



भारत सरकार / Govt. of India  
NABHA POWER LIMITED  
Min. of Environment, Forests & Climate Change  
बेज नं. 24-25, सेक्टर 31-ए  
Bays No. 24-25, Sec- 31A  
चण्डीगढ़/Chandigarh

received by  
Project  
28/09/2021  
NPL  
Nabha Power Limited

P.O. Box No -28, Nabha Rajpura-140401, Punjab

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Letter.No.: NPL/HSE/RB/MoEFCC/DR/210925/1

Date: 25.09.2021

**Director,  
Ministry of Environment & Forests,  
Northern Regional Office,  
Chandigarh-160030,  
Punjab**

**Sub: Environment Statement (Form -V) under Environment Protection Act,  
1986 for Financial Year 2020-2021.**

**Ref:**

**Dear Sir,**


This is with reference to the above mentioned subject please find enclosed herewith Environment Statement (Form- V) of M/s Nabha Power Ltd, 2x700 MW, Super Critical Thermal Power Plant for the Financial Year 2020-2021.

Submitted for your kind information & records please.

**Thanking you,**

**Yours faithfully**

**For Nabha Power Limited**

 25/09/2021

**(Rajiv Bhandari)**

**DGM- HSE**

**Cc: Member Secretary, Punjab Pollution Control Board, Patiala, Punjab.**

**Wholly Owned by L&T**

Corporate Office: L&T House, N M Marg, Ballard Estate, Mumbai 400 001

CIN No: U40102PB2007PLC031039

# **ENVIRONMENT STATEMENT REPORT** **(2020 – 2021)**

**NABHA POWER LIMITED, VILLAGE NALASH,  
RAJPURA DISTRICT, PATIALA, PUNJAB**

## **Index of the Report:**

The Environment statement report is based on data generated for the period 1<sup>st</sup> April' 2020 to 31<sup>st</sup> March' 2021. The report consists of the following chapters:

➤ **Chapter 1.0 – Introduction**

This chapter provides background information, location of the plant, process being adopted and scope of the study.

➤ **Chapter 2.0 – Form – V**

Every person carrying on an industry, operation or process requiring consent under section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) or both or authorization under the Hazardous Wastes (Management and Handling) Rules, 1989 issued under the Environment (Protection) Act, 1986 (29 of 1986) and amendments thereof shall submit an environment statement for the financial year ending on the 31st March in Form V to the concerned State Pollution Control Board on or before the thirtieth day of September every year.

# **Chapter 1.0 – Introduction**

## 1.0

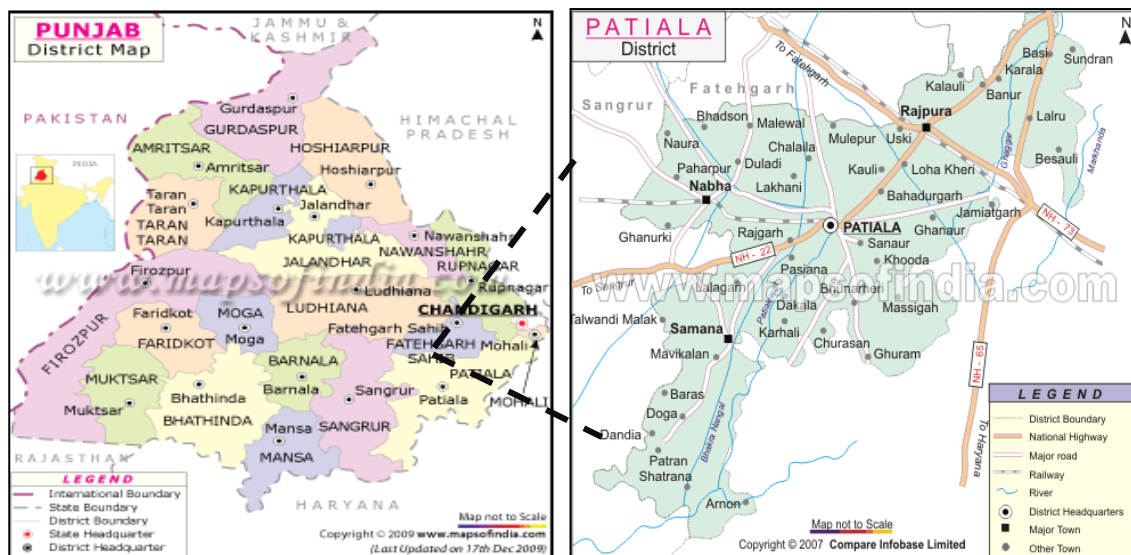
### INTRODUCTION:

Nabha Power Limited (NPL), was established as Special Purpose Vehicle (SPV) by the erstwhile Punjab State Electricity Board (PSEB) to develop the Rajpura Thermal Power Project at a site near village Nalash, Distt Patiala, Punjab. An RfQ/RfP was floated by PSEB in line with the Case 2 competitive bidding guidelines, Govt of India (GoI) and L&T Power Development Limited (a wholly owned subsidiary of L&T) was identified as the lowest bidder. NPL has signed Power Purchase Agreement on 18th January, 2010 with PSEB and the NPL was also transferred to L&T Power Development Limited as its wholly owned subsidiary on 18th January, 2010.

The 1400 MW power plant is constructed as a unit configuration of 2 x 700 MW units, with one steam turbine and one boiler for each unit.

NPL is having two Pulverized Fuel Boilers, generating steam at 25.71MPa at 568°C with two Condensing Turbo Generator Sets each having generating capacity of 700 MW of power. Installation of associated mechanical and electrical equipment, auxiliary units like coal, ash handling plant, water treatment plant, cooling water system, electrostatic precipitators (ESPs), NOx control equipment etc. are part of the total installation.

### Project Location:



### 1.1 Process Description:

The salient features of the power plant are given in **Table-1**

**TABLE - 1**

**SALIENT FEATURES OF NABHA POWER LTD.**

S. N.	Parameter	Description
1	Plant capacity	1400 MW (2 X 700 MW)
2	Main Stream Flow	2322.0 tons/hr
3	Generator	2 X 700 MW
4	Fuel	5.7 MT/Year
5	Ash Generation	5100 TPD
6	Water requirement and source	50 Cusec from Bhakra main canal
7	Total Effluent generation	<ul style="list-style-type: none"><li>• 12768 KLD with Zero Liquid Discharge</li><li>• 48 KLD Domestic Effluent</li></ul>
8	Wastewater treatment	<ul style="list-style-type: none"><li>• Lamella clarifier</li><li>• Pressure Sand Filter</li><li>• Ultra-Filtration</li><li>• Reverse Osmosis (RO)</li></ul>
9	Firefighting system	Adequate firefighting systems as per Tariff Advisory Committee (TAC)
10	Stack height and diameter at top (m)	275 m and 7.5 m
11	Air pollution control equipment's	<ul style="list-style-type: none"><li>• ESP with six passes along with nine fields is available.</li><li>• Dust Extraction and Suppression system is available in coal handling area.</li></ul>

## **CHAPTER 2.0 – Form – V**

**FORM – V****(See rule 14)****Environment Statement for the financial year ending the 31st March 2021****PART – A**

1	Name and address of the Owner/Occupier of the Industry, operation of the process.	:	Nabha Power Limited, Post Box 28, Near Village Nalash, Distt. Patiala 140401, Punjab
2	Industry category	:	Red, Large.
3	Production Capacity	:	1400 MW
4	Year of establishment	:	2010
5	Date of the last environment statement submitted	:	September 29, 2020

**PART – B****Water and Raw Material Consumption****(I) Water consumption in m3/day.**

Process & Cooling	: 52119.84
Domestic	: 129.97
Ash Conveyance	: 0.00*

(\*Note: 100% of ash conveyance is done thru recovery water from ash pond)

Name of products	Process Water consumption* per unit of product output	
	During the previous financial year (2019-20)	During the current financial Year (2020-21)
	(1)	(2)
Electric Power	1.76 litre/kWh	1.78 litre/kWh

\*Reported quantity includes water consumed in cooling as well.

**(II) Raw Material consumption**

S. No.	Name of raw material	Name of products	Consumption of raw material per unit output (Per Tonne)	
			During the previous financial year (2019-20)	During the current financial year (2020-21)
1.	Coal as fuel	Electric Power	0.498 MT/MWh	0.533 MT/MWh



### PART – C

Pollution discharged to environment/unit of output generated (Parameter as specified in the consent issued)

S. No.	Pollutants	Concentration of Pollutants in discharge			Percentage of variation from prescribed standards with reason.
a.	Water (Industrial)	Plant is designed on Zero discharge concept and entire treated effluent is being utilized in process again			
	Water (Domestic)	Domestic sewage treatment plant			Monitored values of parameters are well within the prescribed limits
		Parameter	Prescribed Std. (mg/Ltr.)	Observed Value (mg/Ltr.)	
		pH	6.5– 8.5	7.49	
		TSS	100 mg/l	16	
		BOD	30 mg/l	11.75	
		COD	250mg/l	47.75	
		Oil & Grease	10 mg/l	BDL	
b.	Air (Stack emission) Particulate matter	SPM emission from Boiler Stack			Monitored values of parameters are well within the prescribed limits
		Stack-Boiler	Prescribed Standard (mg/Nm3.)	Observed Value (mg/Nm3.)	
		Unit-1	50	41.7	
		Unit-2	50	42.8	

### PART - D

#### Hazardous Wastes

(As specified under the Hazardous Waste (Management, Handling & Trans boundary Movement) Rules, 2016)

S. No.	Hazardous Waste (Up to 31 <sup>st</sup> March,2021)	Total quantity	
		During the previous financial year (2019-20)	During the current financial year (2020-21)
i	Used oil / Spent oil (KL)-5.1	6.51	13.7
ii	Wastes or residues containing oil	2.469	1.5

	(MT)-5.2		
iii	Empty barrels/containing toxic metals (MT)-33.1	000	300
iv	Spent ion exchange resin containing toxic metals (MT)-35.2	2.04	1.76
v	Chemical sludge from wastewater treatment (MT)-35.3	5.0	4.40

#### PART – E

##### Solid Waste

Sl. No.	Solid Waste	Total quantity	
		During the financial year 2019-2020 (MT)	During the current financial year 2020-2021 (MT)
a.	From Process (Bottom Ash & Fly Ash)	1285934	1420316

#### PART – F

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

##### (i) Hazardous Waste (generated from the entire premises):

Description of Haz. waste	Qty. of waste generated during the year	Discharged from	Disposal Method
Used /Spent oil (KL)-5.1	13.7	Plant machines	Authorised recycler by PPCB
Wastes or residues containing oil (MT)-5.2	1.50	Plant maintenance Activities	TSDF
Empty barrels/containing toxic metals (MT) 33.1	300	Chemical Handling Area	Authorised recycler by PPCB
Spent ion exchange resin containing toxic metals (MT) 35.2	1.76	DM Plant	TSDF
Chemical sludge from wastewater treatment (MT)-35.3	4.40	ETP	TSDF

**(ii) Solid Waste:**

<b>Description of waste</b>	<b>Qty. of waste generated during the Financial year 2020-2021 (MT)</b>	<b>Disposed (MT)</b>	<b>Disposal Method</b>
Fly Ash & Bottom Ash	1420316	1426963	To cement plants, Fly ash brick/Block/tiles industries, asbestos product manufacturing industry, RMC plants, brick/block/tiles industries and area filling.

**PART – G**

**Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.**

Following measures have been adopted for abatement of pollution, conservation of natural resources:

**1. Conservation of Water: Cycle of Concentration (COC)**

NPL is maintaining the Cycle of Concentration (COC) of Natural Draft Cooling Towers greater than 5 by reducing of blow down water of cooling tower to get desired quality of cooling water. By reducing the blow down of cooling water there is significant saving of raw water, which finally leads to the conservation of raw water.

**2. Installation of Air Pollution Control Devices (ESP) at Main boiler Stack-**

To restrict the dust load at the outlet of the chimney below 50 mg/Nm<sup>3</sup> as prescribed by the MOEF, Adequate sized Electrostatic precipitators (ESP) has been provided for each unit. Each ESP is having 6 passes and 9 fields any of which can be isolated for maintenance, as and when required basis, keeping the other paths in operation. The ESP is having a design efficiency of 99.99%. Each ESP is provided with adequate number of ash hoppers having capacity suitable for storing ash generated in a shift of 8 hours duration under 100% BMCR

**Pic-1 High efficiency ESP (99.99%) to control particulate matter**



**Pic-2 275-meter high Boiler stack for wider dispersion of dust and gaseous emissions**

**3. Measures taken to control fugitive emissions during coal handling**



**Pic-1 Covered conveyors for transfer of coal from Wagon tippler to coal bunkers for abatement of fugitive emissions**



**Pic-2 Dust suppression (sprinkler system) provided at each coal stockpile to arrest Dust**



**Pic-3 Three side coverage by wind screen to control fugitive emissions due to wind flow**



**Pic-4 Automated and Mechanized Coal Handling System to minimize manual operations**

#### **4. Extensive plantation in and around the plant-**

NPL is having a complete dedicated team of skilled horticulturists for the forestation and greenery development program at our plant. A green belt of 2.50 lac plants is developed inside as well outside plant premises. Also small patches of gardens are developed inside of the plant premises wherever the open space is available to improve the plant beautification.





**Pic-1 Green belt around coal stock pile area**



**Pic-2 Green belt around plant premises**



**Pic-3 Green belt along boundary**



**Pic-4 Green belt on both sides of road**

## **5. Plant is designed on Zero liquid discharge Concept**

All kind of process wastewater is collected in Common Monitoring Basin and is recycled / reused for plant cooling purpose, dust suppression and transportation of bottom ash to ash dyke being maintained in plant premises.

## **6. Solid waste management**

100% of fly ash being generated is utilised by cement plants and the transportation is made through closed bulkers to avoid fugitive emissions.



**Pic-1 Transportation of Fly-ash in closed bulkers**

## **7. Acoustic Enclosures for Noise mitigation**

Acoustic enclosures have been provided for noise generating equipment to attenuate noise levels. All Equipment are confirming noise regulation norms prescribed by regulatory authorities.



**Pic-1 Acoustic Enclosure provided at Turbine**



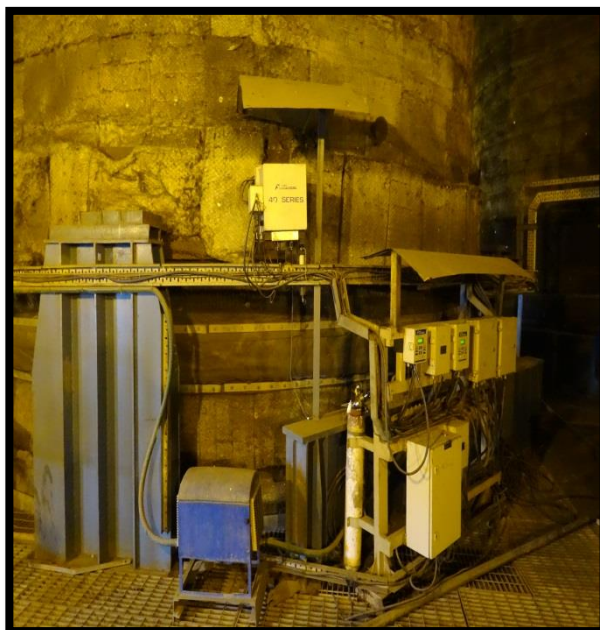
**Pic-2 Acoustic canopy provided at Diesel Generator**

## **8. Online Continuous Air Quality monitoring for measurement of dust levels inside Plant**





**Pic-1 Four numbers of Continuous Ambient Air Quality Monitoring stations has been installed inside plant in consultation with PPCB officials to monitor ambient air quality.**



**Pic-2 Continuous emission monitoring system installed at main stack for measurement of Particulate Matter & Gaseous Emissions.**

- 9. Sewage Treatment Plant (STP) of 48 KLD capacity to treat domestic sewage from industry and the treated wastewater is used for horticulture/plantation purpose.**





**10. Hazardous waste Management:** The hazardous waste (Spent Oil) generated from the plant operation is stored at waste hazardous storage shed. The spent oil is being disposed of to the authorised vendor from PPCB/MOEF within timeline given in prescribed standard.

**Pic-1 Hazardous waste storage shed to collect and store Hazardous waste generated from plant.**



**11. Strict measures are adopted for the control of following:**

- **Dust:** Electrostatic precipitators (ESP), Bag filters, Fixed and portable water sprinklers, closed/covered conveyors, fully mechanised coal handling and Ash Handling Systems, use of PPEs etc.
- **Heat:** Insulation and cladding of hot parts (boiler, steam pipelines etc.), installation of Air handling units, Air Conditioners to mitigate heat effects.
- **Noise:** Acoustic barrier/enclosures, timely maintenance of Equipment, PPE's, Green Belt etc.
- **Vibration:** Vibration studies of Equipment and timely maintenance of the same.
- **Radiation:** Radioactive studies of Ash & Coal are carried out on yearly basis from PPCB/MOEF recognised Labs. Analysis for the presence of radioactive elements in coal & ash is being performed by MOEF&CC/PPCB approved laboratory.

**PART – H**

**Additional measurers/ investment/Expenses/ proposal for Environment protection including abatement of pollution / prevention of pollution.**

**Details of Expenses Incurred for Environment Protection Measures in FY 2020-21**

S.No.	Particulars	Amount (Rs)
<b>A</b>	<b>Air Pollution</b>	
1	Cost of Energy Consumption in ESPs/Bag Filters	118869326
2	Cost of Maintenance of ESP/Bag Filters	8103466
3	Cost of Maintenance of Ash Silos	150000
4	Cost of operation of Dust Suppression and Extraction System	653078
<b>B</b>	<b>Water Pollution</b>	
1	Cost of Energy Consumption in STP	147649
2	Cost of Energy Consumption in ETP	7039294
3	Cost of Chemical used at ETP and STP	4200000
<b>C</b>	<b>Environment Monitoring Expenses</b>	
1	Cost of Manpower	1033680
2	Cost of Consumables and Spares	226303
3	Cost of running of Environment monitoring vehicle	849000
4	AMC/Calibration for environment monitoring equipments.	47790
5	AMC/Calibration/ maintenance of online environment monitoring equipments.	1570000
<b>D</b>	<b>Third Party MoEF&amp;CC approved laboratory testing charges.</b>	
1	Third Party MoEF&CC approved laboratory testing charges for AAQ, Stack, Waste Water, Fly Ash, Bottom Ash etc.	218172
<b>E</b>	<b>Infrastructure Development</b>	
1	Construction of Roads	2426705
2	Provision of Wind shields	922500
3	Provision of Wind shields at Silos	181963
<b>F</b>	<b>Green Belt Development &amp; Maintenance</b>	
1	Development and Maintenance of Green Plants	5300000
2	Maintenance of Landscape Area	4033250
<b>G</b>	<b>Salary &amp; Wages of HSE Professionals</b>	
1	Salary & Wages of HSE Professionals	6444091
<b>I</b>	<b>Solar Harnessing Expenses</b>	
1	Solar Harnessing and maintenance Expenses	208500
<b>H</b>	<b>Housekeeping Expenses</b>	
1	Housekeeping Expenses	3657057
<b>I</b>	<b>Ash Dyke Management</b>	
1	Expenses for Ash Dyke Maintenance (Civil)	2264571
2	Expenses for Ash Dyke Maintenance (Mechanical)	200000
<b>J</b>	<b>Energy Consumption for transportation of Bottom Ash.</b>	
1	Energy Consumption for transportation of Bottom Ash/ Fly Ash	89559421
<b>K</b>	<b>Disposal of Hazardous Waste</b>	
1	Disposal of hazardous waste charges.	448119
2	Bio-medical disposal charges.	16800
<b>L</b>	<b>FGD installation</b>	
1	Construction/installation cost of FGD	541964233
	<b>TOTAL (Rs)</b>	<b>800734968</b>

## PART – I

### **Any other particulars for improving the quality of the environment.**

1. Open areas inside plant are either grassed or concreted to control the fugitive emissions.
2. A thick three tier plantation is developed around ash dyke to control fugitive emissions.
3. Continuous water spraying on roads for controlling the fugitive emission.
4. Utilization of Road Sweeping machine to control particulate emission by vehicle movement inside the plant.
5. Disposal of Hazardous waste generated inside the plant through TSDF.
6. Bio Medical waste is disposed through TSDF generated in OHC.
7. Disposal of E-Waste generated inside the plant through TSDF facility.