



HINDUJA NATIONAL POWER CORPORATION LIMITED

Corporate Office : Hinduja House, 171 Dr. Annie Besant Road, Worli, Mumbai - 400 018

www.hindujagroup.com, Office Tel : +91-22-61360407, Fax : +91-22-2497 4208

Plant Office : Palavalasa Village, T.Devada Post, Steel Plant (Sub Office), Pedagantyada Mandal, Visakhapatnam-530 031. A.P. India.

CIN : U40109TG1994PLC017199

HNPCL/VSKP/APPCB/90/2022-23/29092023

Date: 29th Oct'2023

The Environmental Engineer
Visakhapatnam Regional Office
Andhra Pradesh Pollution Control Board,
Regional Office,
HIG -6, Phase – 1
Madhavadharam VUDA Colony,
Visakhapatnam.

Subject: HNPCL – 2X520MW TPP Submission of Environmental Statement for the year 2022 - 2023

Ref: Consent Order Nos. APPCB/VSP/VSP/19/HO/CFO/2023, Dt.21.03.2023

Dear Sir,

Kindly refer to the above consent orders accorded for operation of our plant.

Please find enclosed a copy of Environmental Statement in the prescribed Form-V for the year 2022 - 2023, for your kind perusal and records.

Thanking you,

Yours faithfully,
For Hinduja National Power Corporation Limited

Sabyasachi Mukherjee
Senior Vice President



HINDUJA

Regd. Office : C/o Gulf Oil Corporation Ltd, Post Bag No. 1 Kukatpally, Sanathnagar, I.E., Hyderabad - 500 018

ENVIRONMENTAL STATEMENT (FORM-V)
For
1,040 MW (2 x 520 MW) THERMAL POWER PLANT
VISAKHAPATNAM, ANDHRA PRADESH

FINANCIAL YEAR
APRIL 2022 - MARCH 2023



HINDUJA NATIONAL POWER CORPORATION LIMITED
VISAKHAPATNAM, ANDHRA PRADESH

September 2023

PREFACE

At the National Level, great emphasis is being laid on maintaining environmental quality particularly in the regions where large-scale developmental programs are being undertaken. Hinduja National Power Corporation Limited (HNPCL) has adopted a corporate policy of development in tune with environmental compatibility with special reference to its existing Power plant, for which advance action is required.

In order to comply with Environmental Protection Act and to be in tune with environmental preservation and sustainable development, Hinduja National Power Corporation Limited an Environmental Statement Report for the financial year 2021-2022 is generate with environmental data for various environmental components, which represent the concentrations due to ongoing Power plant operation of the Industry.

This report presents duly filled in Form V and environmental components comprising attributes like Air, Water and Noise which were collected during the financial year 2022-2023.

Chapter-1
Introduction



1.0 PREAMBLE

1.1 Introduction

Environmental Statement Is a basic management tool, which is needed, rather than the conventional environmental management practices to evaluate the environmental performance and regulatory requirements.

Realizing this need, Ministry of Environment and Forests has also made it mandatory for all the industrial operations, which require authorization under Environmental (Protection) Act 1986 in each financial year ending the 31st March to submit an Environmental Statement to the concerned State Pollution Control Board.

In order to comply with the statutory requirement as well as to maintain corporate image in the region, recognizing the importance of comprehensive structural mechanism to ensure that the industrial activities do not cause any effects on environment.

As a first step in power sector, HNPCL is operating a 1,040 MW(2X520 MW) coal based merchant power plant and is located on the coast of the Bay of Bengal at Palavalasa, Pedagantayada Mandal, Visakhapatnam District in the State of Andhra Pradesh, India.

The enclosed report contains details about the Environmental Statement for the Hinduja National Power Corporation Limited (HNPCL) for 1040 MW (520 X 2 MW) Power Plant for the year **April 2022–March 2023**.

1.2 Project Setting

The existing plant is located in Palavalasa, Pedagantyada Mandal, Visakhapatnam District of Andhra Pradesh and the same is identified on the survey of India toposheet no 65 O/2, O/6 at the Latitude 17^o34'30" North and Longitude 83^o07'30" East at an elevation of 8.5 m above Mean Sea Level (MSL).

The Palavalasa village is located at about 0.3 km, N from plant site respectively. The area is generally barren and devoid of vegetation and only shrubs and trees are found in scattered form. The plant area is completely barren and uncultivable land.

The geographical location of the plant is shown in **Figures-1.1**. The topographical features of the project area (within 10 km radius of plant site) are depicted in **Figures-1.2**.

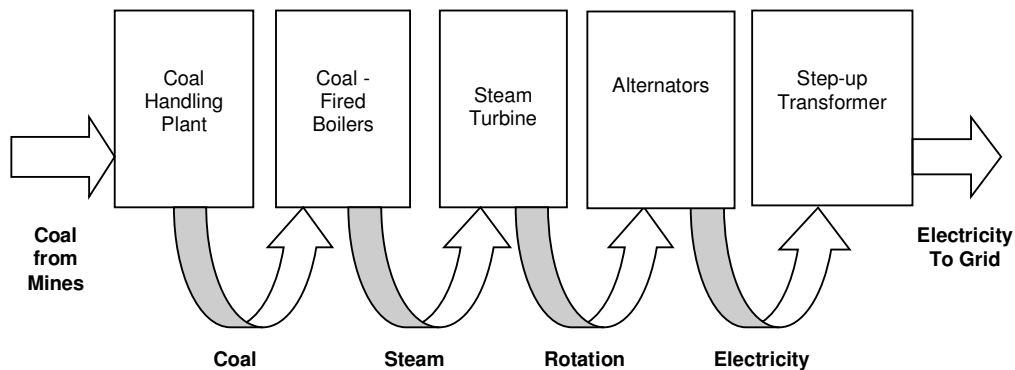
1.3 Process Description

Each of the coal-fired power projects currently in development would employ pulverized coal combustion (PCC) technology. In the PCC process, the coal-handling plants receive coal, crush it to the required size and feed it to the boiler plants. The boiler plants then use coal pulverizers to grind the coal to a finer size before it is fed to the boiler furnace. The boilers are enclosures encased by tubes



filled with flowing water. As the boiler furnace heats, the water flowing in the boiler tubes is converted into high pressure and high temperature steam. This steam is conveyed to the turbine through steam pipelines. The steam produced in the boiler drives steam turbines, making the turbines' rotors rotate at high speeds. Alternators are coupled to the steam turbines and rotate with the turbines' rotors. The alternators convert the energy generated by the rotation of the turbines' rotors into electricity. Step-up transformers then steps up the voltage of generated electricity before it is fed to the grids for transmission. Transmission of electricity is done at very high voltage to minimize transmission losses.

The coal-fired power process is illustrated below:



The process of generation of power from coal (water steam cycle) essentially entails two main stages. In the first stage, the chemical energy stored in coal is converted into heat energy in the coal-fired boilers. In the second stage, the high-pressure steam, which is generated in the boilers, is passed through turbines (conversion of heat energy into mechanical energy) which in turn is coupled to generators (conversion of mechanical energy into electrical energy), thereby generating electricity.

The water steam cycle essentially contains the coal fired steam generator, the steam turbine with condenser, feed-water tank, low-pressure (LP) heaters and high-pressure (HP) heaters and the connecting pipelines. The superheated steam produced in the steam generator is supplied to the steam turbine, which drives the three-phase AC generator. After leaving the HP turbine, the steam is reheated in the steam generator and fed to the Intermediate Pressure (IP) turbine. In the LP turbine the steam coming directly from the IP turbine expands to condenser pressure and is condensed in the condenser.

Once through system is used for cooling of the condenser. The condensate collected in the condenser hot well is discharged by the condensate pumps and supplied via the LP condensate heaters into the feed water tank. The feed water is further heated by bled steam from turbine and dissolved gases from the feed-water are liberated. The boiler feed pumps discharge feed water from the feed-water tank via the HP heaters to the economizer. Steaming starts from this point onwards. The high temperature steam-water mix is further converted into steam



in water walls and finally passed through the super heaters sections for converting the saturated steam into superheated steam.

The power station would be designed with two power generating units of 520 MW each, along with the auxiliaries and common utility services like plant water system, coal handling system, ash handling plant, and switchyard for power evacuation, plant electrical system and workshop.

The main sections of the power generating unit include Steam Generator along with milling system and electrostatic precipitator, integral piping, integral control system, turbine and generator unit, boiler feed pump, regenerative heaters, condensate extraction pump, circulating and auxiliary cooling water pumps and the generator transformer with bus duct. The main sections of the utility system are the coal handling system, ash handling system, fire fighting system, AC & Ventilation system, switchyard and the plant water system. The power generated at lower voltage of 21 KV would be stepped up to 400 KV and will be connected to the proposed 400 KV switchyard for dispatch.

The plant layout is shown in **Figure-1.3**.

1.4 Scope of the Study

Under the scope of the study, an area of 10 km radius from the centre of the existing plant was covered in detail for various environmental components viz Air, water and Noise based on the guidelines of Ministry of Environment and Forests, Government of India.

With a view to assess the various environmental attributes as specified in Environmental Clearance (EC) issued by MoEF and Consent to Establish (CTE) issued by APPCB, HNPCL has retained M/s. Vimta Labs Limited, Hyderabad for carrying out Post Project Monitoring (PPM) studies on monthly basis.

1.5 Methodology of the Study

Reconnaissance survey was conducted and sampling locations were identified on the basis of:

- Predominant wind directions in the study area as recorded by Indian Meteorological Department (IMD) station at Visakhapatnam;
- Existing topography; location of surface water bodies like ponds, canals and rivers;
- Location of villages/towns/sensitive areas;
- Accessibility, power availability and security of monitoring equipment; pollution pockets in the area;
- Areas which represent baseline conditions; and
- Collection, collation and analysis of baseline data for various environmental attributes.

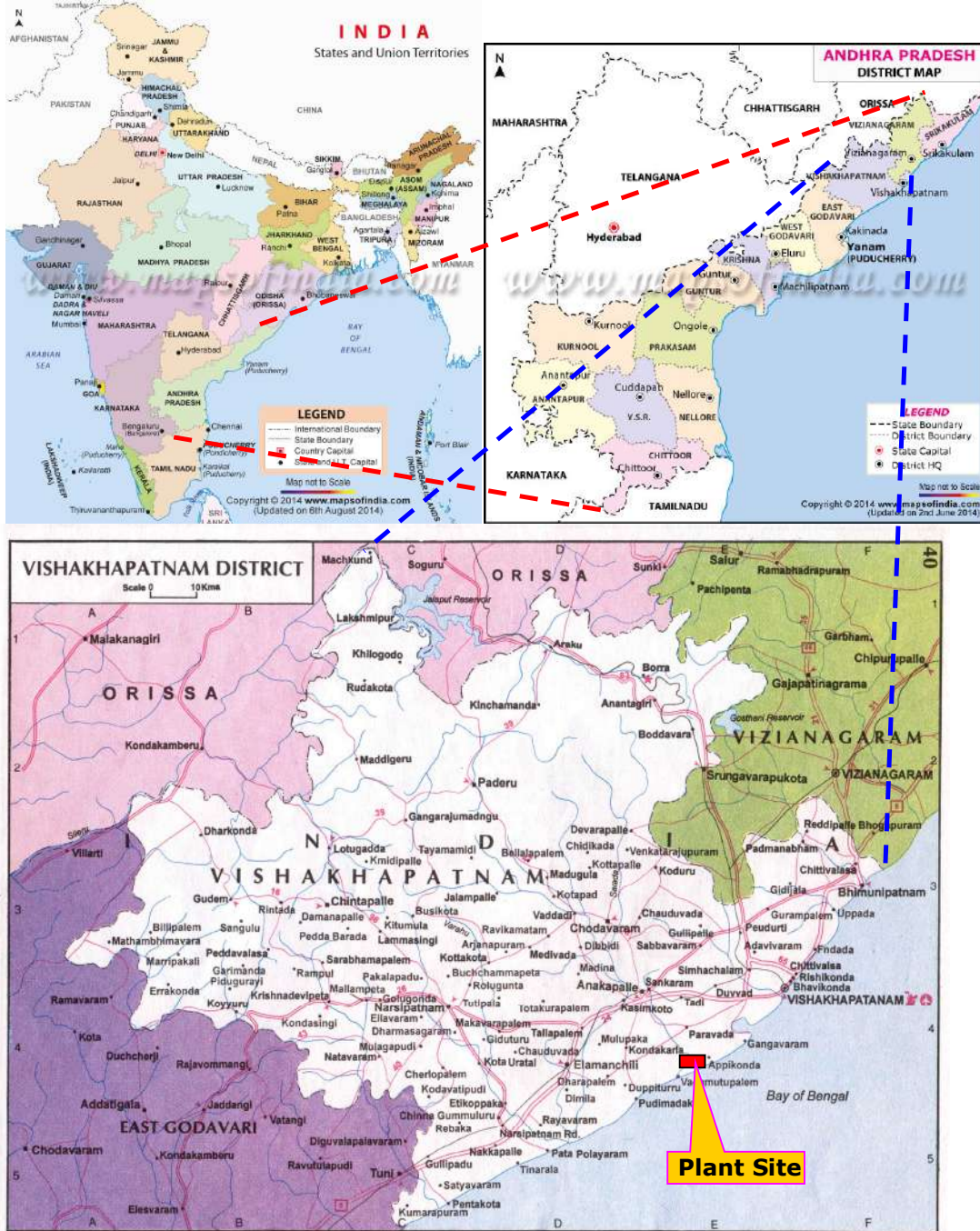
The field observations are used to:

- Identify extent of negative impacts on community/natural resources; and
- Identify mitigation measures and monitoring requirements.

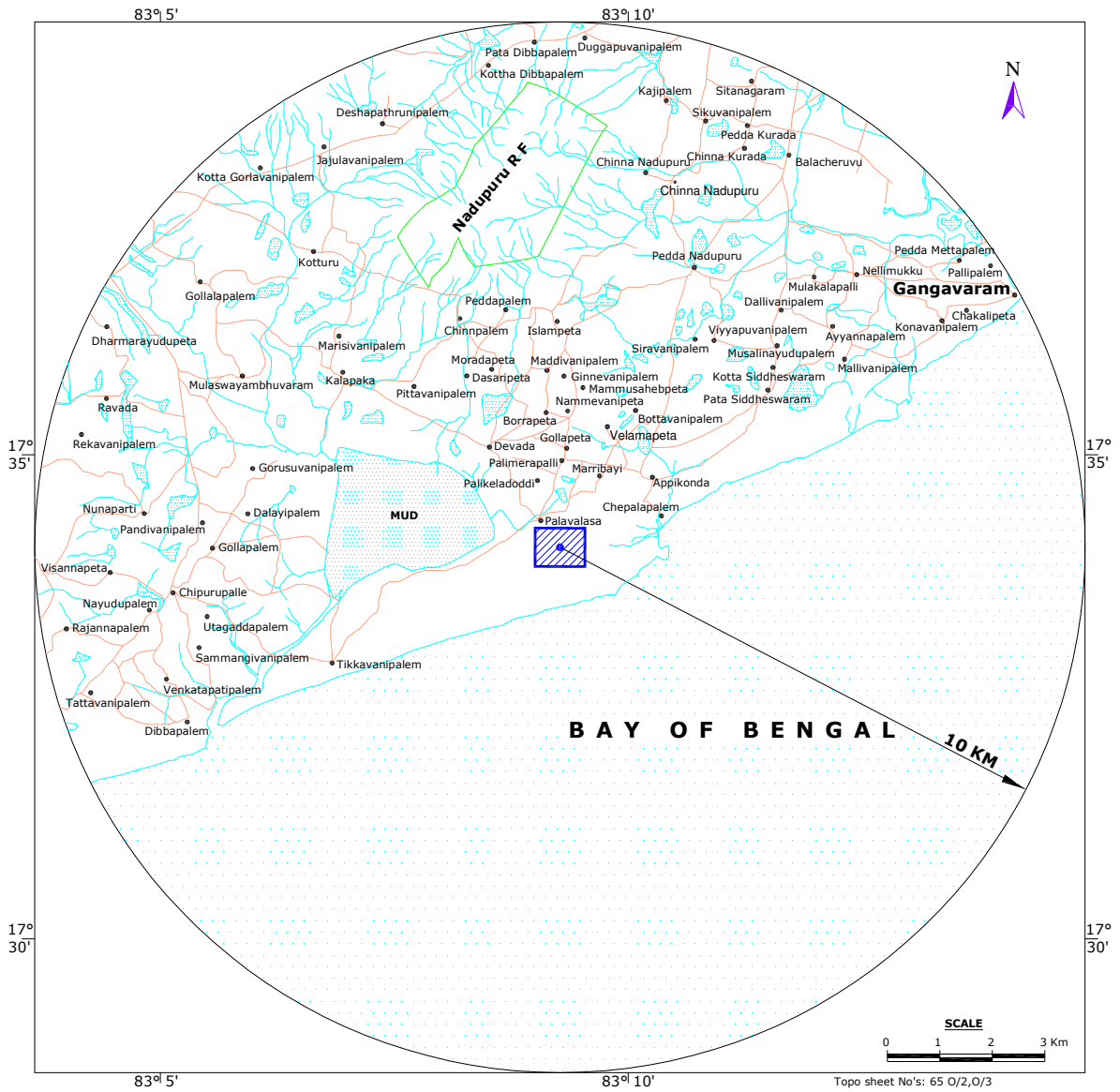


Environmental Statement Report (Form-V) for FY 2022-2023 for 2x520 MW Coal Based Thermal Power Plant at Visakhapatnam.

**Chapter-1
Introduction**

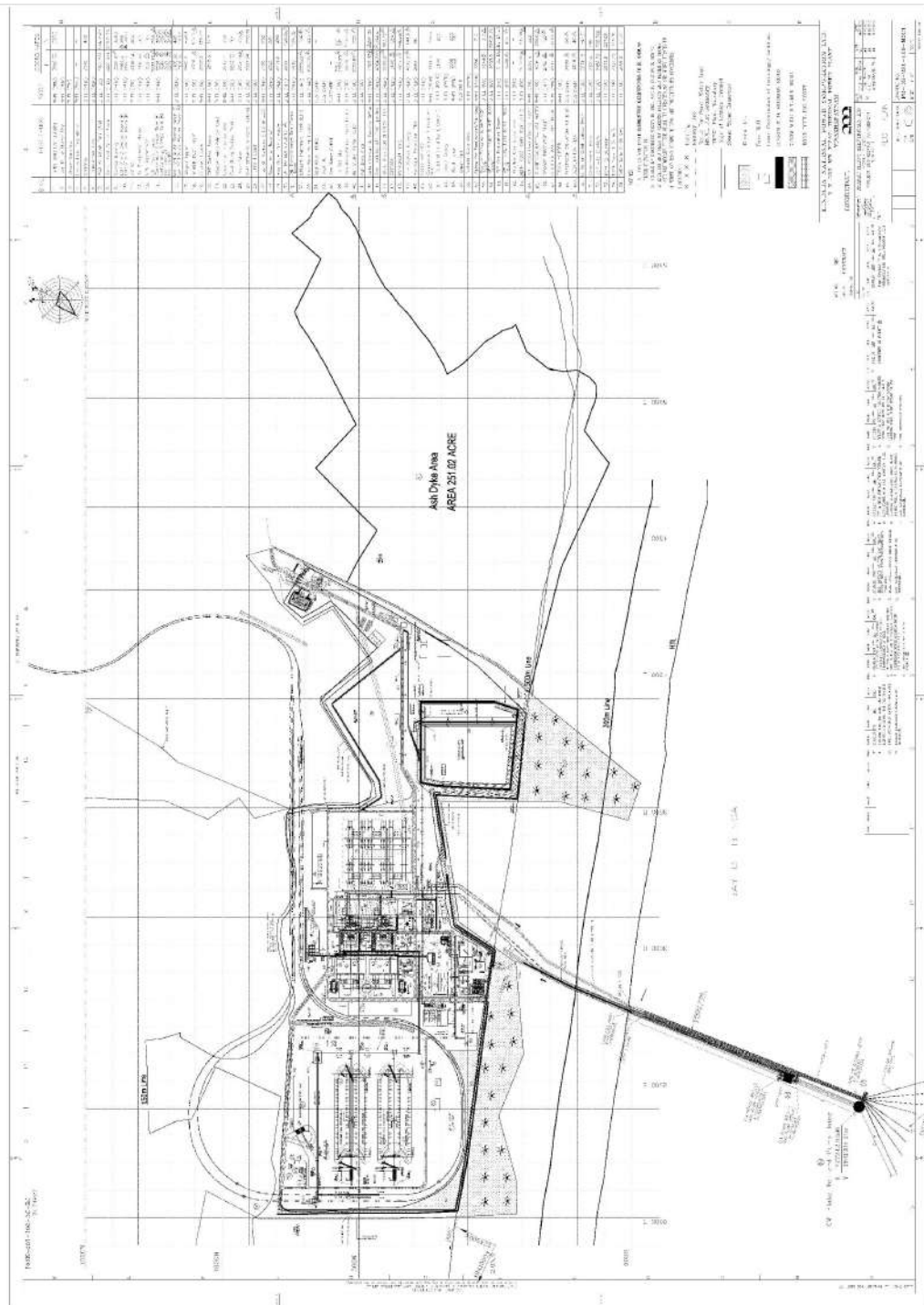


**FIGURE-1.1
LOCATION MAP OF THE PLANT SITE**



- LEGEND**
- Project Site
 - Road
 - Nadi-Nala-Sea
 - Villages
 - Forest Boundary

FIGURE-1.2
STUDY AREA MAP OF 10-KM RADIUS



**FIGURE-1.3
TYPICAL LAYOUT OF PLANT**

Chapter-2
Form-V

	Environmental Statement Report (Form-V) for FY 2022-2023 for 2x520 MW Coal Based Thermal Power Plant at, Visakhapatnam.
	Form-V

FORM-V
(See Rule 14)

Environmental Statement for the financial year ending the 31st March, 2023

PART-A

1. Name and address of the owner Occupier Of the Industry Operation or Process : Mr.K. Venugopal Keshanakurthy
CEO
M/S Hinduja National Power Corporation Ltd, Palavalasa Village, T. Devada (P), Pedagantyada Mandal, Visakhapatnam District, Andhra Pradesh-530031
2. Industry Category : Red Category
Coal based power plant
3. Production Capacity : 1040 MW
(2X520 MW), Unit-I & II
4. Year of Establishment (Date of Production Commenced) : 11th January 2016 -Unit-I (520 MW)
03rd July 2016 -Unit-II (520 MW)
5. Date of last Environmental Statement Submitted : 29th September 2022

PART-B
(Water & Raw Materials Consumption)

1. Water Consumption (m³/Day)

A). For Process:

Water Consumption	During the Previous Financial Year 2021-2022 (m ³ /day)	During the Current financial year 2022-2023 (m ³ /day)
Process water a) Ash Water Sump b) Dust Suppression system c) Desalination pant	37011.8	14756.2
Cooling water	**	**
Domestic	98.7	148.7

** Cooling Water	During the Previous Financial Year 2021-2022 (m ³ /day)	During the Current financial year 2022-2023 (m ³ /day)
Seawater Drawn	2825596.8	51877125.3
Seawater Let-out	2788585.1	51595394.6
Balance	37011.8	281730.6

	Environmental Statement Report (Form-V) for FY 2022-2023 for 2x520 MW Coal Based Thermal Power Plant at, Visakhapatnam.	
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Name of the Product	Process Water Consumption per Unit of Product Output	
	2021-2022 (Unit-I & II)	2022-2023 (Unit-I & II)
a) Electricity (L/KWH)	2.499	19.022

c) Raw Materials Consumption:

Name of Raw Material	Name of Products		Consumption of raw material per Unit of output	
			During the Current financial year 2021-2022	During the Current financial year 2022-2023
COAL (Kg/KWH)	Electricity	Unit-I	0.7393	0.7358
LDO (L/KWH)	Electricity		0.00122	0.00022
COAL (Kg/KWH)	Electricity	Unit-II	0.7552	0.8533
LDO (L/KWH)	Electricity		0.00082	0.00024

Chemicals Consumption

Sno	Name of Chemicals	Units	Quantity Unit-I & II 2021-2022	Quantity Unit-I & II 2022-2023
1	Sodium Hypochlorite (NaOCl)	Kg	12495	30610
2	SMBS	Kg	164	848
3	Hydrazine Hydrate (80%)	lits	1292	1173
4	Ammonium hydroxide (25%)	lits	3205	27435
5	Tri sodium Phosphate	kg	7	68
6	Hydrochloric acid (30%)	ton	21.58	173.92
7	NaOH (40%)	ton	10.4	92.4
8	CaCl ₂	Kg	8355	64600
9	NaHCO ₃	Kg	12225	65150
10	FeCl ₃ (40%)	ton	3.900	31.9

PART - C

Pollution Discharged to Environment/Unit of output
(Parameters as specified in the consent issued)

Pollutants	Quantity of pollutants Discharge (Kg/Day)	% of variation prescribed from Standards (+ ve/ - Ve)
a) water	Refer Annexure IA	
b) Air	Refer Annexure IB, & IC	

	Environmental Statement Report (Form-V) for FY 2022-2023 for 2x520 MW Coal Based Thermal Power Plant at, Visakhapatnam.
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PART – D
HAZARDOUS WASTES

(As specified under Hazardous Waste Management and Handling Rules, 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During previous financial year (2021-2022) KL	During current financial Year (2022-2023) KL
a) Waste lubricating oil (From process Waste oil)	6.0	Nil
b) From pollution control facilities	Nil	Nil

PART-E
SOLID WAST

		Total Quantity	
		During the current financial year (2021-2022) MT	During the current financial year (2022-2023) MT
a	From Process		
	Bottom ash	16899	307309
	Fly Ash	67595	1229238
b	From pollution control facility (fly ash)	Nil	Nil
c	1) Quantity recycled or re-utilized	Nil	Nil
	2) Sold	Nil	Nil
	3) Disposed	86288	1536547

PART – F

Please specify the Characterizations (in terms of composition of quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for the both these categories of wastes.

Fly ash is being sent to bricks & cement manufacturing plants and high ways works also.

PART – G

Impact of pollution control measures on conservation of natural resources and on the cost of production.

To monitor and to take appropriate steps for mitigating the adverse impacts of plant operational effects on the environment, regular monitoring of stack emission, ambient air quality and noise are undertaken. Also water from seven bore wells and three surface water sources are being monitored and reports sent to State Pollution Control Board and MoEF regularly.

The expenditure incurred towards air pollution control measure & monitoring, green belt maintenance and statutory payment details for the FY 2022-2023 are as follows,

	Environmental Statement Report (Form-V) for FY 2022-2023 for 2x520 MW Coal Based Thermal Power Plant at, Visakhapatnam.
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ENVIRONMENTAL EXPENSES IN DURING FY 2022-2023

Sr. No.	Description	Power Plant (Laks)
1	Air Pollution control equipments	36,16,000.00
2	Dust suppression systems	
3	Chimney	
4	Environmental Monitoring and management	
5	Greenbelt Development / Maintenance	
TOTAL		36,16,000.00

PART-H

Additional measures investment proposal for environmental protection including abatement of pollution, prevention of pollution.

1. Housekeeping is taken up on top priority and engaged sufficient manpower for maintenance of the plant premises.
2. A water sprinkling arrangement is made to suppress the fly ash and coal dust to avoid emission.
3. All internal roads are of BT at lorry bay to reduce the dust emission.
4. Tree plantation was done inside as well as outside of the plant. Also small patches of gardens are developed inside of the plant premises wherever the open space is available to improve the plant beautification.

Adequate measures have been taken for pollution control and as per the requirement additional measures will also be taken up.

PART-I
MISCELLANEOUS

Any other particulars for improving environment protection and abatement of pollution. Green belt has been developed inside and all along the periphery of the plant boundary and ash pond. All the Effluent water is treated and utilized for fugitive dust control.



a) WATER:

ANNEXURE-I A
EFFLUENT WATER

Treated Effluent Characteristics

Parameters	Units	Average Concentration	Limits	% of variation Prescribed from Standards (+ ve/ - Ve)
pH	-	7.66	6.5-8.5	- ve
Total Suspended Solids	mg/l	56.4	100	- ve
Oil and Grease	mg/l	<1.0	20	- ve
Free chlorine	mg/l	<0.2	0.5	- ve
Phosphate as PO ₄	mg/l	5.9	20	- ve
Chromium (Total)	mg/l	0.05	0.2	- ve
Copper (Total)	mg/l	0.38	1.0	- ve
Iron	mg/l	0.22	1.0	- ve
Zinc	mg/l	0.39	1.0	- ve
BOD (3 day 27°C)	mg/l	12	30	- ve
Fecal Coliform	MPN/100 ml	<1.8	1000	- ve

Note: The variation (-ve) because the values are less than the standard limits.

b) Seawater Drawn and Let-out

Month	Parameter	Temperature
April 2021 to March 2022	Temperature not more than 10 ⁰ C higher than intake water as per MOEF Communication dated 01.06.1999	< 5 ⁰ C



Environmental Statement Report (Form-V) for FY 2022-2023 for 2x520 MW Coal Based Thermal Power Plant at, Visakhapatnam.

Form-V

b) AIR:

**ANNEXURE-IB
STACK EMISSIONS**

Month	Flue gas Temperature (°C)	Velocity m/Sec	Volumetric flow (m ³ /s)	Particulate Matter PM (mg/NM ³)	SO ₂ (mg/NM ³)	NO _x (mg/NM ³)	Hg (mg/NM ³)
UNIT-I							
April 2022	-	-	-	-	-	-	-
May 2022	124	22.28	636.90	32.6	578	382	0.006
June 2022	128	23.00	646.08	36.2	661	363	0.005
July 2022	124	22.20	582.22	32.7	642	332	0.007
August 2022	123	22.40	567.08	28.4	621	363	0.006
September 2022	108	22.20	630.72	34.5	593	412	0.007
October 2022	117	22.14	625.43	33.2	667	427	0.009
November 2022	120	22.23	631.35	36.2	689	402	0.011
December 2022	121	22.30	616.46	37.0	672	373	0.010
January 2023	121	22.26	627.43	40.5	691	394	0.013
February 2023	114	22.08	604.55	38.1	703	400	0.010
March 2023	108	22.18	593.21	25.0	693	375	0.008
Average	109	20.44	614.67	34.0	655	384	0.008
UNIT-II							
April 2022	125	23.18	605.02	25.3	553	337	0.007
May 2022	127	22.42	638.94	35.6	578	382	0.006
June 2022	125	22.62	623.71	38.5	624	329	0.007
July 2022	122	22.40	613.00	40.2	671	372	0.010
August 2022	121	22.10	565.54	37.1	645	392	0.008
September 2022	116	22.50	647.14	28.6	682	376	0.009
October 2022	112	22.05	629.23	35.3	628	408	0.008
November 2022	123	22.17	623.81	31.6	651	417	0.008
December 2022	108	22.10	598.26	33.5	644	342	0.007
January 2023	124	22.43	612.96	36.4	662	366	0.009
February 2023	120	22.21	586.77	41.3	682	373	0.015
March 2023	110	22.07	577.61	28.0	717	414	0.011
Average	119	22.35	610.17	34.3	645	376	0.009

- Stack Diameter: 6.8 m, Cross Sectional Area: 36.33 m



Environmental Statement Report (Form-V) for FY 2021-2022 for 2x520 MW Coal Based Thermal Power Plant at, Visakhapatnam.

Form-V

ANNEXURE-I C
SUMMARY OF NOISE LEVEL MONITORING RESULTS
(APRIL-2022 to MARCH-2023)

Sr. No.	Location Name	Noise levels dB (A)	
		L _{day}	L _{night}
Inside the Plant Area			
1	Near Plant main gate	62.4	54.9
2	Near Boiler Area	86.0	
3	Near Turbine area	87.2	
Out Side the Plant Premises			
4	Palavalasa	52.5	43.0
5	Appikonda	51.9	42.2
6	Devada	51.1	42.4
7	Cheepurupalle	52.7	42.9
8	Dasaripeta	51.2	42.6
9	Islampeta	51.4	42.2
10	Pittavanipalem	51.9	42.5
11	Kalapaka	51.6	42.6