norms for all tunnels, motor houses, Oil Cellars etc are already provided. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
III	Water quality monitoring and preservation	
i	The project proponent shall install 24x7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules 1986 vide G.S.R 277 (E) dated 31st March 2012 (Integrated iron & Steel); G.S.R 414 (E) dated 30th May 2008 (Sponge Iron) as amended from time to time; S.O. 3305 (E) dated 7th December 2015 (Thermal Power Plants) as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories	Complied. Sunflag already installed 24x7 continuous Effluent Monitoring System with respect to standards prescribed in Environment (Protection) Rules 1986 and results are connected to SPCB and CPCB on line servers. Calibrate these system from time to time according to equipment supplier M/s Forbes Marshall. Calibration report. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
ii	The project proponent shall monitor regularly ground water quality at least twice a year (pre and post monsoon) at sufficient numbers of piezometers/ sampling wells in the plant and adjacent areas through labs recognised under Environment (Protection) Act, 1986 and NABL accredited laboratories	Complied. Sunflag monitor regularly ground water quality at least twice a year (pre and post monsoon) at sufficient numbers of sampling wells and pond in the plant and adjacent areas through labs recognised under Environment (Protection) Act, 1986

		and NABL accredited laboratories. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
iii	The project proponent shall provide the ETP for coke oven to meet the standards prescribed in G.S.R 277 (E) dated 31st March 2012 (Integrated iron & Steel); G.S.R 414 (E) dated 30th May 2008 (Sponge Iron) as amended from time to time; S.O. 3305 (E) dated 7th December 2015 (Thermal Power Plants) as amended from time to time as amended from time to time	Not applicable, as we have not installed Coke Oven Plant.
iv	Adhere to 'Zero Liquid Discharge'	Complied. 'Zero Liquid Discharge' has been implemented. 100% of any effluent generated in the plant is reused/ recycled.
v	Sewage Treatment Plant shall be provided for treatment of domestic waste water to meet the prescribed standards.	Complied. Sewage Treatment Plant are already provided for treatment of domestic waste water, parameters maintained within prescribed standards. The STP photo with analysis reports. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
vi	Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run off.	Garland drains and collection pits for stock piles work is under progress.
vii	Tyre washing facilities shall be provided at the entrance/exit of the plant gates.	Tyre washing facilities work is under progress.
viii	CO2 injection shall be provided in GCP of SMS to reduce pH in circulating water to ensure optimal recycling of treated water for converter gas cleaning	SMS have Primary and Secondary Fume / Dust Extraction System with high capacity bag filters & suction blowers. Working efficiently and maintain the emissions within prescribed limits.
ix	Water meters shall be provided at the inlet to all unit processes in the steel plants.	Complied. Water meters are already provided at the inlet to all unit processes in the steel plants. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-

		2/3A/2724 dtd 24.03.2022
x	The project proponent shall make efforts to minimize water consumption in the steel plant complex by segregation of used water, practicing cascade use and by recycling treated water	<p>Complied.</p> <p>Water consumption maintained at minimum level by recycling of waste water after treatment. Treated waste water is being used in process as a make up to Sinter, DRP, MBF / SMS slag quenching, Rolling mill etc.</p>
IV	Noise monitoring and prevention	
i	Noise quality shall be monitored as per the prescribed Noise Pollution (Regulation and Control) Rules, 2000 and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report	<p>Complied.</p> <p>Noise level is being monitored on regular basis and maintained as per the prescribed Noise Pollution (Regulation and Control) Rules, 2000 and report in this regard is being submitted to MoEFCC Regional Office of the Ministry as a part of six-monthly compliance report. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
V	Energy Conservation measures	
i	Energy conservation measures may be adopted such as adoption of solar energy and provision of LED lights etc., to minimize the energy consumption	<p>Complied.</p> <p>Energy conservation measures has been adopted by providing solar street lights, and replacement of all lights with LED lights and up gradation in electrical control system etc. thus minimize the energy consumption. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
VI	Waste management	
i	An attrition grinding unit to improve the bulk density of BF granulated slag from 1.0 to 1.5 Kg/l shall be installed to use slag as river sand in construction industry.	Our entire BF slag is being sold to Cement industries like ACC cement, Emami Cement, Ambhuja cement etc. BF slag is utilized for manufacturing of slag cement in cement industries. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
ii	In case of Non-Recovery coke ovens, the gas main carrying hot flue gases to the boiler, shall be insulated to conserve heat and to maximize heat recovery.	At present not applicable, as we have not installed Coke Oven Plant.

iii	Carbon recovery plant to recover the elemental carbon present in GCP slurries for use in Sinter plant shall be installed.	100% GCP slurry is being used at Sinter plant.
iv	Used refectories shall be recycled as far as possible.	Complied. Used refectories is being recycled, Buyback system is adopted with refractory suppliers / manufacturers.. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
v	100% utilization of fly ash shall be ensured. All the fly ash shall be provided to cement and brick manufacturers for further utilization and Memorandum of Understanding in this regard shall be submitted to the Ministry's Regional Office	Complied. Fly ash is used for in house manufacturing of fly ash bricks & paver blocks and also sold to brick manufacturers. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
vi	Oil Collection pits shall be provided in oil cellars to collect and reuse/recycle spilled oil. Oil collection trays shall be provided under coils on saddles in cold rolled coil storage area.	Complied. Oil Collection pits are provided in oil cellars to collect and reuse/recycle spilled oil. Oil collection trays are provided. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
vii	Kitchen waste shall be composted or converted to biogas for further use.	Complied. Kitchen waste compost machine has been installed at our Nursery and compost is being used for nursery / plantation. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
VII	Green Belt	
i	Green belt shall be developed in an area equal to 33% of the plant area with a native tree species in accordance with CPCB guidelines. The greenbelt shall inter alia cover the entire periphery of the plant.	Complied. The existing Green belt has been developed in an area equal to 33%(I.e.72 Hectare) of the plant area with a native tree species in accordance with CPCB guidelines. The greenbelt are inter alia cover the entire periphery of the plant, Total plantation has been done till date 5,64,758 nos, will also be increased the

		green belt wherever possible in the project area, 25 Miyawaki sites of each site 500-600 feet square plot has been earmarked at different location of plant.
ii	The project proponent shall prepare GHG emissions inventory for the plant and shall submit the programme for reduction of the same including carbon sequestration including plantation.	<p>GHG emissions of Sunflag steel was accounted and submitted for previous year and for 2020-2021, a statement of carbon budgeting and amount of carbon sequestered by the existing green belt is calculated Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022 also submitted to MoEFCC website on 30.11.2021 and also refer Annexure-3 for 2021-22.</p> <p>Adequate green belt have been developed in a nd around the plant to reduce the Co2 emissions. Existing green belt found to be good, Iso increase the green belt by planting maximum trees along the railway line, waste dump area, loading & unloading area etc and wherever possible.</p>
VIII	Public hearing and Human health issues	
i	Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.	<p>Complied.</p> <p>Emergency plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan has been prepared and submitted along with six monthly compliance report. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p> <p>Mock drills and awareness programme for the employees are conducted periodically. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
ii	The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms of Factory Act	<p>Complied.</p> <p>Heat stress analysis for the workmen who work in high temperature work zone has been carried out, accordingly shift duration for the employees working in high</p>

		temperature zone have been followed. and also provided Personal Protection Equipment (PPE) as per the norms of Factory Act. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
iii	Occupational health surveillance of the workers shall be done on a regular basis and records maintained	<p>Complied.</p> <p>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 check up the health of workers and Staff. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
IX	Corporate Environment Responsibility	
i	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest / wildlife norms / conditions and / or shareholders / stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.	<p>Complied.</p> <p>Company has submitted Environment policy duly approved by Board of Directors towards CER along with previous compliance report.</p> <p>Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
ii	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization	<p>Complied, separate Environmental Cell with qualified personnel has been provided under Section Head & control under Director-Technical and Chief Operating Officer.</p> <p>Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022</p>
X	Miscellaneous	
i	The project proponent shall make public the environmental clearance granted for	Complied. Advertisement have been made in the local news paper within prescribed period &

	their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently	also displayed in the Sunflag Company website. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
ii	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.	Complied. Copies of EC has been submitted to Local bodies, Gram Panchayat samiti etc.. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
iii	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.	Complied. Copies of environment clearance letter, results of monitoring data report are uploaded on Sunflag company website link at https://sunflagsteel.com/1695-2/ . on half yearly basis. Also the Half yearly compliance report is uploaded in Sunflag Steel web site. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
iv	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company	Complied, on line monitoring of pollutants data level namely; PM10, SO2, NOx (ambient levels & stack emissions) has been monitored for the projects and displayed the same at the Main Gate of the company. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
v	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.	Complied, The Six monthly status of compliance report of EC conditions has been uploaded on website of the ministry of Environment, Forest and Climate Change at environment clearance portal. Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022
vi	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed	Refer our compliance report submitted to your office vide letter No.Poll/MoEFCC/FC-2/3A/2724 dtd 24.03.2022

	under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.	
vii	The project proponent 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, commencing the land development work and start of production operation by the project.	Complied. Financial closure and final approval of project will be submitted after commissioning of Combustor.
viii	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.	Agree to comply with this condition.
ix	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forest, and Climate Change (MoEF&CC)	Agree to comply with this condition.
x	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986	Agree to comply with this condition.
xi	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory	Agree to comply with this condition.
xii	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.	Agree to comply with this condition.
xiii	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.	Agree to comply with this condition.
xiv	Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010	Ok, Noted.

ANNEXURE-1. (A)

STACK EMISSION STATUS

Location:- S-2 Reheating Furnace (ASM) S-1A

Stack Identity	S-2 Reheating Furnace (ASM) S-1A
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	LSHS/Furnace Oil & BF Gas

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)	SO₂ (kg/day)	NO_x (mg/Nm³)
1	04-04-2022	174	6.9	15443.10	17.7	94.2	280.4
2	11-04-2022	168	6.65	14956.40	16.5	105.7	275.6
3	25-04-2022	178	7.60	16734.70	16.3	101.4	257.8
4	02-05-2022	182	7.02	15302.4	19.4	156.2	260.7
5	09-05-2022	174	6.56	14555.9	16.9	101.0	273.0
6	16-05-2022	186	6.36	13743.2	17.8	86.8	261.5
7	23-05-2022	178	6.72	14778.5	18.5	99.2	290.3
8	03-06-2022	172	7.07	15757.7	17.7	92.7	234.7
9	08-06-2022	182	6.89	15019.4	21.2	94.5	241.8
10	15-06-2022	162	7.70	17556.14	19.2	91.7	218.0
11	20-06-2022	178	6.45	14184.9	16.2	81.0	249.1
12	05-07-2022	164	6.75	15319.08	16.3	84.6	217.8
13	12-07-2022	167	7.15	16115.59	15.4	87.5	207.0
14	18-07-2022	172	6.26	13952.73	18.1	69.1	263.7
15	26-07-2022	184	7.16	15539.05	12.5	88.5	225.7
16	03-08-2022	182	7.15	15585.13	23.3	92.8	226.0

17	09-08-2022	174	6.83	15154.67	14.3	70.4	210.5
18	17-08-2022	194	6.84	14527.3	16.4	69.3	237.2
19	22-08-2022	168	7.4	16642.4	13.8	86.9	196.0
20	05-09-2022	255	7.42	13938.1	19.6	73.0	213.7
21	15-09-2022	184	7.29	15820.8	24.1	82.4	210.4
22	19-09-2022	178	7.12	15658.4	21.9	78.7	199.6
23	27-09-2022	212	6.83	13967.7	27.0	72.5	211.6
Method		IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	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-3 FBC Boiler ESP (CPP)

Stack Identity	S-3 FBC Boiler ESP (CPP)
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 (Nm³/hr)	Total Particulate Matter (PM) (mg/Nm³)	SO2 (kg/day)	NO2) (mg/ Nm3)
1	06-04-2022	124	7.30	38894.4	28.4	521.6	436.8
2	13-04-2022	138	7.90	40379.2	28.5	544.9	424.1
3	22-04-2022	148	8.40	41956.6	25.2	524.4	435.1
4	10-06-2022	145	7.77	38996.6	24.7	481.4	425.6
5	16-06-2022	137	7.14	36535.4	28.9	464.1	441.9
6	22-06-2022	134	7.45	38403.7	25.4	461.7	394.9
7	07-07-2022	122	7.86	41745.31	31.2	461.8	408.1
8	13-07-2022	118	7.51	40295.56	24.5	468.7	433.9
9	21-07-2022	128	7.40	38716.23	25.1	491.1	410.8
10	28-07-2022	134	8.18	42162.80	21.3	495.7	457.6
11	02-08-2022	126	8.10	42588.13	34.4	495.5	465.9
12	25-08-2022	122	6.78	36014.2	23.7	421.8	414.6
13	07-09-2022	127	7.49	39284.5	36.1	467.8	397.2
14	16-09-2022	138	7.92	40425.4	37.7	468.3	407.8
15	21-09-2022	135	7.12	36613.2	28.2	412.9	438.7
16	28-09-2022	143	7.75	39083.3	30.3	448.5	419.4
	Method	IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	S 11255 (Part 7):2005 RA 2017

Norms: **Total Particulate Matter (PM)-50 mg/Nm³.**
Sulphur Dioxide – 4100 Kg/Day.

STACK EMISSION STATUS

Location :S-4 (BSM)

Stack Identity	S-4 (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	LSHS/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	04-04-2022	305	9.70	31104.6	20.4	179.8	287.3
2	11-04-2022	309	9.10	29054.4	16.9	191.8	270.8
3	20-04-2022	301	9.30	30066.9	19.4	188.6	351.9
4	25-04-2022	312	8.90	28147.4	21.6	180.9	278.2
5	02-05-2022	310	9.79	30962.3	21.6	387.2	291.1
6	09-05-2022	318	9.24	28829.2	19.3	188.3	285.8
7	16-05-2022	307	8.76	27850.7	18.4	185.7	285.5
8	23-05-2022	305	8.61	27465.9	20.6	176.8	304.5
9	02-06-2022	302	9.36	30016.2	16.9	165.4	221.6
10	08-06-2022	309	8.78	27817.6	22.9	169.3	241.3
11	13-06-2022	308	9.16	29072.3	19.4	164.8	235.5
12	20-06-2022	298	8.56	27642.7	19.2	161.9	239.5
13	05-07-2022	307	9.77	31058.4	17.9	154.3	216.2
14	12-07-2022	284	8.46	28006.0	16.6	145.4	230.6
15	18-07-2022	305	9.87	31484.9	18.5	169.2	215.3
16	26-07-2022	312	8.80	27738.0	27.5	178.3	263.6
17	03-08-2022	304	8.47	27069.1	25.0	140.7	236.1
18	09-08-2022	312	9.32	29375.48	16.4	151.6	256.8
19	16-08-2022	305	9.75	31104.22	27.8	190.4	220.6

20	22-08-2022	285	9.81	32415.1	16.3	149.8	227.1
21	05-09-2022	284	10.36	34291.6	24.3	162.8	225.2
22	15-09-2022	297	9.70	31376.9	31.2	160.7	232.3
23	19-09-2022	304	8.74	27929.3	14.2	140.7	231.3
24	27-09-2022	292	8.78	28654.2	23.0	147.9	226.2
Method		IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	S 11255 (Part 7):2005 RA 2017

Norms: **Total Particulate Matter (PM)-50 mg/Nm³.**

Sulphur Dioxide – 2916 Kg/Day.

Oxides of Nitrogen – 400 mg/Nm³

STACK EMISSION STATUS

Location:-S-5 SMS-Secondary

Stack Identity	S-5 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	05-04-2022	96	11.0	452326.9	21.6
2	12-04-2022	92	10.6	443620.3	17.7
3	22-04-2022	97	11.6	476036.1	16.4
4	05-05-2022	97	12.0	493999.3	18.1
5	10-05-2022	94	11.3	467134.9	16.7
6	17-05-2022	92	12.5	519380.1	18.1
7	24-05-2022	86	10.4	441722.41	18.2
8	03-06-2022	93	12.5	518844.6	21.8
9	09-06-2022	87	11.0	463622.5	18.8
10	16-06-2022	82	10.2	438178.5	17.5
11	21-06-2022	92	10.9	454751.1	18.7
12	06-07-2022	84	10.3	437012.72	16.2
13	14-07-2022	78	10.7	463870.81	15.8
14	19-07-2022	85	11.8	499593.83	14.1
15	27-07-2022	76	10.5	456580.0	20.6
16	06-08-2022	87	11.0	463641.3	17.8
17	11-08-2022	92	11.9	494583.3	16.7
18	17-08-2022	84	10.6	451391.1	15.6
19	23-08-2022	94	10.9	450695.4	13.0
20	06-09-2022	87	10.3	435078.9	19.0



21	14-09-2022	91	11.08	460999.4	18.6
22	26-09-2022	82	9.92	423233.9	17.6
Method		IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019

Norms: **Total Particulate Matter (PM)- 50 mg/Nm³.**

STACK EMISSION STATUS

Stack Identity	S-6 ESP WHRSG boiler for Kiln (DRP-1)
Stack diameter	3.2 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)	SO ₂ (kg/day)	NO _x (mg/Nm ³)	CO %
1	19-05-2022	152	7.94	156773.9	30.5	2203.6	445.4	0.06
2	12-08-2022	142	7.85	158727.5	35.2	2130.9	418.6	0.05
Method		IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	IS 11255 (Part 7):2005 RA 2017	Multi Gas Analyzer Method

Norms: Total Particulate Matter (PM)- 50 mg/Nm³.

Sulphur Dioxide – 7250 Kg/Day.

CO – 1.0 %

STACK EMISSION STATUS

Stack Identity	S-7 DES-II De-Dusting System of Discharge Building (DRP-1)
Stack diameter	2.0 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	19-05-2022	56	5.85	58348.8	38.3
2	12-08-2022	48	5.89	60208.6	41.5
Method		IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019

Norms: Total Particulate Matter (PM)- 50 mg/Nm³.

STACK EMISSION STATUS

Stack Identity	S-8 Wet-Scrubber for Discharge Cooler (DRP-1)
Stack diameter	0.8 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	19-05-2022	71	7.24	11038.9	37.4
2	12-08-2022	65	7.55	11714.96	35.5
Method		IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019

Norms: **Total Particulate Matter (PM)- 50 mg/Nm³.**

STACK EMISSION STATUS

Location:-S-11 (MBF Stoves)

Stack Identity	S-11 (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)	CO %
1	06-04-2022	154	12.9	98970.5	16.1	570.10	148.8	0.02
2	13-04-2022	158	12.0	91680.8	14.8	533.0	161.9	0.03
3	18-04-2022	155	11.3	86935.2	12.7	491.3	174.9	0.01
4	05-05-2022	162	10.4	78346.1	14.4	516.6	136.6	0.03
5	13-05-2022	157	12.1	92277.5	16.2	364.1	153.7	0.02
6	17-05-2022	152	10.6	81813.1	13.8	362.6	165.4	0.03
7	28-05-2022	165	11.5	86465.98	15.9	270.1	178.5	0.02
8	04-06-2022	158	11.1	84847.0	15.4	329.3	125.5	0.04
9	17-06-2022	146	10.7	84237.2	15.3	343.6	137.8	0.04
10	22-06-2022	162	12.1	91219.3	13.8	263.1	144.9	0.04
11	07-07-2022	158	11.9	90549.10	16.9	313	117.1	0.03
12	13-07-2022	152	11.54	88966.27	10.1	291	124.2	0.04
13	21-07-2022	148	10.4	80956.88	11.2	248.2	131.9	0.04
14	28-07-2022	154	11.34	87027.86	16.4	297.9	156.0	0.05
15	06-08-2022	164	12.1	91016.95	15.4	343.4	138.8	0.04
16	16-08-2022	147	11.4	89490.2	9.52	269.7	129.4	0.03
17	26-08-2022	142	12.04	95061.5	12.5	363.3	129.9	0.04
18	07-09-2022	148	10.64	82826.2	15.7	296.4	127.2	0.03
19	16-09-2022	152	11.61	89509.6	11.6	279.5	117.4	0.03

20	21-09-2022	143	11.12	87596.1	10.3	278.1	117.9	0.03
21	28-09-2022	158	11.91	90540.5	15.5	276.7	113.2	0.04
Method		IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	IS 11255 (Part 7):2005 RA 2017	

Norms: **Total Particulate Matter (PM)-30 mg/Nm³.**

Sulphur Dioxide – 1620 Kg/Day.

Oxides of Nitrogen – 200 mg/Nm³

Carbon Monoxide - 1.0 %

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 (Nm³/hr)	Total Particulate Matter (PM) (mg/Nm³)	SO ₂ (kg/day)	NO _x (mg/Nm³)
1	07-04-2022	178	11.1	182791.6	39.4	250.6	332.8
2	15-04-2022	168	11.4	191435.5	37.4	215.0	367.9
3	19-04-2022	158	11.4	194858.7	34.0	250.9	266.9
4	28-04-2022	172	12.2	202947.9	33.6	254.5	328.4
5	06-05-2022	182	12.9	210131.1	35.3	251.8	327.2
6	11-05-2022	174	12.1	200049.9	32.7	258.8	297.8
7	25-05-2022	168	12.7	213268.5	31.8	262.3	316.0
8	14-06-2022	146	10.7	189531.2	33.9	247.2	351.7
9	25-06-2022	164	12.8	216575.8	33.5	217.0	250.9
10	08-07-2022	174	11.8	195128.69	36.6	226.4	296.1
11	15-07-2022	164	12.07	203626.59	35.6	223.6	197.9
12	22-07-2022	168	12.2	203925.32	39.5	231.4	237.8
13	29-07-2022	145	10.99	193865.52	34.0	248.9	215.9
14	04-08-2022	172	11.5	191858.35	30.8	248.0	283.4
15	20-08-2022	164	12.36	208473.9	38.0	219.1	182.3
16	25-08-2022	143	10.42	184701.8	26.2	236.4	131.9
17	08-09-2022	158	10.44	178615.9	29.3	251.4	243.7
18	22-09-2022	162	11.37	192722.6	32.7	254.6	311.4



19	29-09-2022	174	12.13	200031.0	37.4	233.7	286.7
Method		IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 1): 1985 RA 2019	IS 11255 (Part 2): 1985 RA 2019	IS 11255 (Part 7): 2005 RA 2017

Norms: **Total Particulate Matter (PM)-50 mg/Nm³.**
Sulphur Dioxide – 272 Kg/Day.
Oxides of Nitrogen – 500 mg/Nm³

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	07-04-2022	162	7.80	83437.8	30.3	81.7	226.4
2	15-04-2022	154	7.40	80536.5	30.5	76.3	218.9
3	18-04-2022	145	8.4	34400.3	19.7	87.8	365.5
4	28-04-2022	154	8.06	87726.7	30.5	87.5	233.10
5	06-05-2022	168	8.09	85254.4	32.5	77.8	236.5
6	11-05-2022	162	7.7	82268.2	31.4	80.6	227.2
7	25-05-2022	157	7.43	80301.1	30.6	86.7	219.4
8	14-06-2022	138	7.26	82086.6	35.2	82.7	235.3
9	25-06-2022	147	8.0	88527.2	33.2	77.4	242.4
10	08-07-2022	148	7.90	87204.87	41.7	78.6	218.2
11	15-07-2022	132	7.32	83992.40	38.8	80.0	251.9
12	22-07-2022	138	7.91	89445.63	36.0	82.4	239.7
13	29-07-2022	142	7.63	54444.34	35.1	84.7	235.5
14	04-08-2022	148	8.32	91849.6	37.3	89.4	224.2
15	20-08-2022	132	7.21	82729.0	26.8	82.9	193.5
16	26-08-2022	132	7.64	87665.3	34.6	85.1	119.1
17	08-09-2022	136	7.13	81016.4	32.6	84.1	233.4
18	22-09-2022	142	6.82	76369.5	32.6	84.1	225.8



19	29-09-2022	148	7.68	84784.3	30.6	84.1	215.1
Method		IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	IS 11255 (Part 7):2005 RA 2017

Norms: **Total Particulate Matter (PM)-50 mg/Nm³.**
Sulphur Dioxide – 92 Kg/Day.
Oxides of Nitrogen - 500 mg/Nm³

STACK EMISSION STATUS

Location:- S-27 Flux Crusher De-Dusting System (Sinter Plant)

Stack Identity	S-27 Flux Crusher De-Dusting System (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	08-04-2022	42	4.20	13225.7	11.5
2	29-04-2022	54	4.80	14742.0	12.0
3	07-05-2022	54	4.13	12528.4	13.9
4	26-05-2022	50	4.26	13082.23	15.4
5	17-06-2022	47	3.92	12151.1	14.6
6	27-06-2022	42	4.20	13225.5	12.5
7	11-07-2022	38	4.74	15117.13	10.3
8	30-07-2022	43	4.06	12744.57	13.6
9	08-08-2022	36	3.69	11846.3	9.57
10	31-08-2022	38	3.35	10685.8	12.8
11	09-09-2022	42	3.72	11714.5	13.5
12	26-09-2022	41	4.20	13268.6	10.7
Method		IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019

Norms: **Total Particulate Matter (PM)-50 mg/Nm³.**

STACK EMISSION STATUS

Location:- S-28 Flux Screening Quickling Bunker Top De-Dusting System (Sinter Plant)

Stack Identity	S-28 Flux Screening Quickling Bunker Top De-Dusting System (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 (Nm ³ /hr)	Total Particulate Matter (PM) (mg/Nm ³)
1	08-04-2022	55	6.00	18368.9	24.4
2	29-04-2022	58	5.80	17601.9	19.5
3	07-05-2022	58	6.09	18261.6	18.9
4	26-05-2022	53	5.83	17750.84	18.3
5	17-06-2022	51	5.7	17461.4	20.3
6	27-06-2022	48	6.0	18552.5	17.5
7	11-07-2022	48	6.1	18891.37	14.1
8	30-07-2022	51	5.81	17797.69	21.6
9	08-08-2022	45	5.29	16510.3	12.7
10	31-08-2022	51	5.81	17798.4	15.9
11	09-09-2022	54	5.37	16299.6	21.9
12	26-09-2022	48	5.67	17531.6	24.9
Method	IS 11255 (Part 3): 2008 RA 2018 IS 11255 (Part 3): 2008 RA 2018 IS 11255 (Part 3): 2008 RA 2018 IS 11255 (Part 1):1985 RA 2019				

Norms: **Total Particulate Matter (PM) - 50 mg/Nm³.**

STACK EMISSION STATUS

Stack Identity	S-29 ESP to New WHRSG of Kiln (DRP– 2)
Stack diameter	2.8 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)	SO ₂ (kg/day)	NO _x (mg/Nm ³)	(CO) %
1	14-04-2022	142	7.10	111167.0	27.4	1175.9	379.3	0.04
2	23-04-2022	148	7.50	115682.8	26.2	1217.9	359.3	0.02
3	27-04-2022	152	7.90	120031.7	28.2	1253.2	380.7	0.03
4	12-05-2022	148	7.90	120561.7	27.9	1261.7	406.0	0.03
5	18-05-2022	154	7.63	114806.6	26.8	1252.5	398.5	0.02
6	27-05-2022	142	7.95	123083.8	27.9	1261.2	411.9	0.03
7	24-06-2022	148	7.80	119043.6	25.7	1218.2	395.7	0.03
8	30-06-2022	142	7.95	123075.5	28.8	1315.10	389.3	0.02
9	01-08-2022	147	7.79	11961.2	28.5	908.6	335.1	0.03
10	29-08-2022	134	7.77	122664.9	27.5	1027.0	367.5	0.04
11	13-09-2022	128	6.83	109439.9	28.3	1001.5	375.3	0.04
12	23-09-2022	143	7.53	116294.7	29.8	1104.5	383.9	0.05
13	30-09-2022	137	7.14	111889.8	26.7	1030.5	377.1	0.04
Method	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	IS 11255 (Part 7):2005 RA 2017	Multi Gas Analyzer Method	

Norms: Total Particulate Matter (PM)- 50 mg/Nm³.
 Sulphur Dioxide – 4520 Kg/Day.
 CO – 1.0 %

STACK EMISSION STATUS

Stack Identity	S-34 Producer Hopper (DRP – 2)
Stack diameter	1.11 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	14-04-2022	58	14.2	42951.5	36.7
2	23-04-2022	65	13.8	41504.0	29.6
3	27-04-2022	68	13.4	39858.3	23.0
4	12-05-2022	62	13.5	40973.2	33.4
5	18-05-2022	58	13.1	39992.9	28.9
6	27-05-2022	56	14.6	44954.0	32.4
7	24-06-2022	54	13.9	43090.0	28.7
8	30-06-2022	56	15.1	46595.5	29.1
9	09-07-2022	58	14.1	43386.45	31.5
10	20-07-2022	48	13.7	43476.10	36.5
11	01-08-2022	58	13.2	40450.98	21.3
12	29-08-2022	47	13.7	43418.7	26.3
13	13-09-2022	42	14.1	45369.9	24.5
14	23-09-2022	48	14.8	46892.4	27.6
15	30-09-2022	52	15.4	48187.3	35.0
Method		IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019

Norms: **Total Particulate Matter (PM)- 50 mg/Nm³.**

STACK EMISSION STATUS

Location:- S-35 Reheating Furnace (Blooming Mill)

Stack Identity	S-35 Reheating Furnace (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	LSHS / Furnace Oil & BF gas

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	05-04-2022	315	9.30	52066.7	25.2	333.7	326.0
2	12-04-2022	312	9.80	54968.7	23.7	342.5	288.2
3	21-04-2022	317	10.0	56053.2	21.3	358.2	325.0
4	26-04-2022	322	9.20	51067.1	26.5	337.8	327.8
5	04-05-2022	316	9.35	52031.8	23.1	657.4	335.3
6	10-05-2022	318	8.85	49086.1	21.9	319.7	292.9
7	20-05-2022	308	8.64	48748.7	25.8	337.5	311.3
8	24-05-2022	312	9.19	51496.7	24.3	334.1	328.2
9	02-06-2022	312	9.19	51499.5	19.9	289.7	222.8
10	09-06-2022	305	9.87	55970.9	19.8	278.2	226.9
11	21-06-2022	302	8.86	50511.6	21.6	307.4	257.8
12	27-06-2022	307	8.63	48772.3	24.2	301.1	303.1
13	06-07-2022	301	9.95	56816.2	22.1	294.3	190.3
14	14-07-2022	310	9.18	51613.67	21.9	269.7	237.5
15	19-07-2022	307	9.28	52449.33	18.4	285.5	237.6
16	27-07-2022	315	8.69	48443.88	26.7	318.9	286.2
17	05-08-2022	312	9.93	55643.36	20.7	262.8	194.8
18	11-08-2022	320	9.88	54608.9	24.5	297.3	251.2



19	18-08-2022	288	9.25	54046.7	22.8	273.5	202.6
20	23-08-2022	294	8.79	50813.5	28.3	307.2	367.9
21	06-09-2022	274	10.68	63996.6	26.8	332.3	198.6
22	14-09-2022	294	10.12	58500.4	35.5	304.5	206.4
23	20-09-2022	312	9.44	52894.0	24.7	286.3	213.8
24	30-09-2022	310	8.92	50151.2	28.1	283.4	211.2
Method		IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	IS 11255 (Part 7):2005 RA 2017

Norms: **Total Particulate Matter (PM)-50 mg/Nm³.**
Sulphur Dioxide – 5490 Kg/Day.
Oxides of Nitrogen – 400 mg/Nm³

STACK EMISSION STATUS

Stack Identity	S-36 BELL Annealing 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 (Nm³/hr)	Total Particulate Matter (PM) (mg/Nm³)	SO ₂ (kg/day)	NO _x (mg/Nm³)
1	20-04-2022	120	9.8	2977.3	9.57	0.38	22.5
2	26-04-2022	124	9.7	2890.6	8.23	0.52	35.1
3	04-05-2022	117	9.85	2987.7	10.2	0.57	32.5
4	13-05-2022	120	10.6	3209.1	9.07	0.46	34.8
5	20-05-2022	112	11.3	3499.4	10.4	0.49	31.3
6	15-06-2022	102	10.8	3328.14	9.43	0.37	40.1
7	30-06-2022	107	11.32	3523.7	9.54	0.20	40.6
8	05-08-2022	107	10.41	3240.94	10.1	0.44	38.9
9	18-08-2022	98	10.06	3207.8	8.24	0.29	28.8
10	24-08-2022	116	9.43	2867.9	8.82	0.39	30.4
11	20-09-2022	102	9.89	3119.6	5.72	0.36	29.2
12	29-09-2022	116	10.60	3059.3	4.38	0.48	24.6
Method		IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 3): 2008 RA 2018	IS 11255 (Part 3): 2008 RA 2018	S 11255 (Part 1):1985 RA 2019	IS 11255 (Part 2):1985 RA 2019	IS 11255 (Part 7):2005 RA 2017

Norms: **Total Particulate Matter (PM)- 50 mg/Nm³.**
Sulphur Dioxide – 102 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-22	04-04-2022 to 05-04-2022	76.5	35.1	16.1	25.3
2		08-04-2022 to 09-04-2022	66.1	32.2	14.3	27.2
3		11-04-2022 to 12-04-2022	68.3	33.7	15.3	27.8
4		15-04-2022 to 16-04-2022	70.4	34.3	13.8	28.5
5		18-04-2022 to 19-04-2022	91.4	46.7	17.3	31.0
6		22-04-2022 to 23-04-2022	83.4	41.1	18.2	31.8
7		25-04-2022 to 26-04-2022	86.5	45.3	16.6	29.5
8		29-04-2022 to 30-04-2022	79.8	36.2	15.3	28.6
9	May-22	02-05-2022 to 03-05-2022	84.2	39.9	18.5	30.2
10		06-05-2022 to 07-05-2022	78.1	37.9	17.8	28.6
11		09-05-2022 to 10-05-2022	87.5	39.6	18.1	29.5
12		13-05-2022 to 14-05-2022	82.2	37.6	16.7	29.4
13		16-05-2022 to 17-05-2022	80.8	36.6	16.4	28.9
14		20-05-2022 to 21-05-2022	87.0	41.1	18.3	33.7
15		23-05-2022 to 24-05-2022	75.5	36.1	17.5	31.3
16		27-05-2022 to 28-05-2022	77.9	37.2	16.4	28.4
17	Jun-22	01-06-2022 to 02-06-2022	79.4	38.0	17.7	29.2
18		03-06-2022 to 04-06-2022	84.0	41.6	16.8	28.2
19		06-06-2022 to 07-06-2022	88.7	42.6	17.6	30.4
20		10-06-2022 to 11-06-2022	85.7	40.1	15.4	27.8
21		13-06-2022 to 14-06-2022	81.7	39.1	14.8	26.4
22		17-06-2022 to 18-06-2022	90.5	48.6	16.1	28.3

23		20-06-2022 to 21-06-2022	71.3	38.3	15.3	26.6
24		24-06-2022 to 25-06-2022	67.3	35.3	14.6	24.3
25		27-06-2022 to 28-06-2022	58.9	33.2	13.2	22.3
26		29-06-2022 to 30-06-2022	56.3	32.7	12.6	20.5
27	Jul-22	04-07-2022 to 05-07-2022	55.1	25.8	10.1	15.2
28		08-07-2022 to 09-07-2022	58.9	28.1	11.4	16.1
29		11-07-2022 to 12-07-2022	56.0	27.0	11.3	15.5
30		15-07-2022 to 16-07-2022	54.6	25.9	10.4	14.9
31		18-07-2022 to 19-07-2022	53.7	24.4	9.75	14.2
32		22-07-2022 to 23-07-2022	57.6	31.9	9.03	15.3
33		25-07-2022 to 26-07-2022	55.3	28.6	9.44	14.5
34		29-07-2022 to 30-07-2022	52.0	26.9	11.7	13.4
35	Aug-22	01-08-2022 to 02-08-2022	55.3	27.2	12.3	14.2
36		05-08-2022 to 06-08-2022	53.2	25.6	11.4	12.8
37		08-08-2022 to 09-08-2022	56.1	27.4	12.5	14.2
38		12-08-2022 to 13-08-2022	58.3	28.8	13.5	15.5
39		16-08-2022 to 17-08-2022	56.3	27.3	12.4	14.4
40		19-08-2022 to 20-08-2022	53.8	26.1	11.8	13.6
41		22-08-2022 to 23-08-2022	52.4	27.9	11.3	14.2
42		25-08-2022 to 26-08-2022	51.2	24.5	11.1	13.3
43	Sep-22	29-08-2022 to 30-08-2022	56.9	30.5	12.4	14.4
44		05-09-2022 to 06-09-2022	58.3	33.7	13.3	15.6
45		09-09-2020 to 10-09-2022	59.4	34.7	14.4	16.4
46		12-09-2022 to 13-09-2022	57.0	31.8	13.6	15.3
47		16-09-2022 to 17-09-2022	62.8	34.5	14.4	17.3
48		19-09-2022 to 20-09-2022	58.2	32.8	13.4	16.2
49		23-09-2022 to 24-09-2022	60.0	33.2	14.6	17.5



50	26-09-2022 to 27-09-2022	63.6	34.8	15.2	18.1
51	29-09-2022 to 30-09-2022	61.3	33.1	14.9	17.8
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-22	04-04-2022 to 05-04-2022	74.4	36.4	17.7	27.3
2		08-04-2022 to 09-04-2022	67.2	33.8	17.1	28.4
3		11-04-2022 to 12-04-2022	83.4	38.1	19.1	29.3
4		15-04-2022 to 16-04-2022	72.8	35.8	17.3	27.7
5		18-04-2022 to 19-04-2022	83.9	41.6	19.6	31.8
6		22-04-2022 to 23-04-2022	69.8	34.4	19.2	32.5
7		25-04-2022 to 26-04-2022	73.9	36.3	15.5	28.1
9		29-04-2022 to 30-04-2022	83.9	42.4	18.4	30.1
10	May-22	02-05-2022 to 03-05-2022	86.8	43.4	20.1	31.8
11		06-05-2022 to 07-05-2022	88.4	43.6	21.4	33.5
12		09-05-2022 to 10-05-2022	92.1	45.4	22.7	35.4
13		13-05-2022 to 14-05-2022	96.5	47.1	24.3	37.9
14		16-05-2022 to 17-05-2022	95.3	46.8	25.1	36.2
15		20-05-2022 to 21-05-2022	90.4	43.8	22.8	34.7
16		23-05-2022 to 24-05-2022	87.8	42.7	21.2	33.5
17		27-05-2022 to 28-05-2022	92.7	44.7	23.4	34.9
18	Jun-22	01-06-2022 to 02-06-2022	87.3	42.3	22.8	33.5
19		03-06-2022 to 04-06-2022	88.4	41.9	23.8	32.7
20		06-06-2022 to 07-06-2022	93.8	46.5	25.2	34.8
21		10-06-2022 to 11-06-2022	79.4	38.4	23.7	32.4
22		13-06-2022 to 14-06-2022	75.7	36.6	14.1	26.1
23		17-06-2022 to 18-06-2022	73.2	35.0	13.7	25.3
24		20-06-2022 to 21-06-2022	68.4	34.8	14.4	24.1
25		24-06-2022 to 25-06-2022	65.3	33.5	13.8	23.6

26		27-06-2022 to 28-06-2022	62.9	33.2	14.0	23.1
27		29-06-2022 to 30-06-2022	60.9	32.6	13.4	21.6
28	Jul-22	04-07-2022 to 05-07-2022	58.2	28.3	11.3	19.2
29		08-07-2022 to 09-07-2022	58.9	29.0	11.9	20.4
30		11-07-2022 to 12-07-2022	58.4	27.6	11.6	18.1
31		15-07-2022 to 16-07-2022	59.6	28.9	13.4	21.2
32		18-07-2022 to 19-07-2022	56.3	27.6	12.4	20.2
33		22-07-2022 to 23-07-2022	58.7	29.9	13.0	15.9
34		25-07-2022 to 26-07-2022	56.5	28.2	12.4	15.2
35		29-07-2022 to 30-07-2022	54.2	28.1	12.1	14.0
36	Aug-22	01-08-2022 to 02-08-2022	56.0	28.1	11.6	13.4
37		05-08-2022 to 06-08-2022	53.4	26.2	10.2	12.4
38		08-08-2022 to 09-08-2022	54.8	26.6	11.4	13.1
39		12-08-2022 to 13-08-2022	55.1	26.9	12.7	14.3
40		16-08-2022 to 17-08-2022	59.1	29.8	14.1	15.7
41		19-08-2022 to 20-08-2022	53.0	24.4	13.3	14.7
42		22-08-2022 to 23-08-2022	54.1	28.4	13.4	15.1
43		25-08-2022 to 26-08-2022	55.3	29.5	13.7	15.3
44		29-08-2022 to 30-08-2022	62.4	33.5	14.6	16.2
45	Sep-22	05-09-2022 to 06-09-2022	66.2	34.2	15.4	19.4
46		09-09-2022 to 10-09-2022	59.2	32.9	16.2	18.6
47		12-09-2022 to 13-09-2022	65.1	34.2	17.9	20.1
48		16-09-2022 to 17-09-2022	68.0	36.3	18.1	22.5
49		19-09-2022 to 20-09-2022	59.2	30.3	15.6	17.8
50		23-09-2022 to 24-09-2022	63.5	35.4	17.8	21.2
51		26-09-2022 to 27-09-2022	58.5	28.2	15.0	19.2
52		29-09-2022 to 30-09-2022	64.7	31.9	17.7	21.3



NAAQM Standard	100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80(24 hrs)
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- 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	Apr-22	04-04-2022 to 05-04-2022	66.9	30.6	11.6	21.3
2		08-04-2022 to 09-04-2022	63.4	30.0	12.4	22.4
3		11-04-2022 to 12-04-2022	53.3	23.7	9.72	18.2
4		15-04-2022 to 16-04-2022	50.6	23.4	8.32	16.7
5		18-04-2022 to 19-04-2022	72.2	33.9	13.9	20.3
6		22-04-2022 to 23-04-2022	68.7	31.2	12.8	16.3
7		25-04-2022 to 26-04-2022	51.4	24.2	13.6	19.2
8		29-04-2022 to 30-04-2022	54.6	27.6	12.7	18.2
9	May-22	02-05-2022 to 03-05-2022	51.6	23.9	11.3	19.4
10		06-05-2022 to 07-05-2022	54.1	26.6	11.5	19.8
11		09-05-2022 to 10-05-2022	44.3	17.9	10.5	21.4
12		13-05-2022 to 14-05-2022	46.1	23.1	9.43	19.4
13		16-05-2022 to 17-05-2022	57.7	25.9	10.8	20.6
14		20-05-2022 to 21-05-2022	49.8	24.7	9.50	19.3
15		23-05-2022 to 24-05-2022	53.2	26.3	11.4	18.4
16		27-05-2022 to 28-05-2022	50.8	23.9	8.52	18.5
17	Jun-22	01-06-2022 to 02-06-2022	55.6	21.8	9.13	17.4
18		03-06-2022 to 04-06-2022	58.2	23.9	9.43	18.4
19		06-06-2022 to 07-06-2022	46.4	20.4	7.5	15.9
20		10-06-2022 to 11-06-2022	43.8	19.9	7.17	14.7
21		13-06-2022 to 14-06-2022	49.2	23.3	8.20	15.8
22		17-06-2022 to 18-06-2022	56.4	23.9	9.65	17.3
23		20-06-2022 to 21-06-2022	57.4	24.1	9.29	16.8
24		24-06-2022 to 25-06-2022	52.4	21.4	8.82	15.3

25		27-06-2022 to 28-06-2022	54.9	21.7	8.78	15.6
26		29-06-2022 to 30-06-2022	55.2	23.3	9.02	16.2
27	Jul-22	04-07-2022 to 05-07-2022	37.7	18.1	8.49	14.1
28		08-07-2022 to 09-07-2022	39.8	19.7	8.10	13.5
29		11-07-2022 to 12-07-2022	44.3	18.0	8.35	13.9
30		15-07-2022 to 16-07-2022	49.9	21.7	8.68	14.7
31		18-07-2022 to 19-07-2022	48.5	25.0	8.59	13.4
32		22-07-2022 to 23-07-2022	52.7	24.4	7.82	12.5
33		25-07-2022 to 26-07-2022	45.0	19.4	8.67	14.4
34		29-07-2022 to 30-07-2022	48.2	21.5	8.01	13.7
35	Aug-22	01-08-2022 to 02-08-2022	43.9	20.3	7.38	11.6
36		05-08-2022 to 06-08-2022	47.6	21.7	7.89	12.2
37		08-08-2022 to 09-08-2022	43.5	19.6	7.21	11.0
38		12-08-2022 to 13-08-2022	40.4	16.5	6.92	10.6
39		16-08-2022 to 17-08-2022	48.3	21.6	8.51	11.3
40		19-08-2022 to 20-08-2022	50.4	21.6	7.58	12.5
41		22-08-2022 to 23-08-2022	49.3	19.7	7.40	12.2
42		25-08-2022 to 26-08-2022	38.4	17.6	6.26	11.8
43		29-08-2022 to 30-08-2022	46.1	17.9	6.65	12.2
44	Sep-22	05-09-2022 to 06-09-2022	51.3	23.0	7.09	13.9
45		09-09-2020 to 10-09-2022	49.6	21.2	8.42	13.8
46		12-09-2022 to 13-09-2022	51.1	21.0	10.1	15.5
47		16-09-2022 to 17-09-2022	52.7	21.9	13.6	16.2
48		19-09-2022 to 20-09-2022	44.1	15.7	9.33	12.6
49		23-09-2022 to 24-09-2022	53.1	19.6	8.84	11.7
50		26-09-2022 to 27-09-2022	39.6	17.9	7.36	10.1
51		29-09-2022 to 30-09-2022	41.8	22.1	8.20	12.6



NAAQM Standard	100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80(24 hrs)
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- 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-22	04-04-2022 to 05-04-2022	68.4	26.0	10.9	17.1
2		08-04-2022 to 09-04-2022	59.8	27.6	11.5	16.1
3		11-04-2022 to 12-04-2022	40.2	23.1	10.1	16.3
4		15-04-2022 to 16-04-2022	67.4	33.9	11.1	17.5
5		18-04-2022 to 19-04-2022	61.2	28.2	12.3	17.2
6		22-04-2022 to 23-04-2022	71.2	29.3	9.73	16.4
7		25-04-2022 to 26-04-2022	66.9	31.6	12.3	17.7
8		29-04-2022 to 30-04-2022	63.1	27.7	10.6	17.5
9	May-22	02-05-2022 to 03-05-2022	58.3	31.5	11.8	18.4
10		06-05-2022 to 07-05-2022	67.7	31.6	11.9	20.4
11		09-05-2022 to 10-05-2022	76.1	35.9	12.3	22.5
12		13-05-2022 to 14-05-2022	73.5	34.7	13.4	23.5
13		16-05-2022 to 17-05-2022	64.2	27.9	12.6	22.3
14		20-05-2022 to 21-05-2022	79.3	38.3	13.4	20.8
15		23-05-2022 to 24-05-2022	62.4	29.0	12.1	18.8
16		27-05-2022 to 28-05-2022	56.9	25.0	11.5	19.7
17	Jun-22	01-06-2022 to 02-06-2022	61.3	25.9	10.8	18.6
18		03-06-2022 to 04-06-2022	65.8	28.0	11.5	19.3
19		06-06-2022 to 07-06-2022	63.3	24.1	10.5	17.8
20		10-06-2022 to 11-06-2022	52.3	23.2	8.90	16.3
21		13-06-2022 to 14-06-2022	58.4	23.5	9.13	15.8
22		17-06-2022 to 18-06-2022	65.2	24.7	10.4	17.2
23		20-06-2022 to 21-06-2022	63.2	26.6	9.32	16.1
24		24-06-2022 to 25-06-2022	55.3	24.0	8.92	15.6

25		27-06-2022 to 28-06-2022	56.3	25.8	9.21	16.1
26		29-06-2022 to 30-06-2022	58.6	23.1	8.84	16.0
27	Jul-22	04-07-2022 to 05-07-2022	56.1	24.9	9.14	14.9
28		08-07-2022 to 09-07-2022	54.5	23.4	9.23	15.1
29		11-07-2022 to 12-07-2022	48.7	19.6	7.67	13.7
30		15-07-2022 to 16-07-2022	51.7	24.8	8.36	13.9
31		18-07-2022 to 19-07-2022	52.1	23.1	8.1	12.9
32		22-07-2022 to 23-07-2022	54.1	23.9	9.1	13.1
33		25-07-2022 to 26-07-2022	52.5	21.5	10.0	14.9
34		29-07-2022 to 30-07-2022	50.7	21.1	8.47	12.9
35	Aug-22	01-08-2022 to 02-08-2022	54.7	23.8	8.65	13.5
36		05-08-2022 to 06-08-2022	52.8	20.8	8.14	13.0
37		08-08-2022 to 09-08-2022	57.7	24.4	8.37	12.6
38		12-08-2022 to 13-08-2022	53.5	23.3	7.78	12.6
39		16-08-2022 to 17-08-2022	58.9	29.5	8.65	13.1
40		19-08-2022 to 20-08-2022	56.3	29.2	7.52	12.5
41		22-08-2022 to 23-08-2022	51.2	22.7	7.27	12.2
42		25-08-2022 to 26-08-2022	43.8	15.5	6.75	11.7
43		29-08-2022 to 30-08-2022	50.1	22.9	6.50	12.4
44	Sep-22	05-09-2022 to 06-09-2022	56.8	23.7	8.55	14.6
45		09-09-2022 to 10-09-2022	53.3	23.1	8.53	13.3
46		12-09-2022 to 13-09-2022	56.0	21.6	10.6	15.7
47		16-09-2022 to 17-09-2022	57.3	24.5	10.2	16.6
48		19-09-2022 to 20-09-2022	55.5	21.3	9.51	15.4
49		23-09-2022 to 24-09-2022	52.3	19.3	8.18	14.2
50		26-09-2022 to 27-09-2022	56.7	25.1	9.71	15.7
51		29-09-2022 to 30-09-2022	57.9	25.9	10.3	16.1



NAAQM Standard	100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80(24 hrs)
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- All Concentrations are in microgram per cubic meter

ANNEXURE-1. (C)

Ambient Noise Quality Status

Apr-2022	Hourly Average Noise Level dB (A)							
Location	1 st		2 nd		3 rd		4 th	
	09-04-2022		16-04-22		23-04-2022		30-04-2022	
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
N-1 (Eklari Gate)	70.6	63.1	70.1	65.0	71.0	63.8	71.0	63.3
N-2 (Pump House-2) Near Water Reservoir	71.8	63.9	71.3	64.0	71.3	63.9	69.6	63.5
N-3 (STP)	52.7	47.5	54.7	49.0	53.9	46.6	53.0	47.5
N-4 (Guest House)	63.9	52.9	62.8	53.0	63.7	52.6	64.3	54.0
Norms	75	70	75	70	75	70	75	70

May-2022	Hourly Average Noise Level dB (A)							
Location	1 st		2 nd		3 rd		4 th	
	07-05-2022		14-05-2022		21-05-2022		28-05-2022	
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
N-1 (Eklari Gate)	63.9	58.9	70.1	65.0	61.7	59.1	60.5	56.5
N-2 (Pump House-2) Near Water Reservoir	70.7	63.4	72.0	65.9	71.3	65.1	71.8	65.6
N-3 (STP)	53.3	46.7	53.0	45.8	53.7	46.7	52.5	48.8
N-4 (Guest House)	60.7	52.2	62.9	53.0	64.2	53.0	61.1	53.7
Norms	75	70	75	70	75	70	75	70



Jun-2022	Hourly Average Noise Level dB (A)									
Location	1 st		2 nd		3 rd		4 th		5 th	
	04-06-2022		11-06-2022		18-06-2022		25-06-2022		30-06-2022	
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
N-1 (Eklari Gate)	63.6	59.3	64.2	60.5	60.7	54.0	61.6	59.1	63.8	53.8
N-2 (Pump House-2) Near Water Reservoir	70.6	63.1	71.3	65.1	70.6	60.6	71.4	63.9	71.8	62.7
N-3 (STP)	52.6	49.0	54.7	49.2	52.6	47.5	51.7	46.3	51.2	46.9
N-4 (Guest House)	60.7	52.6	63.8	53.3	64.2	53.7	60.5	59.1	63.1	53.1
Norms	75	70	75	70	75	70	75	70	75	70

Jul-2022	Hourly Average Noise Level dB (A)							
Location	1 st		2 nd		3 rd		4 th	
	09-07-2022		16-07-22		23-07-2022		30-07-2022	
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
N-1 (Eklari Gate)	70.1	59.4	70.3	59.4	65.2	63.4	64.2	59.3
N-2 (Pump House-2) Near Water Reservoir	72.1	61.7	72.3	63.4	71.4	63.8	70.6	62.7
N-3 (STP)	52.6	49.2	53.7	48.8	51.7	46.3	52.5	47.4
N-4 (Guest House)	63.4	53.1	63.5	52.9	60.5	54.7	62.9	52.6
Norms	75	70	75	70	75	70	75	70

Aug-2022	Hourly Average Noise Level dB (A)							
Location	1 st		2 nd		3 rd		4 th	
	06-08-2022		13-08-2022		20-08-2022		27-08-2022	
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
N-1 (Eklari Gate)	63.1	58.9	65.1	60.0	63.3	59.3	69.6	61.7
N-2 (Pump House-2) Near Water Reservoir	70.1	61.7	71.0	63.4	72.3	61.8	71.9	64.3
N-3 (STP)	53.7	46.7	52.8	47.9	52.9	49.2	52.5	48.8
N-4 (Guest House)	60.7	58.6	63.9	61.7	63.4	59.3	62.9	58.6
Norms	75	70	75	70	75	70	75	70

Sep-2022	Hourly Average Noise Level dB (A)							
Location	1 st		2 nd		3 rd		4 th	
	10-09-2022		17-09-2022		24-09-2022		30-09-2022	
	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
N-1 (Eklari Gate)	61.7	59.3	65.1	60.1	68.6	60.7	63.4	59.3
N-2 (Pump House-2) Near Water Reservoir	70.2	60.7	71.2	63.1	70.6	63.6	71.0	63.0
N-3 (STP)	52.6	49.1	54.7	47.9	51.7	46.3	52.5	48.8
N-4 (Guest House)	63.6	53.8	62.9	52.6	60.5	57.2	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)	Apr-2022	1311.8	728.1
		May-2022	1474.9	688.2
		Jun-2022	1518.3	812.8
		Jul-2022	1438.6	763.3
		Aug-2022	1283.4	567.9
		Sep-2022	1458.7	712.6
2	Raw Material Handling Area (Near Transfer Point)	Apr-2022	1589.4	829.6
		May-2022	1583.5	727.6
		Jun-2022	1355.4	830.3
		Jul-2022	1131.7	492.8
		Aug-2022	1090.1	411.1
		Sep-2022	1245.7	612.3
3	SMS (Steel Melting Shop) (Near Ladle Heating Furnace)	Apr-2022	1592.3	815.0
		May-2022	1521.5	738.9
		Jun-2022	1362.8	862.9
		Jul-2022	1201.9	597.3
		Aug-2022	1286.4	611.5
		Sep-2022	1689.3	835.8
4	MBF (Near Mini Blast Furnace)	Apr-2022	1497.4	950.6
		May-2022	1458.6	718.5
		Jun-2022	1630.2	946.0
		Jul-2022	1323.3	898.7

		Aug-2022	1372.6	971.6
		Sep-2022	1336.1	724.5
5	Raw Material Feed Area (Near Mixing Area)	Apr-2022	1369.4	772.8
		May-2022	1494.9	779.1
		Jun-2022	1276.6	665.8
		Jul-2022	1535.9	729.5
		Aug-2022	1580.4	906.8
		Sep-2022	1413.0	677.0
6	DRP-2 (Near Coal Circuit Area)	Apr-2022	1289.1	630.7
		May-2022	1317.6	645.3
		Jun-2022	1347.3	886.1
		Jul-2022	1237.8	561.2
		Aug-2022	1414.5	654.4
		Sep-2022	1108.6	486.4
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-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	
	pH value	--							--
1.	Total Suspended Solids	mg/l	18.0	14.0	12.0	10	14.0	10.0	50
2.	Biochemical oxygen demand(BOD at 27°C for 3 days)	mg/l	24.4	8.16	15.3	18	19.0	14.0	30
3.	Chemical Oxygen Demand (COD)	mg/l							100
4.	Oil & Grease	mg/l							--
5.	Total Dissolved Solids	mg/l							--
6.	Chloride (as Cl)	mg/l							--
7.	Sulphate (as SO ₄)	mg/l							--
8.	Iron (as Fe)	mg/l							--

1.1 Location : E-2 (Waste Water Tank) In Front of Raw Water Treatment Plant

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	
1.	pH value	-	7.33	8.40	7.46	7.61	8.21	7.01	5.5 to 9.0
2.	Total Suspended Solids	mg/l	8.0	10.0	18.0	82.0	26.0	38.0	100
3.	Biochemical oxygen demand(BOD at 27°C for 3 days)	mg / l	2.70	2.85	2.55	4.0	3.6	3.0	100
4.	Chemical oxygen demand (COD)	mg / l	106.2	130.9	90.1	188.0	132.0	168.0	250
5.	Oil & Grease	mg / l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	396	330.0	300.0	1750.0	292.0	1470	2100
7.	Chloride (as Cl)	mg / l	49.9	68.1	69.2	35.0	56.9	574.8	600
8.	Sulphate (as SO ₄)	mg/l	3.62	37.7	53.6	142.1	30.4	84.3	1000
9.	Iron (as Fe)	mg/l	0.12	0.14	0.12	0.18	0.14	0.17	3.0

1.2 Location : E-3 (Coal Washery)

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	
1.	pH value	-	7.0	8.14	8.40	8.39	8.45	8.43	5.5 to 9.0
2.	Total Suspended Solids	mg/l	54.0	84.0	84.0	96.0	56.0	33.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg / l	3.43	4.89	3.06	4.0	3.0	2.60	100
4.	Chemical oxygen demand (COD)	mg / l	106.9	241.5	180.4	145.0	95.0	92.0	250
5.	Oil & Grease	mg / l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	938	972.0	694.0	642.0	804.0	484.0	2100
7.	Chloride (as Cl)	mg / l	211.9	27.9	139.4	228.6	49.9	75.9	600
8.	Sulphate (as SO ₄)	mg/l	160.3	383.9	353.8	87.4	228.0	100.8	1000
9.	Iron (as Fe)	mg/l	0.23	0.35	0.34	0.38	0.20	0.18	3.0

1.3 Location : E-4 ETP Main Outlet (Utility)

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	
1.	pH value	-	7.89	8.13	8.14	6.4	7.06	6.06	5.5 to 9.0
2.	Total Suspended Solids	mg/l	8.0	10.0	16.0	28.0	24.0	28.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	3.95	4.37	3.78	3.60	4.0	5.2	100
4.	Chemical oxygen demand (COD)	mg/l	86.6	102.8	164.6	136.0	128.0	146.5	250
5.	Oil & Grease	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	314.0	508.0	430.0	380.0	296.0	316.0	2100
7.	Chloride (as Cl)	mg/l	43.4	44.6	43.7	45.4	35.9	72.9	600
8.	Sulphate (as SO ₄)	mg/l	57.2	73.8	69.4	52.2	49.7	70.3	1000
9.	Iron (as Fe)	mg/l	0.11	0.22	0.19	0.14	0.11	0.13	3.0

1.4 Location : E-5- Pickling ETP Outlet

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	
1.	pH value	-	7.49	7.68	7.50	6.8	7.44	7.01	5.5 to 9.0
2.	Total Suspended Solids	mg/l	6.0	2.0	8.0	16.0	8.0	24.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	100
4.	Chemical oxygen demand (COD)	mg/l	125.9	169.9	141.2	156.0	164	190.1	250
5.	Oil & Grease	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	648	824	378.0	342.0	312.0	442.0	2100
7.	Chloride (as Cl)	mg/l	32.2	74.5	48.0	36.4	43.9	147.4	600
8.	Sulphate (as SO ₄)	mg/l	17.6	82.3	40.8	41.6	76.0	17.6	1000
9.	Iron (as Fe)	mg/l	0.40	0.36	0.27	0.20	0.14	0.17	3.0

1.5 Location : E-6 Pickling Nala

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	
1.	pH value	-	7.57	7.61	7.35	5.70	5.60	5.92	5.5 to 9.0
2.	Total Suspended Solids	mg/l	22.0	96.0	46.0	92.0	96.0	90.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	100
4.	Chemical oxygen demand (COD)	mg/l	129.4	178.2	129.4	233.6	245.5	236.0	250
5.	Oil & Grease	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	924.0	1114.0	1316.0	1416.0	1870.0	844.0	2100
7.	Chloride (as Cl)	mg/l	351.8	276.4	461.3	428.6	244.9	294.9	600
8.	Sulphate (as SO ₄)	mg/l	25.5	225.1	129.1	91.5	29.3	158.8	1000
9.	Iron (as Fe)	mg/l	0.37	0.34	0.30	0.37	0.46	0.78	3.0

1.6 Location : E-7 MBF ETP Outlet

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	
1.	pH value	-	6.97	7.56	7.40	7.27	7.83	7.02	5.5 to 9.0
2.	Total Suspended Solids	mg/l	46.0	48.0	34.0	38.0	44.0	36.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	3.12	3.87	4.08	5.40	6.8	7.2	100
4.	Chemical oxygen demand (COD)	mg/l	125.9	186.5	141.2	120.3	152.0	168.0	250
5.	Oil & Grease	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	1960.0	1962.0	1670.0	1924.0	1410.0	1426.0	2100
7.	Chloride (as Cl)	mg/l	481.8	488.10	396.5	288.0	124.9	334.8	600



8.	Sulphate (as SO ₄)	mg/l	232.4	363.0	190.4	237.4	139.8	33.3	1000
9.	Iron (as Fe)	mg/l	0.35	0.32	0.27	0.33	0.29	0.32	3.0

1.7 Location : E- 8 DRP Nala

Sr. No.	Test Parameter	Measurement Unit	Test Results						Limit as per Consent Conditions
			Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	
1.	pH value	-	6.90	7.40	7.93	8.20	7.40	7.59	5.5 to 9.0
2.	Total Suspended Solids	mg/l	44.0	88.0	76.0	62	14.0	11.0	100
3.	Biochemical oxygen demand (BOD at 27°C for 3 days)	mg/l	4.89	6.87	6.53	3.80	2.60	3.20	100
4.	Chemical oxygen demand (COD)	mg/l	91.3	186.1	196.1	129.4	99.0	108.0	250
5.	Oil & Grease	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	10
6.	Total dissolved solids	mg/l	1032.0	1032.0	646.0	1352.0	690.0	688.0	2100
7.	Chloride (as Cl)	mg/l	233.9	168.0	139.4	150.9	97.4	122.4	600
8.	Sulphate (as SO ₄)	mg/l	138.2	363.9	193.6	388.3	207.8	303.3	1000
9.	Iron (as Fe)	mg/l	0.30	0.38	0.40	0.36	0.19	0.16	3.0

Annexure 2

Sl. No.	CSR Activity	Actual Expenditure during the financial year 2021-22 and up to 30.09.2022 (Amount in Rs.)	Budget allocation for the next 5 years (Amount in Rs.)
A	Community Health Improvement	6,84,239	
B	Improvement in Community Education, Training and Skill Development Facilities	41,27,701	
C	Rural Development Infrastructure activities:		
i	Infrastructure development of the Community area i.e. village road/other work	5,61,320	
ii	Drinking Water and Sanitation	28,92,164	
D	Environment Sustainability and protection of Flora & Fauna	30,78,410	
E	Miscellaneous		
i	Community welfare activities including Swatch Bharat, Promotion of Sports and Cultural activities	56,32,450	
F	Disaster Management – Relief under COVID 19 Pandemic	88,67,004	
TOTAL (*)		2,58,43,288	

Details of CSR Amount allocated to the projects during FY 2021-22:

Project S. N.	Name of the Project	Area of Project	Location of the Project	Year of allocation	Year of commencement of Project	Amount allocated for the project (Rs
P-1 – Phase-II	Construction of Auditorium	State of Maharashtra	Bhandara	FY2021-22	FY2022-23	1,00,00,000

GRAND TOTAL	Rs. 3,58,43,288
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(*) – Quarter wise Details given below

Quarter-wise Details of CSR Expenditure for the year 2021-22 and up to 30.09.2022

(Amount in Rs.)

Particulars	Quarter ended 30.06.2021	Quarter ended 30.09.2021	Quarter ended 31.12.2021	Quarter ended 31.03.2022	Quarter ended 30.06.2022	Quarter ended 30.09.2022	Total
Community Health Improvement (Promotion of health care)	-	-	3,50,000	-	3,04,273	29,966	6,84,239
Improvement in Community Education, Training and Skill Development Facilities	57,330	-	-	10,48,560	19,00,458	11,21,353	41,27,701
Rural Development – Drinking Water and Sanitation	5,14,255	7,58,920	-	8,26,233	1,76,800	6,15,956	28,92,164
Rural Development – Infrastructure development of the Community area i.e. village road/other work	-	-	-	5,61,320	-	-	5,61,320
Environment Sustainability and protection of Flora & Fauna	-	15,000	-	15,14,375	10,67,605	4,81,430	30,78,410
Community welfare activities including Swatch Bharat, Promotion of Sports and Cultural activities	-	-	1,30,760	50,00,000	-	5,01,690	56,32,450
Disaster Management – Relief under COVID 19 Pandemic	2,50,600	31,89,211	51,63,120	2,64,073	-	-	88,67,004
TOTAL	8,22,185	39,63,131	56,43,880	92,14,561	34,49,136	27,50,395	2,58,43,288

FY 2021-22

QuANTIFICATION and REPORTING of GREENHOUSE Gas EMISSIONS and REMOVALS for SUNflag IRON and STEEL Co. LTD.



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Annex I

Extension of carbon footprint to the expansion project

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 is accounted to **16,96,544.31 tCO₂e** for FY2021-22. The major contributors to the GHG emissions were following.

1. Coal and coke consumption as fuel and reducing agent in steel production – **12,72,878.38 tCO₂e**
2. Electricity consumption – **1,82,631.74 tCO₂e**
3. Other minor sources in Scope 1 – **421.89 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 FY21-22 were **16,96,544.31 tCO₂e**.

Since this study has been carried out for the first time for Sunflag Steel, the base year for the present and future calculations is taken as FY16-17. 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 has prepared its GHG emissions report to estimate the GHG emissions from its facilities. The content of this report is made in accordance with the clauses of ISO 14064 especially in line with clause 7.3 of ISO 14064-1:2018.

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 around its projects. It has declared an environmental policy to address environmental concerns 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 comply to statutory requirements, Sunflag Steel has undertaken this carbon footprint study wherein it quantifies and reports its GHG emissions and removals for its facility.

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 statutory authority and internal users. 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 (AGM, 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 (Director-Technical). The EHS Department team has been responsible for facility level data collection and documentation. It has interacted with its various departments such as Production, Engineering, HR & Admin, Technical Cell etc. to gather information.

This report and the calculations therein have been calculated and compiled by RSM GC Advisory, Mumbai.

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 etc. 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.

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. 2021 -22 [as the base year](#). Sunflag Steel will attempt to report its GHG emission details and performance improvement data at appropriate periodicity (based on management decision).

captured in this report as per the requirements of ISO 14064:2018.

Data and information of the report

All necessary energy and GHG related information of the facility are

1. Organization Profile

Sunflag Iron and Steel Co. Ltd. is a prestigious unit of the SUN FLAG GROUP . The plant is located in the central part of India at Bhandara, Maharashtra and 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 has regular audits and assurance certification from international body like DQS on ISO 9001:2015, IATF 16949:2016 and body like TUV-NORD and ISO-14001:2015 and BS ISO:45001:2018, on Environment, Health and Safety, wherein continuous improvement towards Environment protection is in the road map.

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, it has also installed environmental management systems and encourages 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 and waste reduction.

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

Corporate Environment Health and Safety Policy



2. GHG Inventory – Roles & Responsibility

Team members of the Bhandara plant EHS Department are responsible for GHG inventory management. AGM, Environment & Utility will undertake and manage the overall GHG activity in coordination with the Sunflag Steel's core EHS team. The inputs to the GHG inventory shall be through documents maintained for production and existing QMS & EMS procedures.

3. Principles followed in GHG reporting

The GHG report is in accordance with ISO 14064-1:2018. 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 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.

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-

1:2018, 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.

Sunflag Steel

Bhandara Steel plant comprising various departments

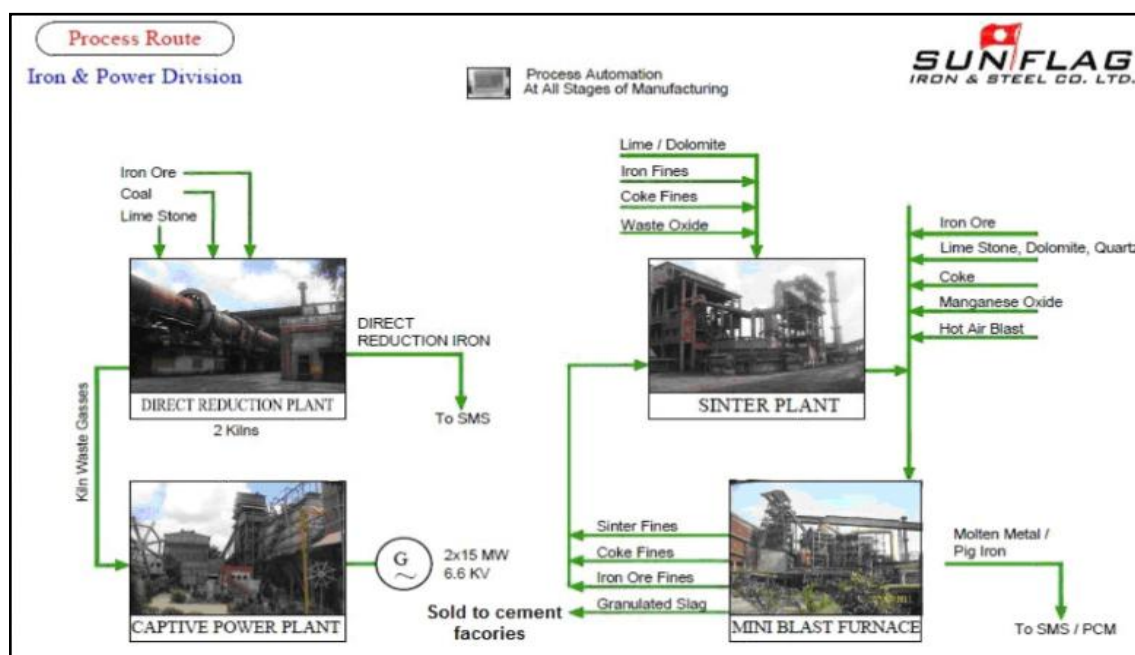
4.2. Operational Boundary

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) and 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 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 units

Products	Maximum Quantity	UOM
Sinter	850000	MT/A
Direct reduced iron (captive)	280000	MT/A
Pickling of stainless steel & carbon steel (intermediate)	66000	MT/A
Coin blanks from rolled steel products (finished)	9600	MT/A
Hot metal from blast furnace (captive)	450000	MT/A
Continuous cast billets (intermediate)	1025000	MT/A
Rolled steel products (finished)	750000	MT/A
Oxygen/Nitrogen/Argon (captive)	45000	MT/A
Additional facilities as rolling mill, bell & annealing furnance, etc.	5	Nos./Y
Electricity (captive)	30	MW
Refining stainless steel converter (intermediate)	288000	MT/A
Coiling of steel bars (intermediate)	18000	MT/A
DRI Ash/Char (By product)	15000	MT/A

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 CO2 type fire extinguishers	Scope 1
Activity 7	CO ₂ type fire extinguishers refilled	Scope 1
Activity 8	Methane emissions from septic digesters	Scope 1
Activity 9	Employee Commute	Scope 3
Activity 10	Raw material Import and Export of end-product	Scope 3

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 16,96,544.31 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 1,82,631.74tCO₂e 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

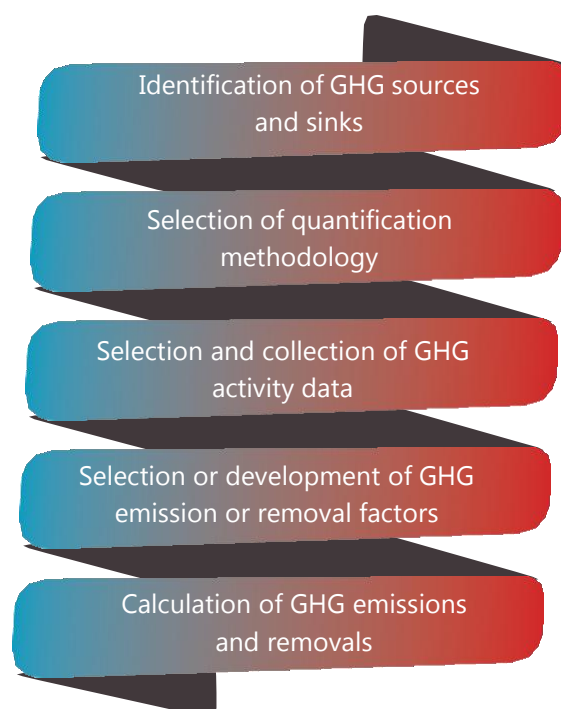
The scope 3 emissions from major inbound raw materials transport, end product export and employee commute for business is calculated at 1,91,084.20 tCO₂e.

4.3 Quantification of GHG emissions and removals

Sunflag 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

Sunflag 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

Sunflag Steel has identified its GHG sources and sinks according to scope of emissions i.e. Scope 1, Scope 2 and Scope 3 from its organization boundary which are categorized as follows

Scope	GHG Activities	GHG Sources
Scope 1	Fuels, reducing agents, few raw materials combustions 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 and End-product Export	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

Sunflag 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 14064-1:2018, Sunflag 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 from World Steel Methodology

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 and from World Steel Methodology. 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 14064-1:2018, GHG activity data is defines 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 Horticulture / 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. 45, 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:

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	World Steel Association, CO ₂ emissions data collection, User Guide, ver. 7, Appendix 4 - Direct emission factors, Pg. 14 (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/ghgp/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 and Scope 3 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	4,97,928.61
Scope 1	Coke and other reducing agents and raw materials consumption	7,74,527.60
Scope 2	Electricity purchased from grid	1,82,631.74
Scope 1	Fugitive emissions from chillers	417.03
Scope 1	CO ₂ type fire extinguishers refilled	2.69
Scope 1	Methane emissions from septic digesters	2.17
Scope 3	Employee Commute	838.67
Scope 3	Raw Materials Import and End-product Export	1,90,245.52
	Total	16,46,594.04

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

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. Please see Annexure II for details of the energy saving projects and estimated savings in 2021-22.

Green belt development

The facility has been proactively engaged in tree plantation activities around its facilities to promote development of greenbelt. The facility will continue to engage in increasing the green cover around its facilities.

5.3 Base-year GHG inventory

5.3.1 Selection and establishment of base year

Sunflag Steel is reported 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 2016 to 31 March 2017. Its base-year GHG inventory was 13,22,569 tCO₂e, the emissions in FY 21-22 are 16,46,594.04 tCO₂e which are more than the Base year.

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 reported its GHG inventory for the first time in the year 2016-17. The base year inventory will be revised and recalculated if organizational and/or operational boundary of the GHG inventory changes in future years.

5.4 Assessing and reducing uncertainty

Due to non-availability of verifiable data for computing the GHG emission especially in scope 1 emission calculations, Sunflag Steel has made certain assumptions. The assumption data are described below and the uncertainties in each data are reported.

Uncertainty Potential Assessment

S.No	Parameter	Value	Unit	Remark/Source	Parameter Uncertainty potential status (Y/N)
1	Electricity emission factor	5	%	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 the World Steel Association (WSA)	Y
3	NCV of fuels	5	%	has not used weighted average	
4	Usage factor of washroom per day	10	%	Assumption	Y

6. 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

- Sunflag Steel shall be responsible for providing training to inventory development team
- Training shall be offered internally or through third party.
- [Concerned employee has been imparted training for Carbon footprint measurement methodology by RSM GC Advisory, Mumbai.](#)

Identification and Review of organization boundaries

- Sunflag Steel shall identify its organization boundary as per the requirements of ISO 14064-1:2018.
- Sunflag Steel shall report the changes in organization boundary with necessary documentation and justification.

GHG sources and sinks

- Sunflag Steel shall identify its GHG sources and sinks as per ISO 14064 requirements.
- All Scope 1, Scope 2 and Scope 3 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.
- 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

- Quantification of the GHG emission within its organization boundary shall be conducted following the methodology established by ISO 14064, UNFCCC, IPCC, WSA and other relevant standards/mechanisms.
- Sunflag Steel shall use the appropriate, relevant and updated methodologies to quantify its GHG emission.
- Sunflag Steel shall periodically review on methodologies carried out and shall explain any changes to quantification methodologies previously used by the organization.
- Sunflag Steel shall select its activity data as per Scope 1, Scope 2 within organization boundary.
- 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.
- 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

- 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

- 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.
- The facility shall maintain the records of calibrated equipment to ensure error free operation.

Development and maintenance of a robust data-collection system

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

Regular accuracy checks

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

Periodic internal audits and technical reviews

- 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

- 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.

7. 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.

The results of study are summarized as below.

16,46,594.04

Total GHG emission (tCO₂)
(Capacity)

Annex I

GHG emissions avoided and sequestered

A) CO₂ sequestration in the green belt

In addition to above energy and fuel savings, Sunflag Steel also has a greenbelt and the trees are a carbon sink. The present study estimated inventory of no. of trees by species and age and the GHG absorbed by these are summarized as below.

TREE PLANTATION DATA UPTO 31.03.2022						
Years of survival/ plantation	Type of Tree/ species	No of trees planted	Maturity Period	Factor kg CO ₂ /year	No of trees planted * Factor kg CO ₂ /year	Carbon sequestration in kg CO ₂ /year
11	KADAM	2200	5	0.097	213.4	1067
11	KEJIDOYEE	1670	3	0.75	1252.5	8767.5
11	KHAOT	1875	3	0.86	1612.5	11287.5
16	ASHOKA PAL	2429	5	0.75	1821.75	18217.5
16	ASHOKA BRUPIN	2100	4	0.022	46.2	508.2
16	FOREST TREE	2000	6	0.024	48	432
16	GHATI	1500	2	0.75	1125	14625
16	GULMOHAR	3520	5	0.75	2640	26400
21	AWLA	475	4	0.75	356.25	5700
21	BELWA	475	4	0.75	356.25	5700
21	BOGANVILLA	6019	3	0.997	6000.943	102016.031
21	CHANDNI	4029	6	0.76	3062.04	42868.56
21	CROTON	12250	4	0.75	9187.5	147000
21	CHIKOO	1800	6	0.75	1350	18900
21	EKALIFA	200	4	0.75	150	2400
21	EKJHORA	1500	5	0.76	1140	17100
21	EKLIFA	200	4	0.75	150	2400
21	GULAB	2120	3	0.75	1590	27030
21	JAM	2850	2	0.75	2137.5	38475
21	KARAM	1710	4	0.76	1299.6	20793.6
21	KINI	2200	4	0.76	1672	26752
21	LAJESTONIA	1200	1	0.75	900	17100
21	LENDRI	3000	1	0.75	2250	42750
21	PALM	15775	3	0.75	11831.25	201131.25
21	RENTRI	8225	5	0.76	6251	93765
21	SAGWAN	45350	5	3.7	167795	2516925
21	SAPTFADNI	3785	3.5	0.75	2838.75	46839.375
21	SITAFAL	1501	3	0.75	1125.75	19137.75
21	ANJAN	2835	5	0.76	2154.6	36628.2

24	AMLA	2835	4	0.75	2126.25	38272.5
25	ARJUN	5972	5	0.75	4479	85101
26	AMALTAJ	1891	3	0.75	1418.25	31201.5
26	CHICH	10805	13	0.75	8103.75	97245
26	MEHNDI	8500	5	1	8500	170000
26	PELTAFARM	12224	5	0.76	9290.24	185804.8
26	THIMATIYA	708	5	0.76	538.08	10761.6
26	VIDYA	548	5	0.76	416.48	8329.6
31	BAMBOO	9000	6	0.76	6840	164160
31	BEL	4334	10	0.75	3250.5	65010
31	JAMUN	1700	8	0.76	1292	28424
31	KARANJI	8300	4	0.75	6225	161850
31	MANGO	4500	4	0.75	3375	87750
31	NEEM	19590	5	1.45	28405.5	710137.5
31	NEELGIRI	7500	3	2.47	18525	500175
31	RITHA	14750	3	0.75	11062.5	298687.5
31	SUBABOOL	222120	6	0.75	166590	3998160
36	SISAM	38212	5	0.75	28659	859770
TOTAL		508282	11013556.47		kg CO ₂ e	
			11013.56		t CO ₂ e	

11013.56 tCO₂

Total GHG emissions sequestered by greenbelt

Measures that could be considered for reducing the GHG emissions

Every tonne of steel produced in 2018 emitted an average of 1.85 tonnes of carbon dioxide, equating to almost 8 percent of global carbon dioxide emissions. ² However, the industry now needs to cope with the pressure to reduce its carbon footprint from both environmental and economic perspectives. Currently, the steel industry is among the three biggest producers of carbon dioxide, with emissions being made in a limited number of locations; steel plants are therefore a good candidate for decarbonization. While the industry must adapt to these new circumstances, it can also use them as a chance to safeguard its license to continue running in the long term.

Below listed are some of the decarbonization strategies and running pilot plants to assess different production technologies,

- Optimizing the BF burden mix by maximizing the iron content in raw materials to decrease the usage of coal as a reductant,
- Increase the use of fuel injection through, for example, pulverized coal injection (PCI), natural gas,

plastics, biomass, or hydrogen (as an additional reagent on top), or

- Using coke oven gas in the BF as an energy source, just to name some of the options. These processes may have the potential to decrease carbon dioxide emissions without eliminating them, but do not offer fully carbon- neutral steel production.
- Biomass reductants: This process uses biomass, such as heated and dried sugar, energy cane, or pyrolyzed eucalyptus, as an alternative reductant or fuel. As such it is regionally dependent and mainly important in areas where the biomass supply is guaranteed, like in South America or Russia. In Europe, the availability of biomass is likely not enough to reduce carbon emissions on a large scale.
- Increased share of scrap-based EAFs: This process maximizes secondary flows and recycling by melting more scraps in EAFs. EAF producers are more environmentally friendly and flexible to the ups and downs of demand. However, shifting to EAF-based steel production requires the future supply of renewable electricity to be commercially available, as well as a sufficient supply of high-quality steel scrap. High-quality scraps are necessary for the production of high-quality products, which

are nowadays mainly produced through the integrated route. If high-quality scrap is not available, lower-quality scraps can be mixed with DRIs to ensure high-quality EAF inputs.

- Optimize inbound and outbound logistics to reduce scope 3 emissions
- Increase greenbelts with species absorbing more CO₂, such as Teak, Nilgiri, Babul, Neem, etc.
- Evaluating renewable energy from power exchange and feasibility of rooftop solar plants

Long-Term Strategies For Carbon Neutrality by 2030

- Greater use of electricity produced from renewable sources i.e., up to 60%, could dramatically reduce CO₂ emissions from iron and steel production.
- Fossil fuel-based carbon is widely used in iron and steelmaking in a number of forms, and the replacement of these materials with renewable carbon derived from biomass offers the greatest potential to reduce the greenhouse gas footprint of steel production.
- Coke is traditionally used in BF's to generate CO and heat for smelting iron ore to produce hot metal. Many steel companies use pulverized coal injection in BF's to reduce the amount of Coke, and hence the cost of raw material. Plastics can replace coke or pulverized coal for the reduction reaction. Injection of plastic waste in the BF allows a reduction in coke usage.
- Increase the greenbelt with species absorbing more CO₂, such as Teak, Nilgiri, Babul, Neem etc.

Based on Study from Gujarat Ecological Education and Research (GEER)

CARBON ELIMINATOR		
Carbon sequestration in lakh tons for a tree with girth between 10-30 cm		
Scientific name	Local name	Carbon sequestration
<i>Tectona grandis</i>	Sagwaan	3.70
<i>Eucalyptus globulus</i>	Nilgiri	2.47
<i>Prosopis juliflora</i>	Gando baval	1.67
<i>Azadirachta indica</i>	Limdo	1.45
<i>Casuarina equisetifolia</i>	Sharu	1.28
<i>Acacia tortilis</i>	Israeli baval	1.04

(Reference - <http://economictimes.indiatimes.com/city/ahmedabad/teak-absorbs-max-co2-from-air-helps-check-global-warming/printarticle/51721854.cms>)