

ODISHA POWER GENERATION CORPORATION LTD.

(A Government Company of the State of Odisha)
CIN: U40104OR1984SG001429

lb Thermal Power Station

Banharpali, Dist.: Jharsuguda, Odisha - 768 234, India
Plant Manager : (+916645) 289266, Fax: (+916645) 222-230
Factory Manager : (+916645) 222224, Fax: (+916645) 222-230



Letter No. ITPS/5169/WE
September 22, 2021

To
The Member Secretary
State Pollution Control Board, Odisha
Paribesh Bhawan, A/118
Nilakantha Nagar, Unit-VIII
Bhubaneswar-751012.

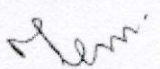
Sub: Environmental Statement for ITPS (2x210MW & 2X660 MW) for the period from 1st April 2020 to 31st March 2021.

Sir,

Enclosed please find herewith the Annual Environmental Statement in (Form-V) for lb Thermal Power Station (2x210MW & 2X660 MW), Banharpali, Jharsuguda for the period from 1st April 2020 to 31st March 2021 for kind perusal.

Thanking you

Sincerely yours,


Manas Ranjan Rout
Director (Operations), OPGC

Encl: Environmental Statement

Copy to-
Regional Officer, State Pollution Control Board, Plot No. 370/5971, At - Babubagicha (Cox Colony), St. Marry Hospital Road, Post - Industrial Estate, Jharsuguda for kind information.

Corporate Office : Zone-A, 7th Floor, Fortune Tower
Chandrasekharpur, Bhubaneswar - 751023, Odisha
Ph: 0674-2303765-66, Fax : 0674-2303755
website : www.opgc.co.in



ENVIRONMENTAL STATEMENT

**Odisha Power Generation Corporation Ltd
Ib Thermal Power Station**

Banharpali, Jharsuguda

(2 x 210 MW)

PERIOD FROM 1st APRIL 2020 TO 31st MARCH 2021

(FORM – V)

(See Rule 14)

Environmental Statement Report for the Financial Year ending the 31st March, 2020.

PART – A

- i. Name and address of the Owner/Occupier of the Industry : **Mr. Manas Ranjan Rout**
Odisha Power Generation Corp. Ltd.
Ib Thermal Power Station
Banharpali, Jharsuguda
Pin Code- 768234
Site Office-Ph.06645-222220, Fax. 222230
Corp. Office- 06742303754, Fax. 2303755
- ii. Production Capacity : 420 MW (2X210 MW)
- iii. Year of Establishment : Unit#1-21.12.1994
: Unit#2-20.06.1996
- iv. Date of last Environment Statement submitted : 28.09.2020
- v. Industry category : Thermal Power Plant

PART – B

(Water and Raw Material Consumption)

(All values indicate Annual consumption) in m³/day

Sl.	Description	2019-2020	2020-2021
(i)	Gross Energy Generation (MU/Year):	2643.544	2609.84
(ii)	Total Water consumption (m ³ /day):	21897	24223
(iii)	Ash disposal make up, Process NEBD:	2274	4457
(iv)	Cooling, Spraying, Boiler Feed:	19362	19512
(v)	Domestic*: (Excluding Township)	211	204
(vi)	Process, EBD	50	50

SI No	Name of the product	Process Water Consumption per Unit of Product Output	
		2019-20	2020-21
01	Electricity	3.02 KL/MWH	3.38 KL/MWH

NB: The Sp. Water consumption was higher than previous due to lesser generation.

Name of Raw Material	Name of the product	Consumption of Raw Material unit of output			
		2019-20		2020-21	
Coal	Electricity	Total Consumption	2294455 MT	Total Consumption	2468005 MT
		Specific Consumption	0.868 Kg/KWH	Specific Consumption	0.945 Kg/KWH
Start-up Fuel Oil (LDO)	Electricity	Total Consumption	1556.287 KL	Total Consumption	1383.538 KL
		Specific Consumption	0.589 ml/KWH	Specific Consumption	0.530 ml/KWH

PART – C
Pollution discharged to Environment and Pollution Level

PERIOD- April 2020 TO March 2021								
STACK EMISSION								
PARAMETER	NORM	STACK 1			NORM	STACK 2		
		MAX.	MIN.	AVE.		MAX.	MIN.	AVE.
PM (mg/Nm ³)	100	95	75	85	100	93	81	89
CO ₂ (%)	NA	9.6	7.2	8.9	NA	10	8.3	9.08
CO (mg/Nm ³)	NA	79	16	30	NA	82	13	38
SO ₂ (mg/Nm ³)	600	1488	1040	1261	600	1499	1009	1258
NO _x (mg/Nm ³)	600	267	187	223	600	216	110	201
AMBIENT AIR QUALITY								
PARAMETER	NORM	INDUSTRIAL			NORM	RESIDENTIAL		
		MAX.	MIN.	AVE.		MAX.	MIN.	AVE.
PM ₁₀ ug/m ³	100	96	12	61	100	91	14	61
PM _{2.5} ug/m ³	60	56	9	31	60	55	7	29
SO ₂ (ug/m ³)	80	18	10	13	80	12	7	9
NO _x (ug/m ³)	80	33	11	22	80	27	10	18
STP WATER QUALITY					AMBIENT NOISE in dB(A)			
PARAMETER	NORM	MAX	MIN	AVE.	INDUSTRIAL		RESIDENTIAL	
					MAX.	MIN.	MAX.	MIN.
pH	6.5 – 9.0	7.52	7.06	7.3	MAX.	MIN.	MAX.	MIN.
TSS, mg/ltr	100	52	31	40	DAY TIME			
BOD(3 days at 27°C), mg/ltr	30	8	7	7	NORM			
COD, mg/ltr	250	32	24	29	75		55	
Total Nitrogen(as N)	10	6.5	5.1	5.8	72	66	49	40
Ammonical Nitrogen(as NH ₃ -N)	50	3.8	2.4	3.2	NIGHT TIME			
Total coliform	--	440	6	264.5	NORM			
Fecal coliform	<1000	84	49	66	70		45	
					69	42	42	35

OPGC has installed continuous emission monitoring system for both the stacks, four continuous ambient air quality monitoring stations and one continuous effluent monitoring station for round the clock monitoring and control of emission/pollution

Environment Statement

parameters. These stations are connected to SPCB & CPCB servers through real time data acquisition and transmission facility. The plant has achieved zero effluent discharge from December'18 onwards and till December'18 only 1 % effluent had been discharged after meeting the norms.

PART – D HAZARDOUS WASTES

(As specified under Hazardous wastes/management & Handling Rules, 2008)

A. From Process:

Hazardous Waste Types	2019-20				2020-21			
	Opening stock	Generation	Sold/ Disposed	Balance	Opening stock	Generation	Sold/ Disposed	Balance
Used oil or Spent oil a.Used Lub. Oil : KL b.Used Grease: MT c.Used Transformer Oil :KL	Nil a. 0 KL b. 0 MT c. 0 KL	68.625 KL a. 11.25 KL b. 57 MT c. 0.375 KL	Nil a. 0 KL b. 0 MT c. 0 KL	68.625 KL a. 11.25 KL b. 57 MT c. 0.375 KL	68.625 KL a. 11.25 KL b. 57 MT c. 0.375 KL	61.672 KL a. 6.672 KL b. 55 MT c. Nil	Nil	130.297 KL
Waste or Residue containing oil*	Nil	0.6 MT	Nil	0.6 MT	0.6	0.5 MT (oily cotton waste)	Nil	1.1 MT
Oily sludge during cleaning: KL	0	0	0	Nil	0	0	0	Nil
Spent Resin, MT	4.6 MT	3 MT	0 MT	7.6 MT	7.6 MT	0	0	7.6 MT
Discarded Container a.oil drums (Nos) Empty Chemical Jar, Nos b. CW chemical	Nil	305Nos. a.05 Nos Chemical Jerkin containing Hydrazine. b. 300 Nos Chemical Jerkin containing CW Chemicals	305Nos. a. 05 b.300 Note- Chemical Jerkins Disposed back to original supplier on by back basis	Nil	0	Used Oil Drum b.05 Nos Chemical Jerkin containing Hydrazine. c. 300 Nos Chemical Jerkin containing CW Chemicals – d.40 Nos Ammonia Jerkins for boilers	Disp ose d back to sup plier	Nil
Used batteries(Nos.)	51 Nos	142 Nos	5 Nos	136 Nos	136 Nos	130 Nos	26 Nos	292

B. From Pollution Control Facilities: No generation

PART – E
SOLID WASTES

A. Ash:

Solid Wastes (Ash):	Total Quantity (MT)	
	2019-20	2019-20
From Process	187838 MT (Bottom Ash)	219301 MT (Bottom Ash)
From Pollution Control Facilities	751363 MT (Fly Ash)	877084 MT (Fly Ash)
Quantity Utilized	624595 MT	730990 MT
Disposed in Ash Pond	314606 MT	365395 MT

Reasons for variation from the target

1. Since the plant is situated in a remote location (pit head power plant located in rural area) there is very limited scope of ash utilization in brick manufacturing. More ever utilization in this particular area cannot exceed more than 2% to 3%.
2. Big stone quarry or low lands are not available in the locality.
3. Export of ash is not feasible since the site is located at a distance of 500 Km from the nearest port. Transportation from site to nearest port through rail or any other means is not feasible.
4. Major road construction activities are taking place near Jharsuguda (Expansion of Sambalpur Rourkela Sate Highway No-10 & Expansion of Sambalpur National Highway No-42). The ash demands for these activities are met by other thermal power plants, close to the road construction areas. However, we have supplied around 8830 MT of ash in the last financial year for construction of road.
5. No scope available in major ash utilization area i.e. Cement Plant use for production of PPC cement. Only one cement plant is available in the vicinity i.e. M/s Ultratech Cement Ltd. M/s Ultratech off takes entire quantity of ash for cement manufacturing from its sister concern i.e. from M/s Aditya Aluminium (Lapanga).
6. Considering OPGC plant's location (Pit Head), mine void back filling of ash is the only means of utilization by which OPGC can achieve 100% ash utilization. The steps so far are as follows.
 - i. There was progress on mine void allotment in the year 2006. With the support from Regional Office, MoEF and SPCB, MCL has consented to allot Lilari mine void to OPGC. Subsequently, in July 2007, MCL accorded consent for taking up EIA & Feasibility Study for back filling in the void based on which OPGC engaged CIMFR to conduct the studies in October 2007. During the course of the EIA study, the consent given to OPGC was withdrawn by MCL unilaterally vide their letter No MCL-3185/13.02.2008 stating "the life of Lilari Mine is extended with ten more years". Thereafter, OPGC has been pursuing MCL time and again involving regulatory as well as Govt. to reconsider the withdrawal or consider allotting any other mine void near to OPGC site but there has been no progress.
 - ii. State Pollution Control Board, Odisha made a proceeding on 05.06.10 for backfilling of OPGC ash in BOCM Mine void of MCL as an alternative solution against allotment of Lilari Mine void but no initiative has been taken so far from MCL side.
 - iii. MCL has also been directed repeatedly by OPGC Chairman & Principal Secretary, Energy, Govt of Odisha, managing Director and Director (Operation) but no positive response has so far been received from MCL.

- iv. In a meeting held on 24.01.2011 with Principal secretary Energy, Govt. of Odisha, CMD, MCL has given consent to give principal approval for back filling BOCM mine void but the same has not been done, so far.
- v. In response to the letter of Director (Operation), OPGC, dtd.24.08.2013 on the subject, Director (Tech. P&P), MCL negated the request on the ground of BOCM expansion towards dip slide and no scope to back fill ash in running mine even though OPGC proposed for a partition bund to separate the void space from active mine for ash back filling.
- vi. In a high-level meeting held on 13.12.2013 under the Chairmanship of Chief Secretary, GoO, directions for allotment of BOCM mine void to OPGCL were issued to MCL on 03.04.2014 by Dept. of Environment & Forest, GoO. The said directions were for taking expeditious steps on this front. However, there has not been any progress as yet.
- vii. In a letter dated 10.08.2020 OPGC had again requested Director Technical for allotment of BOCM mine void, however the request was turned down stating various technical causes.
- viii. In a letter dated 14.06.2021 OPGC had again requested Director Technical for allotment of BOCM mine void, however the request was turned down vide MCL letter No253H, dated 07.08.2021 stating the reason of excavation of bottom seam and integration of Lakhanpur, Belpahar & Lilari mines.

****However, OPGC is still working on high priority to pursue MCL, involving Government & other agency to get newly allotted nearest mine void to fulfill this important regulatory obligation.***

Efforts made by OPGCL to Maximise Utilisation of Fly-Ash:

1. OPGCL has installed its own Fly-Ash brick plant with production capacity of 10,000 bricks per day, and steps have been made for all the bricks that are produced being utilised in all the ongoing and upcoming construction activities of OPGC.
2. Further, not only is OPGCL utilizing the Fly-Ash generated from its own Project in its own brick plant, OPGCL is also supplying Fly-Ash to 10 (ten) ash brick plants, which are located in and around the site of OPGCL's Project.
3. In order to further incentivize these brick plants to utilise the Fly-Ash from OPGCL's Project, OPGCL has extended a subsidy of Rs 150 per MT for use of Fly-Ash at its cost. However, ash utilization in brick manufacturing is limited to 2-3 % due to poor market demand.
4. Another avenue for Fly-Ash utilization which OPGC has explored is use in major road construction activities undertaken close to Jharsuguda or beyond Jharsuguda. The Fly-Ash demands for these activities are met by other TPPs, which are closer to the road construction areas. However, OPGCL still managed to supply 8830 MT of ash for road construction in the FY 2018-19.
5. OPGCL has entered into an agreement with Visveswariya National Institute of Technology, Nagpur ("VNIT") to devise technological advancements for enhancing ash percentage up to 90% in production of bricks and for geopolymeric use of ash in road construction.
6. Transportation subsidy of Rs 150/- per MT has been extended by OPGCL for enhancing ash utilization in areas of manufacturing of ash brick, other Fly-Ash-based products, cement/asbestos manufacturing & road construction.
7. OPGCL has been conducting various ash utilization awareness campaigns in the nearby community by way of street plays, distribution of pamphlets, etc.

8. Strong initiatives have been taken to identify low lying area/ stone quarries in the vicinity. Publications have been made in local newspapers for execution of low land reclamation to supply ash free of cost to the owner for proper utilization of abandoned low land. OPGC now is in process of reclaiming 3 low lying areas of 6.17 acres, 1.4 acres & 1.12 acres for which consent has been taken from State Pollution Control Board, Odisha.
9. Action has been initiated to utilise ash in OPGC expansion project MGR line construction.
10. Working to get mine voids allotment from MCL.
11. OPGCL has ensured that Fly-Ash ash is utilised, instead of precious earth, in the construction of embankment for ash pond as well as raising of bund height for ash pond.
12. OPGCL has also awarded a consultancy order to Centre For Fly Ash Research & Management ("C-FARM") headed by Dr. Vimal Kumar (Former Mission Director & Head, Fly-Ash Unit, Department of Science and Technology, Government of India) for scientific and technical advice for obtaining "Consent for mine void filling with fly ash". C-FARM is continuously deliberating with MCL, as well as with Central Mine Planning and Design Institute, on behalf of OPGCL for allotment of mine void for stowing with ash.

PART – F

Indicate disposal practice adopted for Hazardous as well as solid waste

A. Hazardous Wastes:

OPGC has obtained Hazardous Waste Authorization from OSPCB for Collection & Storage of Hazardous waste valid up to 31st March 2021.

Used Oil and grease are periodically collected from different location within plant & stored at designated place with concrete flooring, shed and secondary containment. The same is then transferred to a central storage area. This is being disposed to recyclers/re-processors having authorization & valid consent from SPCB & registered under CPCB.

Spent resin is temporarily stored in identified impervious pits at ITPS. It has been planned to dispose of the same in CHWTSDF. Asbestos generated from conveyer roofs as a phase out plan is disposed in underground pits within the plant premises. Discarded chemical containers are mostly returned to the Chemical suppliers against supply of fresh chemical supply.

E- Wastes are stored in designated places under concrete floor & shed. Inventorization of the same has been made & intimated to OSPCB. OPGC has signed lifetime membership agreement with M/S Ramky Enviro Engineers for disposal of non-soluble, non-incinerable and non-recyclable hazardous wastes at Common Hazardous Wastes Treatment Storage and Disposal Facility (CHWTSDF), Jajpur.

New Batteries are procured from Battery suppliers against buy back of used/waste batteries.

B. Fly Ash and Bottom Ash

OPGC has both wet ash disposal system as well as dry ash disposal system at ITPS for handling the main solid waste i.e. fly ash & bottom ash. OPGC has 03 Ash Ponds i.e.

- i. Ash Pond A- 150 Acres
- ii. Ash Pond B- 242 Acres

iii. Ash Pond C- 115 Acres.

Ash pond B was exhausted in August 2007 and thereafter a study was conducted through IIT, Madras where it was recommended to go for another 03-meter Dry Ash Mounds on the Pond B. Based on which OPGC has constructed Ash Mounds on the Pond successfully.

Ash pond A is in partial operation and ash is evacuated from ash Pond A for utilization in low lying areas reclamation and road construction.

Ash Pond-C is operational, and ash is disposed in form of lean slurry.

Dry ash collection facility with 500 MT capacities Storage Silo for utilization of dry fly ash by Cement Industries & ash brick/block manufacturing units is already in place. The ash collected in this Silo is from Field 2 of ESPs suitable for Cement & Brick production. Provision has been made for additional storage and collection facility (60 T/Hr with Storage facility of 120 MT) from 1st fields of ESPs. This dry ash collection facility is made for adequate dry ash availability in utilizing ash in low land reclamation and road construction.

C. Other Solid Waste of Plant and Colony (Bio-degradable)

Solid Waste of plant other than Fly Ash & Bottom Ash, like ferrous & non-ferrous scraps are collected regularly from different sites & deposited in the designated scrap yard for selling.

Kitchen waste is collected from Plant Canteen, Colony, Guest House, ITPS Market etc. and segregated as biodegradable and non-biodegradable is being disposed in an eco-friendly manner in a 1.0 Ton Capacity Bio-Gas Plant with zero effluent discharge.

Other biodegradable waste of plant & colony is regularly collected from different places & disposed on OPGC land. Domestic effluent from Plant is disposed through Septic Tanks and Soak Pits and Sewage from colony is treated in 1.0 MLD capacity Sewage Treatment Plant (STP) with zero effluent discharge. Treated Sewage is reused for watering green belt and also used in Park for horticulture purpose.

D. Bio-medical Waste

OPGC has 18-bedded Hospital at ITPS without any Operation Theatre. Bio-medical waste is mainly non-toxic in nature and the quantity is insignificant. Wastes are treated and disposed following the prescribed method as stipulated in Bio medical waste authorization issued by OSPCB vide letter No 3994 Dated 31.03.2018 & valid till 31.03.2021. OPGC has also obtained Consent to Operate under Water Act from OSPCB vide letter no 15440/IND-I-CON-6658 dated 27.12.2018 and valid till 31.03.2021

E. Plastic waste

Plastic waste is being segregated from Colony Garbage and packed in gunny bags. The gunny bags containing plastics are being stored in a designated place at township. The same is being given to plastic waste recycler. Process has been initiated to dispose the same through co-processing in cement plant of M/s ACC Limited. Formal agreement is already in place for disposal.

OPGC has declared no usage of plastic carry bags in colony and plant area. Regular campaigns are made to restrict the use of plastic carry bags in township and peripheral areas. OPGC has distributed Jute carry bags to all its employees to promote non usage of plastic carry bags.

PART – G

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

- By adopting appropriate technology, operation & maintenance, monitoring practices and pollution control measures, OPGC has been successful in conserving coal, oil, water & energy through reduce /reuse/recycle.
- Through 100% Ash Water re-cycling system and maximum reuse of other liquid effluents is in process, not only control & prevention of water pollution takes place but also optimization of fresh water makeup has been taking place. Specific water consumption remains less than 3KL/MWH which indicates effective water conservation.
- Fuel oil consumption is monitored and controlled with minimum Unit light up periods and reducing number of Unit trips.
- Lubricant consumption is also monitored regularly to reduce its consumption.
- All bricks used for civil maintenance activities inside the plant are of ash bricks.
- Pond ash is being used for ash mound preparation & also for ash dyke height raising, thereby conserving soil for dyke height raising as well as increasing ash pond life.
- LED light and solar panel have led significant conservation of energy in township, as pond and street lighting

B. IMPACT OF POLLUTION CONTROL MEASURES ON COST OF PRODUCTION:

Cost of production reduces due to

1. Process optimization to operate plant with reduced emission and higher efficiency.
2. Conservation of resources used as input (Coal, Oil, Water.)
3. Waste utilization & eco-friendly and cost-effective disposal means (Solid waste and hazardous waste).

The additional investment and the above benefits balance some way by treating the pollution control and mitigation is integrated with overall efficiency of the plant and cost of the production

PART – H

Additional investment proposal for Environmental protection abatement of pollution,

Prevention of pollution

1. Utilization of ash in low lying areas, brick plants/asbestos- 700 lakh
2. Tree Plantation/Green belt development- 30 lakh
3. Installation of mist sprayer for dust suppression -7 Lakhs
4. Installation of 2 Nos of 5 Kg/hr capacity incinerator for sanitary waste disposal- 7 Lakhs
5. Effective Ash dispersion control in Ash Pond at the time of turbulent wind flow- 30 lakh

Environment Statement

C. Other Solid Waste of Plant and Colony (Bio-degradable)

Solid Waste of plant other than Fly Ash & Bottom Ash, like ferrous & non-ferrous scraps are collected regularly from different sites & deposited in the designated scrap yard for selling.

Kitchen waste is collected from Plant Canteen, Colony, Guest House, ITPS Market etc. and segregated as biodegradable and non-biodegradable is being disposed in an eco-friendly manner in a 1.0 Ton Capacity Bio-Gas Plant with zero effluent discharge.

Other biodegradable waste of plant & colony is regularly collected from different places & disposed on OPGC land. Domestic effluent from Plant is disposed through Septic Tanks and Soak Pits and Sewage from colony is treated in 1.0 MLD capacity Sewage Treatment Plant (STP) with zero effluent discharge. Facility for pumping of sewage generated from office buildings to centralized STP at township is under progress. Treated Sewage is reused for watering green belt and also used in Park for horticulture purpose.

D. Bio-medical Waste

OPGC has 18-bedded Hospital at ITPS without any Operation Theatre. Bio-medical waste is mainly non-toxic in nature and the quantity is insignificant. Wastes are treated and disposed following the prescribed method as stipulated in Bio medical waste authorization issued by OSPCB vide letter No 3994 Dated 31.03.2018 & valid till 31.03.2021. OPGC has also obtained Consent to Operate under Water Act from OSPCB vide letter no 15440/IND-I-CON-6658 dated 27.12.2018 and valid till 31.03.2021

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OPGC has declared no usage of plastic carry bags in colony and plant area. Regular campaigns are made to restrict the use of plastic carry bags in township and peripheral areas. OPGC has distributed Jute carry bags to all its employees to promote non usage of plastic carry bags.

PART – G

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

- By adopting appropriate technology, operation & maintenance, monitoring practices and pollution control measures, OPGC has been successful in conserving coal, oil, water & energy through reduce /reuse/recycle.
- Through 100% Ash Water re-cycling system and maximum reuse of other liquid effluents is in process, not only control & prevention of water pollution takes place but also optimization of fresh water makeup has been taking place. Specific water consumption remains less than 2.73KL/MWH against the norm of 3.5 KL/MWH. Process optimization is under progress to reduce it further to less than 2.5 KL/MWH.
- Fuel oil consumption is monitored and controlled with minimum Unit light up periods and reducing number of Unit trips.

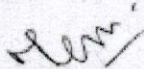


5. Effective Ash dispersion control in Ash Pond at the time of turbulent wind flow- 30 lakh
6. Ash Disposal line replacement to reduce the risk of pipe line failure- 25 lakh
7. Hazardous waste disposal-15 Lakhs
8. Maintenance of online analysers-10 Lakhs
9. ISO 14001:2015 recertification-2.5 Lakhs
10. Installation of camera for real time video transmission through RTDAS- 8 Lakhs

PART- I

Any other particulars for improving the quality of environment.

- Complying with the directions and conditions of state and central pollution boards.
- Environment Management by establishing ISO 14001:2015 EMS and Global EMS standard.
- Fine tuning of ESPs of both the Units for achieving desired emission level.
- Adequate plantation and greenbelt developed to minimise air as well as noise pollution. Planted approx. 3.22 lakh trees. 34.6% greenbelt and plantation exists in and around plant and colony premises.
- Water conservation by 100% Ash water recirculation and other effluents recycle & reuse. All the plant effluent is also getting recycled back in process.
- Housekeeping has been given highest priority. Plant & Colony premises are maintained clean all the time. Roads are black turfed to control fugitive emission. Colour coded bins have been provided at all generation points for proper segregation and management of wastes.
- Water, Coal, Oil & Ash leakages & spillages are being controlled at the source itself to maintain clean work place and clean environment.
- Provided HDPE Lining on New Ash Pond (Ash Pond C) to minimize water pollution. Ash dykes are extra strengthened to prevent dyke failure.
- Implemented sound wastes management practices.
- Carrying out regular environmental audits by competent auditors and taking timely corrective measures.
- Carrying out Annual Hydrogeological study for studying characteristics of aquifers and quality of ground water.


Manas Ranjan Rout
Director (Operations), OPGC

Environment Statement

ENVIRONMENTAL STATEMENT

**Odisha Power Generation Corporation Ltd
Ib Thermal Power Station**

Banharpali, Jharsuguda

(2 x 660 MW)

PERIOD FROM 1st APRIL 2020 TO 31st MARCH 2021

(FORM – V)

(See Rule 14)

Environmental Statement Report for the Financial Year ending the 31st March, 2020.

PART – A

- i. Name and address of the Owner/Occupier of the Industry : **Mr. Manas Ranjan Rout**
Odisha Power Generation Corp. Ltd.
1b Thermal Power Station
Banharpali, Jharsuguda
Pin Code- 768234
Site Office-Ph.06645-222220, Fax. 222230
Corp. Office- 06742303754, Fax. 2303755
- ii. Production Capacity : 1320 MW (2X660 MW)
- iii. Year of Establishment : Unit#3-03.07.2019
Unit#4-21.08.2019
- iv. Date of last Environment Statement submitted : 28.09.2021
- v. Industry category : Thermal Power Plant

PART – B

(Water and Raw Material Consumption)

(All values indicate Annual consumption) in m³/day

Sl.	Description	2019-2020	2019-2020
(i)	Gross Energy Generation (MU):	3852.248	5967.429
(ii)	Total Water consumption/day:	28835	46700
(iii)	Ash disposal make up, Process NEBD:	No fresh water used for handling ash	No fresh water used for handling ash
(iv)	Cooling, Spraying, Boiler Feed:	25951	41563
(v)	Domestic*: (Excluding Township)	Reported under OPGC-1 (2x210 MW)	Reported under OPGC-1 (2x210 MW)
(vi)	Process, EBD	2883	5137

Sl No	Name of the product	Process Water Consumption per Unit of Product Output	
		2019-20	2020-21
01	Electricity	2.73 KL/MWH	2.86 KL/MWH

Name of Raw Material	Name of the product	Consumption of Raw Material unit of output			
		2019-20		2020-21	
Coal	Electricity	Total Consumption	2906481MT	Total Consumption	4762143MT
		Specific Consumption	0.754 Kg/KWH	Specific Consumption	0.798 Kg/KWH
Start-up Fuel Oil (LDO)	Electricity	Total Consumption	5521.23 KL	Total Consumption	2301.33 KL
		Specific Consumption	1.433 ml/KWH	Specific Consumption	0.386 ml/KWH

PART – C
Pollution discharged to Environment and Pollution Level

PERIOD- April 2020 TO March 2021								
STACK EMISSION								
PARAMETER	NORM	STACK #3			NORM	STACK #4		
		MAX.	MIN.	AVE.		MAX.	MIN.	AVE.
PM (mg/Nm ³)	50	47	39	43	50	49	35	40
SO ₂ (mg/Nm ³)	200	1907	1035	1612	200	1900	1313	1717
NO _x (mg/Nm ³)	450	403	260	362	450	401	234	362
AMBIENT AIR QUALITY								
PARAMETER	NORM	INDUSTRIAL			NORM	RESIDENTIAL		
		MAX.	MIN.	AVE.		MAX.	MIN.	AVE.
PM ₁₀ ug/m ³	100	96	12	61	100	91	14	61
PM _{2.5} ug/m ³	60	56	9	31	60	55	7	29
SO ₂ (ug/m ³)	80	18	10	13	80	12	7	9
NO _x (ug/m ³)	80	33	11	22	80	27	10	18
STP WATER QUALITY					AMBIENT NOISE in dB(A)			
PARAMETER	NORM	MAX	MIN	AVE.	INDUSTRIAL		RESIDENTIAL	
					MAX.	MIN.	MAX.	MIN.
pH	6.5 – 9.0	7.52	7.06	7.3	MAX.	MIN.	MAX.	MIN.
TSS, mg/ltr	100	52	31	40	DAY TIME			
BOD(3 days at 27°C), mg/ltr	30	8	7	7	NORM			
COD, mg/ltr	250	32	24	29	75		55	
Total Nitrogen(as N)	10	6.5	5.1	5.8	72	66	49	40
Ammonical Nitrogen(as NH ₃ -N)	50	3.8	2.4	3.2	NIGHT TIME			
Total coliform	--	440	6	264.5	NORM			
Fecal coliform	<1000	84	49	66	70		45	
					69	42	42	35

OPGC has installed continuous emission monitoring system for both the stacks, four continuous ambient air quality monitoring stations and one continuous effluent monitoring station for round the clock monitoring and control of emission/pollution parameters. These stations are connected to SPCB & CPCB servers through real time data acquisition and transmission facility. The plant has achieved zero effluent discharge from December'18 onwards and till December'18 only 1 % effluent had been discharged after meeting the norms.

Environment Statement

**PART – D
HAZARDOUS WASTES**

(As specified under Hazardous wastes/management & Handling Rules, 2008)

A. From Process:

Hazardous Waste Types	2019-20				2020-21			
	Opening stock	Generation	Sold/ Disposed	Balance	Opening stock	Generation	Sold/ Disposed	Balance
Used oil/Spent oil	Nil	1 KL	Nil	1 KL	1 KL	30.625 KL	Nil	31.625 KL
a. Used Lub. Oil : KL	a. 0 KL	a. 1 KL	a. Nil	a. 1 KL	a. 1 KL	a. 30.625 KL		
b. Used Grease: MT	b. 0 MT	b. Nil	b. Nil	b. Nil	b. Nil	b. Nil		
c. Used Transformer Oil:KL	c. 0 KL	c. Nil	c. Nil	c. Nil	c. Nil	c. Nil		
Sludge contaminated with oil: KL	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Spent ion exchange resin, MT	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Waste Residue Containing Oil	0	1 MT	Nil	1 MT	1 MT	1.5 MT	Nil	2.5 MT
Used batteries(Nos.)	Nil	Nil	Nil	Nil	Nil	292 Nos	26 Nos	266 Nos

B. From Pollution Control Facilities: No generation

**PART – E
SOLID WASTES**

A. Ash:

Solid Wastes (Ash):	Total Quantity (MT)	
	2019-20	2019-20
From Process	246745 MT (Bottom Ash)	425118 MT (Bottom Ash)
From Pollution Control Facilities	986979 MT (Fly Ash)	1700458 MT (Fly Ash)
Quantity Utilized	213978 MT	484577 MT
Disposed in Ash Pond	1019746 MT	1640999 MT

Reasons for variation from the target

1. Since the plant is situated in a remote location (pit head power plant located in rural area) there is very limited scope of ash utilization in brick manufacturing. More ever utilization in this particular area cannot exceed more than 2% to 3%.
2. Big stone quarry or low lands are not available in the locality.
3. Export of ash is not feasible since the site is located at a distance of 500 Km from the nearest port. Transportation from site to nearest port through rail or any other means is not feasible.

4. Major road construction activities are taking place near Jharsuguda (Expansion of Sambalpur Rourkela Sate Highway No-10 & Expansion of Sambalpur National Highway No-42). The ash demands for these activities are met by other thermal power plants, close to the road construction areas. However, we have supplied around 8830 MT of ash in the last financial year for construction of road.

5. No scope available in major ash utilization area i.e. Cement Plant use for production of PPC cement. Only one cement plant is available in the vicinity i.e. M/s Ultratech Cement Ltd. M/s Ultratech off takes entire quantity of ash for cement manufacturing from its sister concern i.e. from M/s Aditya Aluminium (Lapanga).

6. Considering OPGC plant's location (Pit Head), mine void back filling of ash is the only means of utilization by which OPGC can achieve 100% ash utilization. The steps so far are as follows.

- i. There was progress on mine void allotment in the year 2006. With the support from Regional Office, MoEF and SPCB, MCL has consented to allot Lilari mine void to OPGC. Subsequently, in July 2007, MCL accorded consent for taking up EIA & Feasibility Study for back filling in the void based on which OPGC engaged CIMFR to conduct the studies in October 2007. During the course of the EIA study, the consent given to OPGC was withdrawn by MCL unilaterally vide their letter No MCL-3185/13.02.2008 stating "the life of Lilari Mine is extended with ten more years". Thereafter, OPGC has been pursuing MCL time and again involving regulatory as well as Govt. to reconsider the withdrawal or consider allotting any other mine void near to OPGC site but there has been no progress.
- ii. State Pollution Control Board, Odisha made a proceeding on 05.06.10 for backfilling of OPGC ash in BOCM Mine void of MCL as an alternative solution against allotment of Lilari Mine void but no initiative has been taken so far from MCL side.
- iii. MCL has also been directed repeatedly by OPGC Chairman & Principal Secretary, Energy, Govt of Odisha, managing Director and Director (Operation) but no positive response has so far been received from MCL.
- iv. In a meeting held on 24.01.2011 with Principal secretary Energy, Govt. of Odisha, CMD, MCL has given consent to give principal approval for back filling BOCM mind void but the same has not been done, so far.
- v. In response to the letter of Director (Operation), OPGC, dtd.24.08.2013 on the subject, Director (Tech. P&P), MCL negated the request on the ground of BOCM expansion towards dip slide and no scope to back fill ash in running mine even though OPGC proposed for a partition bund to separate the void space from active mine for ash back filling.
- vi. In a high-level meeting held on 13.12.2013 under the Chairmanship of Chief Secretary, GoO, directions for allotment of BOCM mine void to OPGCL were issued to MCL on 03.04.2014 by Dept. of Environment & Forest, GoO. The said directions were for taking expeditious steps on this front. However, there has not been any progress as yet.

vii. In a letter dated 10.08.2020 OPGC had again requested Director Technical for allotment of BOCM mine void, however the request was turned down stating various technical causes.

viii. In a letter dated 14.06.2021 OPGC had again requested Director Technical for allotment of BOCM mine void, however the request was turned down vide MCL letter No253H, dated 07.08.2021 stating the reason of excavation of bottom seam and integration of Lakhanpur, Belpahar & Lilari mines.

****However, OPGC is still working on high priority to pursue MCL, involving Government & other agency to get newly allotted nearest mine void to fulfill this important regulatory obligation.***

Efforts made by OPGCL to Maximise Utilisation of Fly-Ash:

1. OPGCL has installed its own Fly-Ash brick plant with production capacity of 10,000 bricks per day, and steps have been made for all the bricks that are produced being utilised in all the ongoing and upcoming construction activities of OPGC.
2. Further, not only is OPGCL utilizing the Fly-Ash generated from its own Project in its own brick plant, OPGCL is also supplying Fly-Ash to 10 (ten) ash brick plants, which are located in and around the site of OPGCL's Project.
3. In order to further incentivise these brick plants to utilise the Fly-Ash from OPGCL's Project, OPGCL has extended a subsidy of Rs 150 per MT for use of Fly-Ash at its cost. However, ash utilization in brick manufacturing is limited to 2-3 % due to poor market demand.
4. Another avenue for Fly-Ash utilization which OPGC has explored is use in major road construction activities undertaken close to Jharsuguda or beyond Jharsuguda. The Fly-Ash demands for these activities are met by other TPPs, which are closer to the road construction areas. However, OPGCL still managed to supply 8830 MT of ash for road construction in the FY 2018-19.
5. OPGCL has entered into an agreement with Visveswariya National Institute of Technology, Nagpur ("VNIT") to devise technological advancements for enhancing ash percentage up to 90% in production of bricks and for geopolymeric use of ash in road construction.
6. Transportation subsidy of Rs 150/- per MT has been extended by OPGCL for enhancing ash utilization in areas of manufacturing of ash brick, other Fly-Ash-based products, cement/asbestos manufacturing & road construction.
7. OPGCL has been conducting various ash utilization awareness campaigns in the nearby community by way of street plays, distribution of pamphlets, etc.
8. Strong initiatives have been taken to identify low lying area/ stone quarries in the vicinity. Publications have been made in local newspapers for execution of low land reclamation to supply ash free of cost to the owner for proper utilization of abandoned low land. OPGC now is in process of reclaiming 3 low lying areas of 6.17 acres, 1.4 acres & 1.12 acres for which consent has been taken from State Pollution Control Board, Odisha.
9. Action has been initiated to utilise ash in OPGC expansion project MGR line construction.
10. Working to get mine voids allotment from MCL.
11. OPGCL has ensured that Fly-Ash ash is utilised, instead of precious earth, in the construction of embankment for ash pond as well as raising of bund height for ash pond.

12. OPGCL has also awarded a consultancy order to Centre For Fly Ash Research & Management ("C-FARM") headed by Dr. Vimal Kumar (Former Mission Director & Head, Fly-Ash Unit, Department of Science and Technology, Government of India) for scientific and technical advice for obtaining "Consent for mine void filling with fly ash". C-FARM is continuously deliberating with MCL, as well as with Central Mine Planning and Design Institute, on behalf of OPGCL for allotment of mine void for stowing with ash.

PART – F

Indicate disposal practice adopted for Hazardous as well as solid waste

A. Hazardous Wastes:

OPGC has obtained Hazardous Waste Authorization from OSPCB for Collection & Storage of Hazardous waste valid up to 31st March 2024.

Used Oil and grease are periodically collected from different location within plant & stored at designated place with concrete flooring, shed and secondary containment. The same is then transferred to a central storage area. This is being disposed to recyclers/re-processors having authorization & valid consent from SPCB & registered under CPCB.

Spent resin is temporarily stored in identified impervious pits at ITPS. It has been planned to dispose of the same in CHWTSDF. Discarded chemical containers are mostly returned to the Chemical suppliers against supply of fresh chemical supply. Used oil drums are disposed along with used oil.

E- Wastes are stored in designated places under concrete floor & shed. Inventorization of the same has been made & intimated to OSPCB. OPGC has signed lifetime membership agreement with M/S Ramky Enviro Engineers for disposal of non-soluble, non-incinerable and non-recyclable hazardous wastes at Common Hazardous Wastes Treatment Storage and Disposal Facility (CHWTSDF), Jajpur. OPGC is in discussion with M/s Ramky for disposal of temporarily stored wastes (Spent resins & Asbestos).

New Batteries are procured from Battery suppliers against buy back of used/waste batteries.

B. Fly Ash and Bottom Ash

OPGC has both wet ash disposal system as well as dry ash disposal system at ITPS for handling the main solid waste i.e. fly ash & bottom ash. OPGC-2 (2X660 MW) has 02 Ash Ponds i.e.

- i. Tilia Phase-1 Ash Pond-125 Acres
- ii. Tilia Phase-2 Ash Pond- 180 Acres

Tilia Phase-1 Ash Pond has started operation since 24.07.2020 and the ash generated from OPGC-2 was disposed in Ash Pond-C of OPGC-1, temporarily till 23.07.2020 through HCSD for Fly Ash & LCSD for bottom ash. Dry ash collection facility with 8100 MT capacities (3 nos of silos of 2700 MT capacity each) Storage Silo for utilization of dry fly ash by Cement Industries & ash brick/block manufacturing units is already in place. Provisions have been made for evacuation of ash through rail directly from the silos.

C. Other Solid Waste of Plant and Colony (Bio-degradable)

Solid Waste of plant other than Fly Ash & Bottom Ash, like ferrous & non-ferrous scraps are collected regularly from different sites & deposited in the designated scrap yard for selling.

Kitchen waste is collected from Plant Canteen, Colony, Guest House, ITPS Market etc. and segregated as biodegradable and non-biodegradable is being disposed in an eco-friendly manner in a 1.0 Ton Capacity Bio-Gas Plant with zero effluent discharge.

Other biodegradable waste of plant & colony is regularly collected from different places & disposed on OPGC land. Domestic effluent from Plant is disposed through Septic Tanks and Soak Pits and Sewage from colony is treated in 1.0 MLD capacity Sewage Treatment Plant (STP) with zero effluent discharge. Facility for pumping of sewage generated from office buildings to centralized STP at township is under progress. Treated Sewage is reused for watering green belt and also used in Park for horticulture purpose.

D. Bio-medical Waste

OPGC has 18-bedded Hospital at ITPS without any Operation Theatre. Bio-medical waste is mainly non-toxic in nature and the quantity is insignificant. Wastes are treated and disposed following the prescribed method as stipulated in Bio medical waste authorization issued by OSPCB vide letter No 4732 Dated 23.03.2021 & valid till 31.03.2026. OPGC has also obtained Consent to Operate under Water Act from OSPCB vide letter no 15440/IND-I-CON-6658 dated 27.12.2018 and valid till 31.03.2021(Not applicable at present since hospital is less than 30 bed i.e. 18 beds.

E. Plastic waste

Plastic waste is being segregated from Colony Garbage and packed in gunny bags. The gunny bags containing plastics are being stored in a designated place at township. The same is being given to plastic waste recycler. Process has been initiated to dispose the same through co-processing in cement plant of M/s ACC Limited. Formal agreement is already in place for disposal.

OPGC has declared no usage of plastic carry bags in colony and plant area. Regular campaigns are made to restrict the use of plastic carry bags in township and peripheral areas. OPGC has distributed Jute carry bags to all its employees to promote non usage of plastic carry bags.

PART – G

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

- By adopting appropriate technology, operation & maintenance, monitoring practices and pollution control measures, OPGC has been successful in conserving coal, oil, water & energy through reduce /reuse/recycle.
- Through 100% Ash Water re-cycling system and maximum reuse of other liquid effluents is in process, not only control & prevention of water pollution takes place but also optimization of fresh water makeup has been taking place. Specific water consumption remains less than 2.73KL/MWH against the norm of 3.5 KL/MWH. Process optimization is under progress to reduce it further to less than 2.5 KL/MWH.

- Lubricant consumption is also monitored regularly to reduce its consumption.
- All bricks used for civil maintenance activities inside the plant are of ash bricks.
- Pond ash is being used for ash mound preparation & also for ash dyke height raising, thereby conserving soil for dyke height raising as well as increasing ash pond life.
- LED light and solar panel have led significant conservation of energy in township, as pond and street lighting

B. IMPACT OF POLLUTION CONTROL MEASURES ON COST OF PRODUCTION:

Cost of production reduces due to

1. Process optimization to operate plant with reduced emission and higher efficiency.
2. Conservation of resources used as input (Coal, Oil, Water.)
3. Waste utilization & eco-friendly and cost-effective disposal means (Solid waste and hazardous waste).

The additional investment and the above benefits balance some way by treating the pollution control and mitigation is integrated with overall efficiency of the plant and cost of the production

PART – H

Additional investment proposal for Environmental protection abatement of pollution,

Prevention of pollution

1. Utilization of ash in low lying areas, brick plants/asbestos- 1000 lakh
2. Utilization in Cement Industries-800 Lakhs
3. Tree Plantation/Green belt development- 40 lakh
4. Installation of mist sprayer for dust suppression -6 Lakhs
5. Installation of 2 Nos of 5 Kg/hr capacity incinerator for sanitary waste disposal- 25 Lakhs
6. Tree sapling distribution in the peripheral villages- 1.5 Lakhs
7. Effective Ash dispersion control in Ash Pond at the time of turbulent wind flow- 30 lakh
8. Ash Disposal line replacement to reduce the risk of pipe line failure- 50 lakh
9. Hazardous waste disposal-15 Lakhs
10. Maintenance of online analysers-15 Lakhs
11. ISO 14001:2015 -3 Lakhs
12. Carrying out bird nesting for improvement of biodiversity-10 Lakhs
13. Installation of Flow meters- 20 Lakhs



PART- I

Any other particulars for improving the quality of environment.

- Complying with the directions and conditions of state and central pollution boards.
- Environment Management by establishing ISO 14001:2015 EMS and Global EMS standard.
- Fine tuning of ESPs of both the Units for achieving desired emission level.
- Adequate plantation and greenbelt developed to minimise air as well as noise pollution. Planted approx. 3.22 lakh trees. 34.6% greenbelt and plantation exists in and around plant and colony premises.
- Water conservation by 100% Ash water recirculation and other effluents recycle & reuse. All the plant effluent is also getting recycled back in process.
- Housekeeping has been given highest priority. Plant & Colony premises are maintained clean all the time. Roads are black turfed to control fugitive emission. Colour coded bins have been provided at all generation points for proper segregation and management of wastes.
- Water, Coal, Oil & Ash leakages & spillages are being controlled at the source itself to maintain clean work place and clean environment.
- Provided HDPE Lining on New Ash Pond (Tilia Phase-1 & Phase-2 Ash Ponds) to minimize water pollution. Ash dykes are extra strengthened to prevent dyke failure.
- Implemented sound wastes management practices.
- Carrying out regular environmental audits by competent auditors and taking timely corrective measures.
- Carrying out Annual Hydrogeological study for studying characteristics of aquifers and quality of ground water. The Annual Hydrogeological study is vetted through IIT Madras.

Manas Ranjan Rout
Director (Operations) & Occupier

Environment Statement