



NABHA POWER LIMITED

NPL
Nabha Power Limited

P.O. Box No -28, Near Nalash, Rajpura-140401, Punjab
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Email ID: rajiv.bhandari@larsentoubro.com
Letter.No.: NPL/HSE/20-21/28

29.09.2020

To,

Director,
Ministry of Environment, Forests and Climate Change
Northern Regional Office,
Chandigarh-160030,
Punjab

Sub: Environmental Statement under Environment Protection Act, 1986 for Financial Year
2019-20.

Dear Sir,

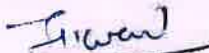
This is with reference to the above mentioned subject please find enclosed herewith
Environmental Statement of M/s Nabha Power Ltd, 2x700 MW, Super Critical Thermal Power
Plant for the Financial Year 2019-20.

This is for your kind reference and record please.

Thanking you,

Yours Sincerely,


Mandari 29/9/2020
(Rajiv Bhandari)
Authorised Signatory
Nabha Power Limited


29/09/20

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


भारत सरकार /Govt. of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Min. of Environment, Forests & Climate Change
ब्लॉक नं. 24-25, सेक्टर 31-ए
Bays No.24-25, Sec-31 A
चण्डीगढ़/Chandigarh

Wholly Owned by L&T

Corporate Office: L&T House, N M Marg, Ballard Estate, Mumbai 400 001
CIN No: U40102PB2007PLC031039



Nabha Power Limited

ENVIRONMENTAL STATEMENT
REPORT
(2019 – 2020)

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

Index of the Report:

The environmental statement report is based on data generated for the period 1st April' 2019 to 31st March' 2020. 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 environmental 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

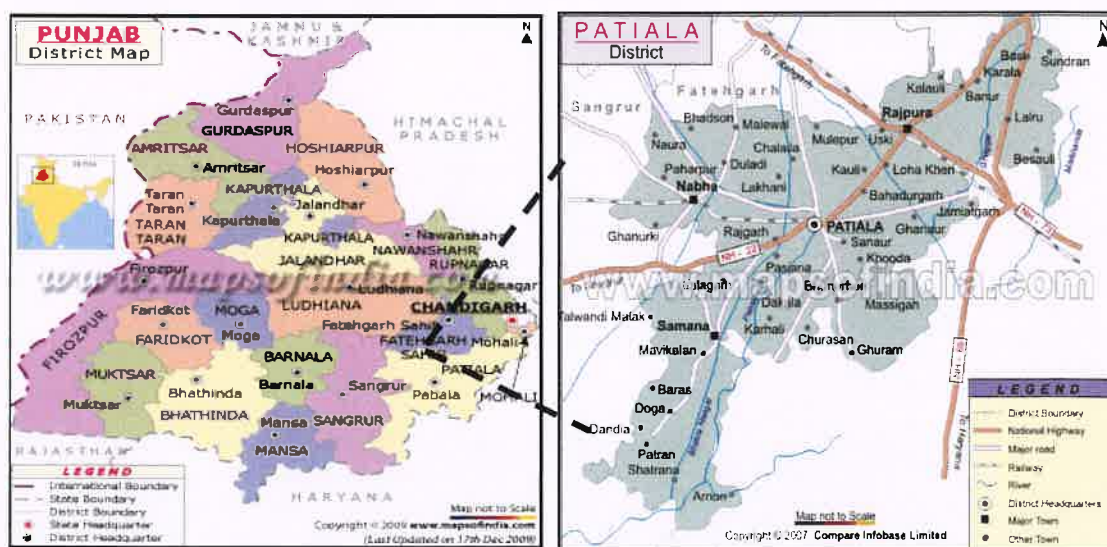
1.0 INTRODUCTION:

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 Steam 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">• 12768 KLD with Zero Liquid Discharge• 50 KLD Domestic Effluent
8	Waste water treatment	<ul style="list-style-type: none">• Lamella clarifier• Pressure Sand Filter• Ultra Filtration• Reverse Osmosis
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	ESP with six passes nine fields Dust Extraction and Suppression system

CHAPTER 2.0 – Form – V

FORM – V
(See rule 14)

Environmental statement for the financial year ending the 31st March 2020

PART – A

1	Name and address of the Owner/Occupier of the Industry, operation of the process.	:	Nabha power ltd. Village: nalash , Rajpura (punjab)
2	Industry category	:	Red, large
3	Production Capacity	:	1400 MW
4	Year of establishment	:	2010
5	Date of the last environmental statement submitted	:	September 27, 2019

PART – B

Water and Raw Material Consumption

(I) **Water consumption in m3/day.**

Process & Cooling	: 49226.29
Domestic	: 129.04
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 (2018-19)	During the current financial Year (2019-20)
	(1)	(2)
Electric Power	1.83 litre/KWH	1.76 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 (2018-19)	During the current financial year (2019-20)
1.	Coal as fuel	Electric Power	0.522 MT/MWH	0.498 MT/MWh

PART – C

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

S. N.	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 <table border="1"> <thead> <tr> <th>Parameter</th> <th>Prescribed Std. (mg/Ltr.)</th> <th>Observed Value (mg/Ltr.)</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>6.5– 9.0</td> <td>7.6</td> </tr> <tr> <td>TSS</td> <td>100 mg/l</td> <td>29.5</td> </tr> <tr> <td>BOD</td> <td>30 mg/l</td> <td>9.4</td> </tr> <tr> <td>COD</td> <td>150mg/l</td> <td>37</td> </tr> <tr> <td>Oil & Grease</td> <td>10 mg/l</td> <td>BDL</td> </tr> </tbody> </table>	Parameter	Prescribed Std. (mg/Ltr.)	Observed Value (mg/Ltr.)	pH	6.5– 9.0	7.6	TSS	100 mg/l	29.5	BOD	30 mg/l	9.4	COD	150mg/l	37	Oil & Grease	10 mg/l	BDL	Monitored values of parameters are well within the prescribed limits
Parameter	Prescribed Std. (mg/Ltr.)	Observed Value (mg/Ltr.)																			
pH	6.5– 9.0	7.6																			
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BOD	30 mg/l	9.4																			
COD	150mg/l	37																			
Oil & Grease	10 mg/l	BDL																			
b.	Air (Stack emission) Particulate matter	SPM emission from Boiler Stack <table border="1"> <thead> <tr> <th>Stack-Boiler</th> <th>Prescribed Standard (mg/Nm3.)</th> <th>Observed Value (mg/Nm3.)</th> </tr> </thead> <tbody> <tr> <td>Unit-1</td> <td>50</td> <td>41.3</td> </tr> <tr> <td>Unit-2</td> <td>50</td> <td>40.0</td> </tr> </tbody> </table>	Stack-Boiler	Prescribed Standard (mg/Nm3.)	Observed Value (mg/Nm3.)	Unit-1	50	41.3	Unit-2	50	40.0	Monitored values of parameters are well within the prescribed limits									
Stack-Boiler	Prescribed Standard (mg/Nm3.)	Observed Value (mg/Nm3.)																			
Unit-1	50	41.3																			
Unit-2	50	40.0																			

PART - D

Hazardous Wastes

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

S. No.	Hazardous Waste (Up to 31 st March,2020)	Total quantity (KL)	
		During the previous financial year (2018-19)	During the current financial year (2019-20)
a.	From Process		
i	Used Oil & Grease (Kg)	14.28	6.51
ii	Wastes or residues containing oil (MT)	2.17	2.469
iii	Spent ion exchange resin containing toxic metals (MT)	10.8	2.04
b.	From pollution control facility		
i	Chemical sludge from waste water treatment (MT)	0.035	5.0

PART – E

Solid Waste

Sl. No.	Solid Waste	Total quantity	
		During the financial year 2018-2019 (MT)	During the current financial year 2019-2020 (MT)
a.	From Process (Bottom Ash)	212540.38	186353
b.	From pollution control facility (Fly Ash)	1226904.79	1099581

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 (KL)	Discharged from	Disposal Method	Equipment / Facility Used
Used /Spent Oil	6.51	Plant machines	Authorised recycler by PPCB	
Wastes or residues containing oil (MT)	2.469	Plant maintenance Activities	TSDF	
Spent ion exchange resin containing toxic metals (MT)	2.04	DM plant	TSDF	
Chemical sludge from wastewater treatment (MT)	5.0	ETP	TSDF	

(ii) Other Solid Waste (generated from the entire premises):

Description of waste	Qty. of waste generated during the Financial year 2019-2020 (MT)	Disposed (MT)	Disposal Method
Fly Ash	1099581	1083740	To cement plants, Fly ash brick/Block/tiles industries, asbestos product manufacturing industry, RMC plants
Bottom Ash	186353	712533	To brick/ block /tiles industries, self-utilization, area filling.

PART – G

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

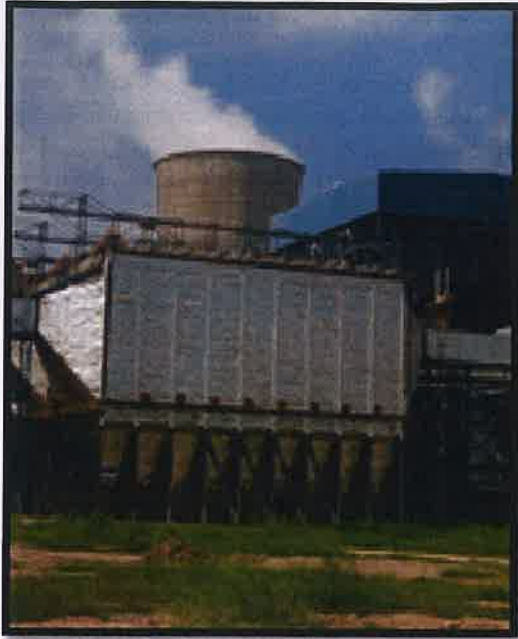
Following measures have been adopted for abatement of pollution, conservation of natural resources:

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/Nm³ 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 stock pile 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 railway track



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 treated in effluent treatment plant and is recycled / reused for plant cooling purpose, dust suppression and transportation of bottom ash to ash dyke within plant premises.



Pic-1 Effluent Treatment Plant

6 Solid waste management

100% generated fly ash is being utilised by cement plants/bricks manufacturing plant and the transportation is made through closed bulkers/covered tippers 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 generator



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 (CAAQMS) inside the plant to monitor ambient air quality.



Pic-2 Continuous Emission Monitoring System (CEMS) installed at main stack for measurement of Particulate Matter & Gaseous Emissions.

9. Sewage Treatment Plant (STP) of 50 KLD capacity to treat domestic sewage from industry and the treated wastewater is used for horticulture/plantation purpose.



Pic-1 Sewage Treatment Plant

10. Hazardous waste Management: The hazardous waste generated from the plant operation is stored at waste hazardous storage shed. The hazardous wastes are being disposed of to the TSDF and authorised vendor from PPCB/MOEF.



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 six monthly 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.

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

Details of Expenses Incurred for Environment Protection Measures IN FY 2019-20

S.No.	Particulars	Expenses Incurred (₹)
A	Control of Air Pollution	
1	Cost of Energy Consumption in ESPs/Bag Filters	117855143
2	Cost of Maintenance of ESP/Bag Filters	12994307
3	Cost of Maintenance of Ash Silos	50000
4	Cost of operation of Dust Suppression and Extraction System	481495
B	Control of Water Pollution	
1	Cost of Energy Consumption in STP	77936
2	Cost of Energy Consumption in ETP	6568994
3	Cost of Chemical used at ETP and STP	14314000
C	Environment Monitoring Expenses	
1	Cost of Manpower	1033680
2	Cost of Consumables	107620
3	Cost of running of Environment monitoring vehicle	732025
4	AMC for environment monitoring equipment.	66375
5	AMC/Calibration/maintenance of online environment monitoring equipment's	3592000
D	Third Party MoEF&CC approved laboratory testing charges.	
1	Third Party MoEF&CC approved laboratory testing charges for AAQ, Stack, Waste water, Fly Ash, Bottom Ash etc.	329416
E	Infrastructure Development	
1	Cost of Construction of Roads	4398000
2	Cost of Provision of Wind shields	236000
F	Green Belt Development & Maintenance	
1	Cost of New Pant Plantation	10175429
2	Cost of Maintenance of Landscape Area	
3	Cost Maintenance of Green Plants	
G	Salary & Wages of HSE Professionals	
1	Salary & Wages of HSE Professionals	5420827
H	Solar Harnessing Expenses	
1	Solar Harnessing Expenses	208500
I	Housekeeping Expenses	
1	Housekeeping Expenses	13820652
J	Ash Dyke Management	
1	Expenses for Ash Dyke Maintenance	2133000
K	Energy Consumption for handling of Ash.	
1	Energy Consumption for handling of Fly Ash & Bottom Ash.	69567290
L	Training, Subscription & Legal Updates and Promotional Activities	
1	Cost of Subscription & Legal Updates	23482
2	World Environment Day Celebration Expenses	14058

M	Disposal of Wastes	
1	Hazardous wastes disposal charges	1134537
2	Bio-medical wastes disposal charges	21600
N	FGD Installation	
1	Feasibility study, Technical evaluation & Advertisements for FGD installation	2100000
Details of Expenses Incurred for Environment Protection Measures IN FY 2019-20		267871436

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.	Disposal of Hazardous waste generated inside the plant through TSDF and authorized recycler..