

ODISHA POWER GENERATION CORPORATION LTD.

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

Ib 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/7275/WE
November 29, 2022

The Additional Director (S)

Ministry of Environment Forests & Climate Change
Eastern Regional Office
A/3, Chandrasekharpur
Bhubaneswar – 751023

Sub.: **Half yearly Environmental Status Report of Odisha Power Generation Corporation (2X660 MW ITPS),
Banharpali, Dist. Jharsuguda for the period from April 2022- September 2022.**

Ref.: **ITPS Environmental Clearance No. No-J-13011/59/2008 for 2X660 MW Unit#3 & Unit#4 & Subsequent
Amendments**

Dear Sir,

This has reference to the above subject and cited references.

Kindly find enclosed the half-yearly Environmental Status report of Odisha Power Generation Corporation (2X660 MW ITPS) for the period from **April 2022- September 2022.**

We have also uploaded the half yearly compliance status for the mentioned period in OPGC **website-
www.opgc.co.in** for your ready reference and kind perusal.

Thanking you

Sincerely yours,

Manas Ranjan Rout
29.11.22

Manas Ranjan Rout

Director (Operations) & Occupier

Enclosures as above

CC: Member Secretary, State Pollution Control Board, Odisha, Bhubaneswar – 751 012

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

CI. No.	EC Conditions	Compliance Status
4. (i)	It shall be ensured that natural drainage in the area is not disturbed due to any activity associated with operation or development of the power plant.	The original natural drainage status has been maintained in the project area. The same will not be disturbed in future.
4. (ii)	The height of the existing ash pond shall not be increased to accommodate fresh disposal of ash slurry.	<ul style="list-style-type: none"> • The height of the existing ash pond (Ash Pond- A & Ash Pond-B) will not be increased to accommodate fresh disposal of ash slurry from the expansion (Unit 3 & 4). • Ash from Units 3 & 4 shall not be disposed in that time existing ash ponds i.e. (Ash Pond A & B). OPGC has constructed dedicated Ash Pond for its Unit#3 & Unit#4 at Tilia (Phase-1 & Phsase-2 Ash Ponds)
4.(iii)	Wildlife conservation plan prepared in consultation with the office of the concerned Chief Wildlife Warden shall be implemented before any expansion activity is undertaken. The status of implementation shall be submitted to the Regional Office of the Ministry within six months and from time to time.	<ul style="list-style-type: none"> • The Site-Specific Wild Life Conservation Plan (SSWLCP) for the power plant has been prepared and got approved from Chief Wildlife Warden, Odisha on dtd. 12th June 2014. • The payment of amount Rs 6, 62, 92,000 for execution of SSWLCP was made on 18.07.2014 to Odisha CAMPA account. This payment was communicated to Forest Dept; Odisha vide our letter no 2161/WE on Dtd 19.07.2014. • Besides the above, OPGC has already spend Rs 66 lakh towards plantation activities against the plantation requirement mentioned in approved wild life management plan & is in process of planting additional saplings of forest and indigenous species in the FY 2022-23.
4. (iv)	Hydro-geological study of the area shall be reviewed annually, and results submitted to the Ministry and concerned agency in the State Govt. In case adverse impact on ground water quantity and quality is observed, immediate mitigating steps to contain any adverse impact on	<ul style="list-style-type: none"> • First hydrogeological study was carried out in the year 2014-15. In the study, no such adverse impact was observed. The report was submitted to the Ministry & OSPCB. Thereafter yearly review study has been conducted with no observance of adverse impact so far. • Now, a comprehensive detailed Hydrogeological study covering the plant and ash pond area was carried out during 2018-19 & 2019-20. No adverse impact was observed from the study. The report is enclosed as Annexure-1.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	ground water shall be undertaken.	<ul style="list-style-type: none"> • Piezometers have been installed in existing ash pond and periodic monitoring is being carried out. Six nos. of Bore wells have been constructed in the identified locations covering all directions of the plant and ash pond for collection of water samples.
4. (v)	A twin flue stack of 275 m height shall be provided with continuous online monitoring equipment's for SO _x , NO _x and RSPM (PM _{2.5} & PM ₁₀). Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack shall also be monitored on periodic basis.	<ul style="list-style-type: none"> • A twin flue stacks of 275 meters height have been constructed with sampling port hole and safe access arrangement for carrying out manual monitoring • 2 nos of CEMS have been installed at the twin flue stack for monitoring of SO_x, NO_x and PM parameters and real time data being transferred to SPCB and data transmission to CPCB is in process (analyser serial nos., make, model etc has been sent to CPCB IT section for registering the analysers in their server). • Exit velocity of flue gas has been maintained more than 22 m/sec. • Mercury emission and other emission parameters (PM, SO₂ & NO_x) of flue gas is being monitored periodically from January 2020 onwards through NABL accredited Lab and reports are being submitted. OPGC is also in process of purchasing online mercury analysers for its Unit#3 & Unit#4.
4. (vi)	High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm ³ .	High efficiency ESPs are designed and installed to ensure PM emission less than 50 mg/Nm ³ .
4. (vii)	Adequate dust extraction system such as cyclones/ bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other	<ul style="list-style-type: none"> • Dust extraction systems (Bag Filters) have been provided at Crusher House, Boiler Bunkers, Transfer Towers and vents of Ash Silos to control the fugitive dust emission.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	vulnerable dusty areas shall be provided.	<ul style="list-style-type: none">Dust Suppression Systems (DSS- Dry Fog and Water sprinkling) have been installed at Track hopper, Transfer towers.Rain Gun type water sprinkling systems have been installed at Coal stock yard to control fugitive emission during stacking and reclamation of coal.
4. (viii)	Utilisation of 100% Ash generated shall be made from 4th year of operation of the plant. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.	<ul style="list-style-type: none">Shall be complied.Ash utilization status for the FY 2021-22 has been reported to MoEF & CC vide OPGC Letter No. ITPS 655 (A)/WE, dated 08.04.2021(Enclosed as Annexure -2).
4. (ix)	Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Unutilized fly ash shall be disposed of in the ash pond in the form of slurry form. Mercury and other heavy metals (As, Hg, Cr, and Pb etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed of in low lying area.	<ul style="list-style-type: none">Pneumatic conveyer system with 3 nos of dry ash storage silos have been constructed with capacity of 2300 MT each for storage of ash and for its further utilisation and disposal.Unutilised fly ash is being disposed in the ash pond through HCSD system and Bottom ash is being disposed through LCSD system.Effluent emanating from the existing ash pond is being recycled and reused for fresh slurry making. No ash pond effluent is being discharged outside. The heavy metal in ash and nearby ground water is being monitored periodically, test reports are enclosed as Annexure-6 for kind reference.No ash shall be disposed in low lying area without taking consent from OSPCB.
4. (x)	Ash pond shall be lined with HDP/LDP lining or any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.	HDPE lining has been provided in the ash pond. Dyke safety measures has been addressed during design and construction of ash pond to protect the ash dykes from getting breached. During operation of ash pond, adequate safety measure will also be implemented to avoid breaching of ash dykes.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
4. (xi)	For disposal of Bottom Ash in abandoned Manoharpur mines it shall be ensured that the bottom and sides of the mined-out areas are adequately lined with clay before Bottom Ash is filled up. The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity.	The requirement will be implemented, and approval/clearances will be taken from State Pollution Control Board before undertaking filling of mine void using ash.
4. (xii)	Closed cycle cooling system with natural draft cooling towers shall be provided. The Effluents shall be treated as per the prescribed norms.	<ul style="list-style-type: none"> • Considering the ambient conditions, the plant has been designed with induced draft cooling tower. This deviation request was submitted to Director (Thermal), MoEF vide letter No.565 dated 8 -March-2010 • Considering our request, MoEF has granted its permission for use of Induced Draft Cooling System via EC Amendment dated 22/01/2014. The permission is enclosed as Annexure 3 • The blow down of the IDCT will be utilised in ash handling and dust suppression purpose.
4. (xiii)	COC 5.0 will be adopted.	Being Complied
4. (xiv)	The treated effluents conforming to the prescribed standards only shall be re-circulated and reused within the plant. There shall be no discharge outside the plant boundary except during monsoon. Arrangements shall be made that effluents and storm water do not get mixed.	<ul style="list-style-type: none"> • 200 m3/hour ETP is being installed for treatment and utilisation of waste water generated from the plant. • Zero effluent discharge is being adhered. Effluent drains have been segregated from the Storm water drains.
4. (xv)	A sewage treatment plant shall be provided, and the treated sewage shall be used for raising greenbelt/plantation.	<ul style="list-style-type: none"> • 1 MLD capacity Sewage Treatment Plant has been provided for treatment of sewage generated from colony and office buildings of OPGC Unit#3 & Unit#4. • Treated sewage is being used for raising greenbelt/plantation.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
4. (xvi)	Rainwater harvesting should be adopted. Central Groundwater Authority/ Board shall be consulted for finalization of appropriate rainwater harvesting technology within a period of three months from the date of clearance and details shall be furnished.	<ul style="list-style-type: none"> • The detail study on rain water harvesting technology has already been completed in May-2012 and the report is already finalised. The same was submitted to Central Ground Water Board for review and advice vide letter No. 1612/WE dated 28-June 13. After compliance submission against the observation raised by CGWB and further verification, finally approval accorded by CGWB vide letter no – 5-22/SER/CGWA/2017-18-1455 on dated 07.12.2017. After getting the approval of the technology, the rain harvesting pond design was carried on and construction completed in May'22.
4. (xvii)	Adequate safety measures shall be provided in the plant area to check/minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.	<ul style="list-style-type: none"> • Details of fire protection arrangement at coal yard with lay out map has been submitted to Regional Office, MoEF & CC • Adequate fire hydrant system has been installed in the Coal stock yard and Track hopper site to control spontaneous fire.
4. (xviii)	Storage facilities for auxiliary liquid fuel such as LDO and/ HFO/LSHS shall be made in the plant area in consultation with Department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	<ul style="list-style-type: none"> • Storage facilities for auxiliary liquid fuel has been made in consultation with Dept. of Explosive, Nagpur. Further, the facilities have been brought into operation after getting valid license from Dept. of Explosive, Nagpur. • As regards to Sulphur content, EAC (Thermal) in its monthly meeting held on 18th/19th November 2013 has accorded its consent for the use of commercially available fuel oil. • Emergency response plan has been prepared to handle any emergency
4. (xix)	Regular monitoring of ground water (especially around ash pond and plant areas) shall be carried out by establishing a	<ul style="list-style-type: none"> • Piezometers have been installed in existing ash pond and 6 nos of Bore wells have been constructed in the identified locations covering all directions of the plant and ash pond for collection of water sample.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	<p>network of existing wells and constructing new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (Hg, Cr, As, Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.</p>	<ul style="list-style-type: none"> • Periodic monitoring for heavy metals is being carried out in the ground water samples from ash pond and surrounding area and reports are being submitted to the Regional Office. • The analysis of the ground water samples near the existing ash pond & nearby surrounding villages' shows that the concentration of heavy metals is within the permissible limits. Reports enclosed as Annexure-1 for kind reference
4. (xx)	<p>Monitoring surface water quantity and quality shall also be regularly conducted, and records maintained. The monitored data shall be submitted to the Ministry regularly. Further, monitoring points shall be located between the plant and drainage in the direction of flow of ground water and records maintained. Monitoring for heavy metals in ground water shall be undertaken.</p>	<p>Surface water and ground water quality monitoring is being done regularly. The points for monitoring in the direction of flow of ground water has been determined from the Hydro geological report and monitoring is being carried out accordingly.</p>
4. (xxi)	<p>Green Belt consisting of 3 tiers of plantations of native species around plant and at least 100 m width shall be raised. Wherever 100 m width is not feasible a 50 m width shall be raised, and adequate justification shall be submitted to the Ministry. Tree density shall not less than 2500</p>	<ul style="list-style-type: none"> • The requirements are addressed in the drawing number D-56 (already submitted on 30th November 2011). • District Plantation monitoring committee lead by Ex. Vice Chancellor Sambalpur University & Wild Life Warden along with Additional Chief Conservator of Forest, Asst. Director Horticulture, Asst. Environment Engineer OSPCB & Chief Co-ordinator Eco Club of Jharsuguda has verified the plantation/green belt status through site visits which comes to be 34.6% till Feb'18 (More than 12000 samplings have been planted since Feb'18 till date as gap plantation and increasing density of existing green belt)

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	per ha with survival rate not less than 70 %.	<ul style="list-style-type: none"> The District Plantation committee report mentioning 34.6% green cover is enclosed as Annexure-4 for reference. Detailed Plantation report enclosed as Annexure-5
4. (xxii)	First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	Construction phase has been completed, however fully equipped 18 bedded Hospital has been established inside the campus for health care of workers. Annual Health check-up of all labours is also being carried out in the same Hospital.
4. (xxiii)	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs/ear muffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non-noisy/less noisy areas.	<ul style="list-style-type: none"> Arrangements for control of noise in the working areas have been taken in the plant by provision of acoustic enclosures, silencers etc. Sufficient ear protection PPE will be provided for all personnel exposed to work in noisy area. Periodic/ Annual health check will also be carried out for all employees & contractor partners.
4. (xxiv)	Regular monitoring of ground level concentration of SO ₂ , NO _x , RSPM (PM _{2.5} & PM ₁₀) and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be	<p>The project is located inside the existing plant premises. Six online CAAQ monitoring stations to monitor PM₁₀, PM_{2.5}, SO₂, NO_x & CO has been installed within impacted zone. Results are transmitted to SPCB & CPCB server on real time basis. Other than this, Ambient Air Quality is also being monitored through five permanent offline ambient air quality stations and the location of the stations are decided earlier in consultation with the Regional Office. Periodic monitoring is being performed for ambient Hg.</p> <p>Necessary control measures shall be implemented in case any exceedances are observed.</p>

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.	Monitoring reports are being submitted on periodic basis (The monitoring details have been summarized in Annexure-6 for the period from April'22 to September'2022)
4. (xxv)	A good action plan for R&R (if applicable) with package for the project affected persons be submitted and implemented as per prevalent R&R policy within three months from the date of issue of this letter.	R & R plan is not applicable as there is no displacement of people due to establishment of the project.
4. (xxvi)	An amount of Rs 24.36 Crores shall be earmarked as one-time capital cost for CSR programme. Subsequently a recurring expenditure of Rs 4.87 Crores per annum shall be earmarked as recurring expenditure for CSR activities. Details of the activities to be undertaken shall be submitted within one month along with road map for implementation.	A revised /updated list of projects amounting to Rs. 26.91 Crores has been approved by the CSR committee in its 22 nd meeting dated 06 th April 2019. A copy of the updated list of projects is attached herewith which includes projects that are completed, in progress and yet to start. (Annexure -7).
4. (xxvii)	As part of CSR programme the company shall conduct need-based assessment for the nearby villages to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people besides development of fodder farm, fruit bearing orchards,	Need based assessment have been conducted by CSR team of OPGC which was followed by a baseline survey taken up by a professional agency. The project list of Rs. 26.91 Crores provides the details of projects to be undertaken for development of local people as per their expressed needs and priorities.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	vocational training etc. can form a part of such programme. Company shall provide separate budget for community' development activities and income generating programmes. This will be in addition to vocational training for individuals imparted to take up self-employment and jobs.	
4. (xxviii)	The project proponent shall also adequately contribute in the development of the neighbouring villages. Special package with implementation schedule for providing fluoride free potable drinking water supply in the nearby villages and schools shall be undertaken in a time bound manner.	This remains high on OPGC'S agenda. The approved project list sheds adequate light on how OPGC has planned elaborately to provide lasting and sustainable water solutions to people of nearby villages. A scientific Hydrology study was conducted to guide the process of project implementation. OPGC has also started mobilising people's opinion and support for sustainable water solutions in collaboration with experts and Jharsuguda district authority.
4. (xxix)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Construction phase has been completed.
4. (xxx)	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the	Complied. Published in Sambad (Odiya) & New India Express (English) in March 2010.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in .	
4. (xxxix)	A copy of the clearance letter shall be sent by the proponent to concern Panchayat, ZilaParisad / Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/representations, if any, received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Complied in March 2010.
4. (xxxix)	A separate Environment Management Cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.	A separate Environment Management Cell with qualified staff has already been functioning for the purpose.
4. (xxxix)	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to	<ul style="list-style-type: none">The status of compliance is being uploaded in Website and reports are also being sent to the said offices.2 Nos of LED display boards are installed at the Plant main gate for display of environmental information. <p>Website path</p>

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely, RSPM, SO ₂ , NO _x (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.	http://www.opgc.co.in/env/half_comp_powerplant.asp
4. (xxxiv)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well by e- mail) to the respective Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB.	This is being complied since October 2010.
4. (xxxv)	The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	Annual Environment Statement (Form-V) of 2X660 MW for the FY 2021-22 had been submitted to OSPCB & MoEF & CC regional office vide ITPS Letter No. 5169/WE, dated 22.09.2021 and web-hosting of Environment Statement has also been done. Environment Statement for FY 2021-22 will be submitted before 27.09.2022.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
4. (xxxvi)	<p>The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same bye-mail to the Regional Office, Ministry of Environment and Forests.</p>	<ul style="list-style-type: none">• Reporting already commenced since October 2010. The compliance report is being sent to Ministry of Environment and Forests, its Regional Office, Central Pollution Control Board, State Pollution Control Board and the Regional Office, OSPCB.• Web hosting of EC Compliance status is being done. <p>Website path</p> <p>http://www.opgc.co.in/env/half_comp_powerplant.asp</p>
4. (xxxvii)	<p>Regional Office of the Ministry of Environment & Forests will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring. Project proponent will up-load the compliance status in their website and up-date the same from time to time at least six-monthly bases. Criteria pollutants levels including NOx</p>	<ul style="list-style-type: none">• Reporting already commenced since October 2010.• Web-hosting of compliance of stipulated in the EC conditions being done.• Criteria pollutants levels NOx (from ambient air and stack) is being displayed at the main gate of the power plant.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	(from stack & ambient air) shall be displayed at the main gate of the power plant.	
4. (xxxviii)	Separate funds shall be allocated for implementation of environmental protection measures along with item-wise break-up. These costs shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	The project cost includes the provision for implementation of environmental protection measures as required. It is made strictly for environment protection measure.
4. (xxxix)	The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.	The financial closure of the project was done on 23rd November 2012. NTP was issued to BHEL and BGR on 26th March 2014.
4.(xxxx)	Full cooperation shall be extended to the Scientists/Officers from the Ministry / Regional Office of the Ministry at Bangalore / CPCB/ SPCB who would be monitoring the compliance of environmental status.	It is being done.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
Additional Recommendations to OPGCL by MoEF in EC amendment dated 22.01.2014		
S. No	Recommendations	Compliance status
a	A long-term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute. Thereafter, mechanism for an inbuilt continuous monitoring for radio activity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.	Coal & Ash samples have been sent to BRIT for radio activity analysis of Coal/fly ash and results are awaited, we have analysed the heavy metal content of Coal & Ash through Institute of Minerals & Materials Technology Bhubaneswar and results are enclosed as Annexure-8 for reference.
b	Continuous monitoring for heavy metals in and around the existing ash pond area shall be immediately carried out by reputed institutes like IIT Kanpur.	The monitoring has been periodically carried out through reputed and accredited agency (M/S SGS India Ltd., Visiontek Consultancy Services,)/Institutions (IIT, Chennai)
c	Harnessing solar power within the premises of the plant particularly at available roof tops shall be undertaken and status of implementation shall be submitted periodically to the Regional Office of the Ministry.	Complied. Details of renewable energy initiatives of OPGC has been enclosed as Annexure-9
d	Fugitive emissions shall be controlled to prevent impact on agricultural or non-agricultural land.	<ul style="list-style-type: none"> • Adequate fugitive dust control measures had been implemented to prevent impact during construction phase • Adequate dust suppression systems (water sprinklers & Dry Fog) have been installed to suppress fugitive dust in coal and ash handling area for the operational stage • Mechanized road sweeping machines deployed for filtering loose dust from the roads.
e	No ground water shall be extracted for use in operation of	Ground water is not being used. All requirement of water is met from Hirakud reservoir.

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	the power plant even in lean season.	
f	Minimum required environmental flow suggested by the Competent Authority of the State Govt. shall be maintained in the Channel/ Rivers (as applicable) even in lean season.	Minimum required environmental flow is being maintained as per the water agreement with Water Resource Department.
g	No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up/operation of the power plant.	No water bodies have been disturbed due to project and will not be disturbed in future due to operation.
h	Fly ash shall not be used for agricultural purpose. No mine void filling will be undertaken as an option for ash utilization without adequate lining of mine with suitable media such that no leachate shall take place at any point of time. In case, the option of mine void filling is to be adopted, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and adequate clay lining shall be ascertained by the State Pollution Control Board and implementation done in close co-ordination with the State Pollution Control Board.	For mine void filling of ash, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and adequate clay lining shall be ascertained in close co-ordination with the State Pollution Control Board.
i	Three tier green belts shall be developed all around Ash Pond	<ul style="list-style-type: none">Green belt already exists all along the plant boundary. Details stated in condition no 4.xxi:

ODISHA POWER GENERATION CORPORATION LIMITED

2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

Cl. No.	EC Conditions	Compliance Status
	over and above the Green Belt around the plant boundary.	<ul style="list-style-type: none"> • For Ash Pond, SPCB Odisha advised not to go for any plantation on the ash pond dykes looking towards the risk of dyke failure due to tree root channelling. • However, adequate water sprinkling arrangement has been made in the Ash Ponds for control of fugitive dust emission.
j	A common Green Endowment Fund shall be created, and the interest earned out of it shall be used for the development and management of green cover of the area.	Shall be complied.
k	It shall be ensured that in-built monitoring mechanism for the schemes identified is in place and annual social audit shall be got done from the nearest government institute of repute in the region. The project proponent shall also submit the status of implementation of the scheme from time to time.	<ul style="list-style-type: none"> • Baseline Survey has been completed by Sutra Consultancy Services, Bhubaneswar and the Final report is already available with OPGC. Monitoring is regularly done by OPGC CSR team. • Projects are currently under execution and appropriate time to get them evaluated by an external agency is not yet ripe. Impact measurement will be done in due course. An internal monitoring mechanism is already in place. As recommended, a proposal will be put up before OPGC Board of Directors to consider getting social audit conducted once all the approved projects have been successfully executed.
l	An Environmental Cell shall be created at the project site itself and shall be headed by an officer of the company of appropriate seniority and qualification. It shall be ensured that the head of the Cell shall directly report to the Head of the Organization.	A separate Environment Management Cell with qualified staff has already been functioning for the purpose. A senior qualified officer heads the Cell (EHS Head) who directly reports to Unit Head (Occupier).
m	The project proponent shall formulate a well laid Corporate Environment Policy and identify and designate responsible officers at all levels of its hierarchy for ensuring	OPGC has got well formulated EHS Policy. Also identified and designated responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance with the conditions stipulated in this clearance

ODISHA POWER GENERATION CORPORATION LIMITED

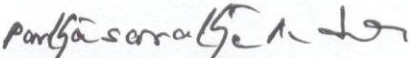
2x660 MW Ib Thermal Power Station

Environment Clearance No-J-13011/59/2008 & Subsequent Amendments

Period Apr 2022- Sep 2022

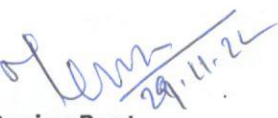
CI. No.	EC Conditions	Compliance Status
	adherence to the policy and compliance with the conditions stipulated in this clearance letter and other applicable environmental laws and regulations.	letter and other applicable environmental laws and regulations. (EHS Policy Enclosed as Annexure-10)

Prepared By:


Parthasarathi Panda

Manager (Environment)

Head of Organization:


Manas Ranjan Rout
Director (Operations) & Occupier
OPGC Limited



**HYDROGEOLOGICAL STUDIES AT ASH POND A, B AND
C, IB THERMAL POWER STATION, JHARSUGUDA
DISTRICT, ODISHA**

CLIENT NAME:

**IB THERMAL POWER STATION, JHARSUGUDA
DISTRICT, ODISHA**

**PROJECT REFERENCE NUMBER:
IN/ES-HG/2013-02
(VERSION 1.2)**

PREPARED BY:

**SGS India Private Limited
226, Udyog Vihar Phase- I
Gurgaon – 122 016, Haryana, India**

**Tel: +91 124 6776300
Fax: +91 124 6776403/04**

<http://www.sgsgroup.in/>

ODISHA POWER GENERATION CORPORATION LTD.

(A Government Company of the State of Odisha)

CIN: U40104OR1984SG001429

Ib 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/2520/WE
April 25, 2022

The Director
Ministry of Environment Forests & Climate Change
Eastern Regional Office
A/3, Chandrasekharpur,
Bhubaneswar – 751023

Dear Sir,

Sub.: Submission of annual implementation report of Ash for the period from 01-04-2021 to 31-03-2022 for Ib Thermal Power Station (2X 210 ITPS & 2X660 MW ITPS), of Odisha Power Generation Corporation.

Ref.: Fly ash Notification S.O. 763(E) Dated 14th September 1999

This has reference to the captioned subject and the cited reference. Please find here the annual implementation report of ash for 2 X 210 MW ITPS & 2X660 MW ITPS of M/s Odisha Power Generation Corporation, Jharsuguda for the period from 01-04-2021 to 31-03-2022 in dully filled in prescribed format.

Hope the above is in line with your requirement.

Thanking you,

Yours Sincerely,

Manas Ranjan Rout
26.04.22

Manas Ranjan Rout
Director (Operations) & Occupier

Encl.: Annual Implementation Report of Ash

Copies to: 1. The Member Secretary, State Pollution Control Board, Bhubaneswar, Odisha
2. The Member Secretary, Central Pollution Control Board, East Arjun Nagar, Delhi



Fly ash Notification S.O. 763(E) Dated 14th September 1999 - Statutory compliance report for the period from 01.04.2021 to 31.03.2022

S. No.	Item	Reply
1	Name of the Thermal Power station	Ib Thermal Power Station (2X210 MW) of Odisha Power Generation Corporation
2	Full address including Pin code	At: Banharpali Post: Banharpali Jharsuguda-786 234, Odisha
3	E Mail address	Parthasarathi.panda@opgc.co.in
4	Name of the Nodal officer dealing with ash management with designation (not below DGM rank)	AS Rao Head-EHS
5	Telephone No	06645-289258
6	Fax No	06645-222230
7	Capacity of the Thermal Power station	420 MW
8	Details of the Number of units and capacity of each unit	Units: 2 Nos Capacity: 210 MW each
9	Coal/ Lignite consumption in 2021-2022 (million tonnes)	2.595
A. Ash Generation in 2021-2022 (in tonnes)		
10	Bottom Ash	232973
11	Fly ash	931891
	Total A	1164864
B. Ash Unutilized (in tonnes)		
12	Ash pond disposal	761664
13	Ash Yard	0
14	Ash Dump	0
	Total B (12 to 14)	761664

C. Ash Utilization in 2021-2022 (in tonnes)						
	Purpose for which ash is utilized	Target (as per action plan)	Actual			Total
			From ESP Dry Ash	From Pond Ash	From Bottom Ash	
15	Ash pond dyke rising		-	-	-	-
16*	Cement Industry .	-	-	-	-	-
17	Land fill		-	124220	-	124220
18	Own Brick unit	-	279	-	-	279

19*	Outside brick units other than brick kilns	-	7577	-		7577
20*	Brick kilns	-	-	-	-	-
21	Own ash based products (other than bricks)	-	-	-	-	-
22	Ash based products (out side)	-	-	-	-	-
23*	Road and Flyover embankments	-	-	266300	-	266300
24*	Back filling of mines	-	-	-	-	-
25	Agriculture	-	-	-	-	-
26	Ready mix concrete	-	-	-	-	-
27	Asbestos	-	4740	-	-	4740
28*	Exports	-	-	-	-	-
29	Other (Please Specify)	-	-	84 (Cenosphere)	-	84
	Total C (15 – 29)	-	12596	390604	0	403200

D. 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. 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 plant 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. 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.
 - ii. 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.
 - iii. In response to the letter of Director (Operation), OPGC, dtd.24.08.2013 on the subject, Director (Tech. P&P), MCL neglected 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.
 - iv. 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.
 - v. OPGC vide letter dated 10.08.2020 had again requested Director (Tech/P&P), MCL for allotment of BOCM mine void for backfilling of ash, however Director Technical, MCL vide letter dated 28.08.2020 turned down the proposal stating integration of Lakhanpur-Belpahar-Lilari mines and extraction of further seams from these mines.
 - vi. OPGC vide letter dated 15.06.2021 had requested Director (Tech/P&P), MCL for allotment of BOCM mine void for backfilling of ash, however Director Technical, MCL vide letter dated 07.08.2021 again rejected the proposal of OPGC.
 - vii. OPGC sources entire coal from MCL mines. Coal being supplied has high ash content i.e. from 40%-45%. The utilization of this huge quantity of ash has significant cost implication. Any relief on this matter (Like cost pass through in tariff) will be immensely helpful for companies like OPGC.

****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.***

E. Efforts made by OPGCL to Maximise Utilization 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 6 (six) 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. 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.
5. OPGCL has been conducting various ash utilization awareness campaigns in the nearby community by way of street plays, distribution of pamphlets, etc.
6. 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, 1.28 acres & 1.12 acres for which consent has been taken from State Pollution Control Board, Odisha.
7. Action has been initiated to utilise ash in OPGC expansion project MGR line construction.
8. Working to get mine voids allotment from MCL.
9. 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.

10. 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 ash.

F. Quantity in ash pond:

30	Estimated quantity of Pond ash in active ash pond (Pond in use) as on 31.03.2022 (million tonnes)	4.97
----	--	------

G. Ash Pond details

31	Total area ear marked for ash pond (ha)	Forest area	Non forest area	Total
		Nil	Nil	Nil
32	Ash ponds already filled up and reclaimed (ha)	Nil	157.89	157.89
33	Ash ponds already filled up but yet to be reclaimed (ha)	Nil	Nil	Nil
34	Ash ponds in use (ha) (Active ash ponds)	Nil	46.55	46.55
35	Area earmarked for ash ponds but ash ponds yet to be constructed (ha)	Nil	Nil	Nil

H. Dry ash collection facilities

36	Whether Mechanical handling facility for dry fly ash collection is available	Yes
----	--	-----

37	If yes for how many units	To facilitate dry ash utilization at ITPS, 1st & 2nd field of both the Units (Unit#1 & Unit#2) has been retrofitted with dense phase dry ash collection system. Dry ash collection facility of 1100 MT capacity for utilization of dry fly ash in asbestos plant, ash brick/block & land reclamation is already in place.		
I. Dry fly ash storage.				
38	Daily ash generation (TPD)	Capacity of storage as on 31.03.2022 (tonnes)	Capacity proposed if any in 2022-23 (tonnes)	
	3192 MT *Average of 2021-22	620 MT (Silo)	Not required now, since the present storage capacity is surplus to meet dry ash off-take demand.	
J. Capital Expenditure (Rs. Lakhs)				
	Item	Expenditure in 2021-22(Rs .Lakhs)	Budgetary provision in 2022-23 (Rs. Lakhs)	
39	Mechanical dry fly ash collection facility	Nil Provisions of capital expenditures had been made in the previous years and the dry ash collection facility is adequate to meet the present requirement.	Nil The dry ash collection facility is adequate to meet the present requirement.	
40	Dry fly ash storage	-do-	-do-	
K. Dispute settlement committee				
41	No. of meetings held in 2021-22	If no meetings were held reason for the same		
	Nil	Due to COVID-19 pandemic		
L. Provision regarding supply to the brick kilns				
42	Whether the Thermal Power Station is maintaining month-wise records of ash made available to each brick kiln	Yes, month wise records maintained.		
43	If yes, how many brick kilns have been supplied with fly ash	6 Nos <ol style="list-style-type: none"> 1. Bhawani ash bricks 2. Talibahal ash bricks 3. Kirarama ash bricks 4. Best ash brick 5. BB ash bricks 6. ADCL ash bricks 7. OPGC ash bricks* *Own brick plant		
M. Mode of Transport for ash (strikeout whichever not applicable)				
44	Dry Ash	Through Closed Containers/Bulkers covered with Tarpaulin		
45	Wet Ash	Low Concentration Slurry Disposal through ash pipelines (LCSD)		
N. Promotional Measures				
		No. of meetings/ workshops exhibition held during 2021-2022	Amount spent in 2021-22 (Rs. Lakhs)	Outlay for 2022-23 (Rs. Lakhs)

46	Exhibitions	No awareness session could be conducted due to COVID-19 pandemic issue.	NIL	-
47	Seminars for awareness creations amongst farmers for use of ash in agriculture.			-
48	Workshops			5
49	Advertisement in News Papers			0.5
50	Advertisement in TV			-
51	Advertisement in Radio			-
52	Others (Please specify)			-
	Total N (46 to 52)			5.5
O. Administrative measures taken				
S.N	Administrative measures	Outcome		
53	Meeting with brick manufacturers	Better coordination & confidence building among the manufacturer as a part of awareness process.		
54	Meeting with State Government/agencies	<p>i. Appraising the area of improvement, constraints accordingly for getting support during review meeting with OSPCB & high-level Ash Utilization Committee.</p> <p>ii. 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".</p>		
55	Any other measure (Please specify)	-		

Prepared by: *Parthasarathi Panda*
 Designation: **Manager- Environment**
 Date: **25-04-2022**

Manas Ranjan Rout
 Signature of the CEO/General Manager/CE of the Thermal power station
 Name: **Manas Ranjan Rout**
 Designation: Director (Operations) & occupier
 Date: **25.04.2022**

Fly ash Notification S.O. 763(E) Dated 14th September 1999 - Statutory compliance report for the period from 01.04.2021 to 31.03.2022

S. No.	Item	Reply
1	Name of the Thermal Power station	Ib Thermal Power Station (2X210 MW) of Odisha Power Generation Corporation
2	Full address including Pin code	At: Banharpali Post: Banharpali Jharsuguda-786 234, Odisha
3	E Mail address	Parthasarathi.panda@opgc.co.in
4	Name of the Nodal officer dealing with ash management with designation (not below DGM rank)	AS Rao Head-EHS
5	Telephone No	06645-289258
6	Fax No	06645-222230
7	Capacity of the Thermal Power station	420 MW
8	Details of the Number of units and capacity of each unit	Units: 2 Nos Capacity: 210 MW each
9	Coal/ Lignite consumption in 2021-2022 (million tonnes)	2.595
A. Ash Generation in 2021-2022 (in tonnes)		
10	Bottom Ash	232973
11	Fly ash	931891
	Total A	1164864
B. Ash Unutilized (in tonnes)		
12	Ash pond disposal	761664
13	Ash Yard	0
14	Ash Dump	0
	Total B (12 to 14)	761664

C. Ash Utilization in 2021-2022 (in tonnes)						
	Purpose for which ash is utilized	Target (as per action plan)	Actual			Total
			From ESP Dry Ash	From Pond Ash	From Bottom Ash	
15	Ash pond dyke rising		-	-	-	-
16*	Cement Industry .	-	-	-	-	-
17	Land fill		-	124220	-	124220
18	Own Brick unit	-	279	-	-	279

19*	Outside brick units other than brick kilns	-	7577	-		7577
20*	Brick kilns	-	-	-	-	-
21	Own ash based products (other than bricks)	-	-	-	-	-
22	Ash based products (out side)	-	-	-	-	-
23*	Road and Flyover embankments	-	-	266300	-	266300
24*	Back filling of mines	-	-	-	-	-
25	Agriculture	-	-	-	-	-
26	Ready mix concrete	-	-	-	-	-
27	Asbestos	-	4740	-	-	4740
28*	Exports	-	-	-	-	-
29	Other (Please Specify)	-	-	84 (Cenosphere)	-	84
	Total C (15 - 29)	-	12596	390604	0	403200

D. 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. 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 plant 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. 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.
 - ii. 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.
 - iii. In response to the letter of Director (Operation), OPGC, dtd.24.08.2013 on the subject, Director (Tech. P&P), MCL neglected 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.
 - iv. 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.
 - v. OPGC vide letter dated 10.08.2020 had again requested Director (Tech/P&P), MCL for allotment of BOCM mine void for backfilling of ash, however Director Technical, MCL vide letter dated 28.08.2020 turned down the proposal stating integration of Lakhanpur-Belpahar-Lilari mines and extraction of further seams from these mines.
 - vi. OPGC vide letter dated 15.06.2021 had requested Director (Tech/P&P), MCL for allotment of BOCM mine void for backfilling of ash, however Director Technical, MCL vide letter dated 07.08.2021 again rejected the proposal of OPGC.
 - vii. OPGC sources entire coal from MCL mines. Coal being supplied has high ash content i.e. from 40%-45%. The utilization of this huge quantity of ash has significant cost implication. Any relief on this matter (Like cost pass through in tariff) will be immensely helpful for companies like OPGC.

****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.***

E. Efforts made by OPGCL to Maximise Utilization 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 6 (six) 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. 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.
5. OPGCL has been conducting various ash utilization awareness campaigns in the nearby community by way of street plays, distribution of pamphlets, etc.
6. 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, 1.28 acres & 1.12 acres for which consent has been taken from State Pollution Control Board, Odisha.
7. Action has been initiated to utilise ash in OPGC expansion project MGR line construction.
8. Working to get mine voids allotment from MCL.
9. 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.

10. 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 ash.

F. Quantity in ash pond:

30	Estimated quantity of Pond ash in active ash pond (Pond in use) as on 31.03.2022 (million tonnes)	4.97
----	--	------

G. Ash Pond details

31	Total area ear marked for ash pond (ha)	Forest area	Non forest area	Total
		Nil	Nil	Nil
32	Ash ponds already filled up and reclaimed (ha)	Nil	157.89	157.89
33	Ash ponds already filled up but yet to be reclaimed (ha)	Nil	Nil	Nil
34	Ash ponds in use (ha) (Active ash ponds)	Nil	46.55	46.55
35	Area earmarked for ash ponds but ash ponds yet to be constructed (ha)	Nil	Nil	Nil

H. Dry ash collection facilities

36	Whether Mechanical handling facility for dry fly ash collection is available	Yes
----	--	-----

37	If yes for how many units	To facilitate dry ash utilization at ITPS, 1st & 2nd field of both the Units (Unit#1 & Unit#2) has been retrofitted with dense phase dry ash collection system. Dry ash collection facility of 1100 MT capacity for utilization of dry fly ash in asbestos plant, ash brick/block & land reclamation is already in place.		
I. Dry fly ash storage.				
38	Daily ash generation (TPD)	Capacity of storage as on 31.03.2022 (tonnes)	Capacity proposed if any in 2022-23 (tonnes)	
	3192 MT *Average of 2021-22	620 MT (Silo)	Not required now, since the present storage capacity is surplus to meet dry ash off-take demand.	
J. Capital Expenditure (Rs. Lakhs)				
	Item	Expenditure in 2021-22(Rs .Lakhs)	Budgetary provision in 2022-23 (Rs. Lakhs)	
39	Mechanical dry fly ash collection facility	Nil Provisions of capital expenditures had been made in the previous years and the dry ash collection facility is adequate to meet the present requirement.	Nil The dry ash collection facility is adequate to meet the present requirement.	
40	Dry fly ash storage	-do-	-do-	
K. Dispute settlement committee				
41	No. of meetings held in 2021-22	If no meetings were held reason for the same		
	Nil	Due to COVID-19 pandemic		
L. Provision regarding supply to the brick kilns				
42	Whether the Thermal Power Station is maintaining month-wise records of ash made available to each brick kiln	Yes, month wise records maintained.		
43	If yes, how many brick kilns have been supplied with fly ash	6 Nos <ol style="list-style-type: none"> 1. Bhawani ash bricks 2. Talibahal ash bricks 3. Kirarama ash bricks 4. Best ash brick 5. BB ash bricks 6. ADCL ash bricks 7. OPGC ash bricks* *Own brick plant		
M. Mode of Transport for ash (strikeout whichever not applicable)				
44	Dry Ash	Through Closed Containers/Bulkers covered with Tarpaulin		
45	Wet Ash	Low Concentration Slurry Disposal through ash pipelines (LCSD)		
N. Promotional Measures				
		No. of meetings/ workshops exhibition held during 2021-2022	Amount spent in 2021-22 (Rs. Lakhs)	Outlay for 2022-23 (Rs. Lakhs)

46	Exhibitions	No awareness session could be conducted due to COVID-19 pandemic issue.	NIL	-
47	Seminars for awareness creations amongst farmers for use of ash in agriculture.			-
48	Workshops			5
49	Advertisement in News Papers			0.5
50	Advertisement in TV			-
51	Advertisement in Radio			-
52	Others (Please specify)			-
	Total N (46 to 52)			5.5
O. Administrative measures taken				
S.N	Administrative measures	Outcome		
53	Meeting with brick manufacturers	Better coordination & confidence building among the manufacturer as a part of awareness process.		
54	Meeting with State Government/agencies	<p>i. Appraising the area of improvement, constraints accordingly for getting support during review meeting with OSPCB & high-level Ash Utilization Committee.</p> <p>ii. 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".</p>		
55	Any other measure (Please specify)	-		

Prepared by: *Parthasarathi Panda*
 Designation: **Manager- Environment**
 Date: **25-04-2022**

Manas Ranjan Rout
 Signature of the CEO/General Manager/CE of the Thermal power station
 Name: **Manas Ranjan Rout**
 Designation: Director (Operations) & occupier
 Date: **25.04.2022**



J-13011/59/2008 -IA.II (T)
Government of India
Ministry of Environment & Forests

BY SPEED POST

Paryavaran Bhawan
CGO Complex, Lodi Road
New Delhi-110 003
Dated: 22.01.2014.

To

M/s Odisha Power Generation Corporation Ltd.
Zone-A, 7th Floor, Fortune Towers,
Bhubaneswar- 751 023,
Odisha.

Ph: 0674-2303765; Fax; 0674-2303755/56

Sub: Expansion of existing Coal Based Thermal Power Plant by addition of 2x660 MW (Unit 3 & 4) at Village Banaharpalli, in Jharsuguda Distt., in Orissa by M/s Odisha Power Generation Corporation Ltd. – reg. Amendment and Extension of validity of Environmental Clearance.

Sir,

This has reference to your letters dated 05.06.2013 and 18.09.2013 requesting for amendment and extension of validity of environmental clearance accorded for the above mentioned project.

2. The matter was placed before the Expert Appraisal Committee (Thermal Power) in its 4th Meeting held during November 18-19, 2013. In acceptance of the recommendation of the Expert Appraisal Committee (Thermal Power) and in view of the information/clarification furnished by you, with respect to the above mentioned power project, the following amendments are made in two conditions i.e. (xii) & (xviii) specified in the earlier EC accorded to you vide our letter of even no. dated 04.02.2010.

- a) The condition no. (xii) of Para No.4 shall be read as *“Closed cycle cooling system with induced draft cooling towers shall be provided. The Effluents shall be treated as per the prescribed norms”* **instead of**

“Closed cycle cooling system with natural draft cooling towers shall be provided. The Effluents shall be treated as per the prescribed norms.”

- b) The condition no. (xviii) of Para No.4 shall be read as *“Storage facilities for auxiliary liquid fuel such as LDO and/ HFO/LSHS shall be made in the plant area in consultation with Department of Explosives, Nagpur. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil”* **instead of**

“Storage facilities for auxiliary liquid fuel such as LDO and/ HFO/LSHS shall be made in the plant area in consultation with Department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.”

3. Further, under Para no.4 of this Ministry's letter of even no. dated 04.02.2010, after the condition no. (xl), the following conditions shall be inserted:

- (xli) A long term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute. Thereafter, mechanism for an in-built continuous monitoring for radio activity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.
- (xlii) Continuous monitoring for heavy metals in and around the existing ash pond area shall be immediately carried out by reputed institutes like IIT Kanpur.
- (xliii) Harnessing solar power within the premises of the plant particularly at available roof tops shall be undertaken and status of implementation shall be submitted periodically to the Regional Office of the Ministry.
- (xliv) Fugitive emissions shall be controlled to prevent impact on agricultural or non-agricultural land.
- (xliv) No ground water shall be extracted for use in operation of the power plant even in lean season.
- (xlvi) Minimum required environmental flow suggested by the Competent Authority of the State Govt. shall be maintained in the Channel/ Rivers (as applicable) even in lean season.
- (xlvii) No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up/operation of the power plant.
- (xlviii) Fly ash shall not be used for agricultural purpose. No mine void filling will be undertaken as an option for ash utilization without adequate lining of mine with suitable media such that no leachate shall take place at any point of time. In case, the option of mine void filling is to be adopted, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and adequate clay lining shall be ascertained by the State Pollution Control Board and implementation done in close co-ordination with the State Pollution Control Board.
- (xlix) Three tier green belt shall be developed all around Ash Pond over and above the Green Belt around the plant boundary.
 - (i) A common **Green Endowment Fund** shall be created and the interest earned out of it shall be used for the development and management of green cover of the area.
 - (ii) It shall be ensured that in-built monitoring mechanism for the schemes identified is in place and annual social audit shall be got done from the nearest government institute of repute in the region. The project proponent shall also submit the status of implementation of the scheme from time to time.
 - (iii) An Environmental Cell shall be created at the project site itself and shall be headed by an officer of the company of appropriate seniority and

qualification. It shall be ensured that the head of the Cell shall directly report to the Head of the Organization.

(liii) The project proponent shall formulate a well laid Corporate Environment Policy and identify and designate responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance with the conditions stipulated in this clearance letter and other applicable environmental laws and regulations.

4. All other conditions mentioned in this Ministry's letter of even no. dated 04.02.2010 shall remain the same.

5. Regarding the extension of validity of environmental clearance, since the validity will only expire in Feb, 2015, you may request this Ministry along with updated Form-I only before 6 months from expiry of the validity of EC, if required.

This issues with the approval of the Competent Authority.


(Dr. Saroj)
Director

Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Secretary (Environment), Environment Department, Government of Orissa, Bhubaneswar.
3. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
4. The Chairman, Orissa State Pollution Control Board, A-118, Nilkanta Nagar, Unit - VIII, Bhubaneswar- 751 012.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi- 110032.
6. The Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment & Forests, A/3, Chandesekhapur, Bhubaneswar - 751023.
7. The District Collector, Jharsuguda District, Orissa.
8. Guard file.


(Dr. Saroj)
Director

Report of Plantation Monitoring Committee

of the

District Environment Society, Jharsuguda

for the year 2017-18

Report of the Plantation Monitoring Committee of the District Environment Society, Jharsuguda-2017-18.

INTRODUCTION

The Jharsuguda District Environment Society constituted a Plantation Monitoring committee on 30.04.2013 with Prof. DR. Naik, Former Vice-Chancellor, Sambalpur University and Honorary Wildlife warden for Jharsuguda District as its Chief. The ACF, Jharsuguda Forest Division, the Chief Co-ordinator of the Eco-Club Co-ordination Committee and representatives from the State Pollution Control Board and Horticulture Department were other members. Since then the committee is inspecting industrial premises at least twice every year for monitoring the plantation activity. The report submitted by the committee was discussed in the Review meeting held on 20.12.2016 with the Collector as the Chairman. It was decided that the Plantation Monitoring Committee should inspect the industrial premises and submit its report for further action.

Inspection (2017-18):

The Plantation Monitoring Committee comprising of Prof. D.R. Naik, Former Vice-Chancellor, Sambalpur University and Honorary Wildlife Warden, Sri. P.K. Dhal, ACF, Jharsuguda Forest Division, Sri Prahallad Naik, Chief Co-ordination, Eco-Club Co-Ordination Committee, Sri Devadutta Mohanty, Assistant Environment Engineer, State Pollution Control Board and a representative of the Horticulture Department inspected in the various industrial premises as per the following schedule.

Date	Industries/Mines inspected
04.10.2017	MCL Lakhanpur Area, OPGC, Banharpali Ltd., TRL, Krosaki Ltd.
07.10.2017	Vedanta (Sesa Sterlite) Limited, Ultratech Cement Ltd., Sven Star Steel Ltd., MCL Ib Valley Area, Gopal Coalwashery.
23.08.2017	SMC Power Generation Limited, L.N. Metallic's, MCL Orient Area

General Remarks

- (1) It was not intended to conduct the census of trees planted over the years. An overall estimation of the greenery in the accessible areas within the industrial premises was made. In addition, patches of vacant Govt. land outside their premises assigned to some of them for creating 'green belt' were also inspected. Care was taken to note the species of tree planted.
- (2) It was found that some of the Industries/Mines have not been able to meet the 33.3% mandatory requirement. The concerned Industries have been advised to make up the deficiency by the end of 2017-18.
- (3) It was noted that some Industries have planted trees like Eucalyptus and Acacia over extensive areas. These species are not environment friendly. Hence the concerned Industries were advised to undertake intercropping with other species of trees such as Neem, Jamun, Karanja, Simaruba, Jackfruit and such other species with thick foliage and big crown. In due course, Eucalyptus and Acacia may be eliminated.

(4) As Principal Chief Conservator of Forest, Odisha has allotted target of 1,25,000 nos. of seedlings to be planted during 2017-18 under Corporate Sector in Jharsuguda District, a scheme has been prepared by the Divisional Forest Officer, Jharsuguda for raising Urban/ Peri-Urban plantation which will be funded by MCL & Vedanta (Sesa Sterlite) Ltd.. Copy of the scheme has been forwarded to the appropriate authority of MCL & Vedanta (Sesa Sterlite) Ltd. vide Letter No.4411 and Date.14.12.2016 and Letter No.1016 dt. 29.03.2017 respectively. However, MCL Authorities have provided required funds the DFO, Jharsuguda for raising one lakh saplings for plantation in Urban/ Peri-Urban area of Jharsuguda District.

Table showing the Area covered and Number of Saplings planted by various Industries/Mines:

Sl No.	Name of Industries/ Mines	Total land Acquired (Ac)	33.3% of area (Ac)	Land planted (Ac) up to 2016-17	Plantation Achieved during 2017-18		Total area planted inside premises (Ac) up to 2017-18	Total nos. Of saplings planted during 2017-18 (inside & outside)	Remarks/ percentage Achieved
					Inside premises (Ac/No)	Outside premises (Ac/Km)			
1	SMC Power Ltd.	284	94.57	93.8	5.1	0	96.92	2000	34.12%
2	TRL Krosaki	386	128.53	135.0	1.54	0	136.4	1000	35.33%
3	Global Washery	21.17	7.04	7.9	0	0	7.9	0	37.31%
4	Ultratech Cement Ltd.	165.25	55.02	55.02	0	0	55.02	0	33.33%
5	Vedanta (Sesa Sterlite)	2371.0	789.54	615.6	19.0	0	624.6	18000	26.34%
6	OPGC Ltd.	1227.5	408.75	207.0 (210.0 Ac natural forest)	7.0	0	424.0	1000	34.60% (4000 nos seedling distributed)
7	MCL Ib Valley, Area	3474.558	1158.07	458.62	0	0	458.62	0	13.19%
8	MCL Orient, Area	3472.422 (surface braking area-247.5)	82.41	143.97	0	0	143.97	0	58.16%
9	MCL Lakhanpur, Area	3610.13	1202.17	1084.32	3.51	0	1087.83	5625	30.13%
10	Seven Star Steel	59.0	19.65	21.5	1.62	0	23.12	1200	39.18%
11	LN-Metallic's	25.41	8.46	12.0	1.4	0	13.4	900	52.73%
Total: -								29,725	

Comments on the Plantation Activities of Different Industries & Mines:

1. Ultratech Cement Ltd.:

- A) Saplings Planted on the embankments of the reservoir and along the railway track are well maintained. The 11 acres patch lately planted during the previous season was inspected. The area was inaccessible and filled with grass. This area would be inspected again. They are advised to clean up the tall grass and take adequate care of the saplings.
- B) They have done plantation in the Arda Gramya Jungle (about 4 acres). Many of the saplings are dead. They need to be replaced with neem, Karanj, and such other saplings.
- C) The Avenue plantation from Dhutra village to Badpulia is not visible. Proper maintenance of the saplings is necessary.
- D) No plantation has been taken up during 2017-18.

2. Seven Star Steels Ltd.:

- A) Maintenance of plantation sites satisfactory.
- B) Damaged tree-guard/gabion for the Avenue plantation may be repaired/replaced.

3. LN Metallic's:

- A) Maintenance satisfactory. Care may be taken during the dry season to ensure survival of the saplings planted during the Current year. Fire-line should be maintained to check possible fire accident having summer.

4. SMC Power Generation Ltd.:

- A) Maintenance satisfactory. It is nice to see their greenery getting greener. Sustained efforts are necessary to keep it up.
- B) They have a nursery of their own. They are also providing sapling in the neighbouring areas. Preparatory work for the nursery may be started in January. However, the current year plantation work not up to the Mark.

5. Vedanta (Sesa- Sterilite) Ltd.:

- A) They have done plantation over an extensive area of their ash Pond dyke and in very small patches inside the premises of plant area. The area was inaccessible, but the greenery was visible.
- B) They have developed a nursery. Preparation for the necessary may be started in January.
- C) They may prepare a sketch map showing the green belt and number the different sectors for proper assessment of their greenery.
- D) Plantation done lately during the previous season may be properly maintained before the next inspection.
- E) Spacing between saplings should be 2 m. to 2.5m.
- F) As they have planted very small size seedlings, they have been advised to procure seedlings from Forest Department nursery from next year.

6.OPGC:

A) Maintenance of plantation sites satisfactory.

B) Saplings planted in the extension area are small. Special care need to be taken for their maintenance.

C) They have nursery for their own use and for distribution among the local community.

7.Global Coal Washery:

A) Maintenance of plantation sites satisfactory.

B) Plantation in the railway siding remains to be inspected.

8.MCL Ib Valley Area:

A) No plantation has been done by during 2017-18

9. MCL Lakhanpur Area:

A) Plantation sites of 2016-17 satisfactory. Replacement of the dead sapling advised.

B) Plantation of the current season is satisfactory an about 20,000 saplings has been planted.

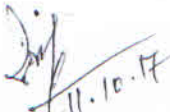
10.MCL Orient Area:

They reported that they have distributed saplings to different educational institutions. These institutions have to be inspected for on the spot verification. They have planted around 200 saplings in the colony area. They may be assigned Govt. land for plantation.

11.TRL-Krosaki:

A) Plantation satisfactory.

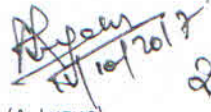
B) They have a well maintained nursery.



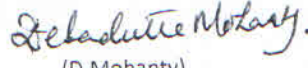
(D.R. Naik)
Ex VC & Honorary
WL Warden



(P.K. Dhal)
ACF, Jharsuguda
Forest Division



(A. Lugun)
A.D Horticulture
Jharsuguda



(D. Mohanty)
Asst. Env. Engineer
Jharsuguda



(Prahallad Naik)
Chief Co-ordinator,
Eco-Club, Jharsuguda

Annexure- V (A)
IB THERMAL POWER STATION
SUMMERY OF GREEN BELT & PLANTATION, TILL October 2022

- Total Plantation & colony Area-**1227.5 acres**
- Greenbelt & High-Density Trees- **426.25 acres**
- % Greenbelt & High-Density Trees- **34.73**
- Total trees planted- **323749 Nos.**
- Total trees survived-**244094 Nos.**
- % of survival-**75.4**

Plantation & sapling distribution

Year	Planted	Sapling distributed
2012-13	350	2000
2013-14	1300	6000
2014-15	3000	5000
2015-16	700	4480
2016-17	8200	15000
2017-18	1885	4000
2018-19	10725	4600
2019-20	265	4500 *Grafted mango saplings-4000 Nos Forest species trees saplings-500 Nos
2020-21	300	Saplings could not be distributed due to COVID Pandemic
2021-22	200	1000 Fruit Bearing trees
2022-23 (till Oct'22)	850	1000 Fruit Bearing trees (Grafted Mango, Guava & Lemon)

*Compensatory plantation of 260 acres has been done in Deogarh area.

Besides, a nursery of 25000 capacity has been developed


Parthasarathi Panda
Manager Environment



Annexure- V (B)

ODISHA POWER GENERATION CORPORATION LTD
IB THERMAL POWER STATION

YEAR WISE TREE PLANTATION DETAILS OF OPGC AT ITPS

Location	Name of Agency	Year	No.of trees planted	Name of the Species	No.of trees alive	Plant Area	Green Belt & High density natural green belt
Colony,Guest House,Halipad, Periphery,Pump House,Filter House,Stores etc.	Local agencies	1991-92/92-93	12,000	Akashia Sirish Chhatim	9,550		
Periphery of Boundary Wall (Green Belt)	O.P.G.C.	1992-93/93-94	38,500	Kadamba Panash	23,300		
Vacant place in front of SBI, Old Hanuman Temple back side of Store yard,colony road side.	Sidhartha agency, Jharsuguda.	1993-94/94-95	23,800	Neem Bottle brush Bottle Palm Chakunda	15,000		
i)Back side of Autobase, Falsamunda village area.	i)Sidhartha agency, Brukshyaropan Samiti,Jharsuguda.	1994-95/95-96	20,000	Jhaun Sisoo Golmohar	15000		
ii)Coal yard side,either sides of main roads,Plant boundary, Railway lines,inside area between D.M.Plant,R.W.pump house and compound wall. Both sides of Rly,inline out side the plant boundary and Ash Pond area.	ii)Departmentally, Total:-		37,000	Eucalyptus Gambhari Jarul Litchi Amba	31,155		
Jhawn & Plantation coal handling plant area & other species on both sides of roads inside plant.	i)Green channel, Brukshyaropan Samiti & 3 Nos.of Club and Yubak Sangha	1995-96/96-97	40,000	Baula Radhachuda Deodaru Karanja Pijuli			
Fuel Oil Pump house area, School,Hospital,Police station Outer periphery of children Parks,Playgrounds etc. Ash Pond	ii)Departmentally		34,500	Saguan baxa Mandar Rangani			
Ash Pond	iii)Local agencies Total:-		5,500	Areca Palm Juniperous china Palm	65,000		
Both side of Security road.	i)Brukshyaropan Samiti		5,000	Musunda Karabira Golap			
Ash Pond	ii)Departmentally Total		5,000	Thuja			
Ash Pond		1998-99/99-00	5,500		4,500		
CHP & Plant	By agencies -do-	2000-2001	5,058		5,000		
Colony	-do-		5,966		4,842		
Ash Filling Area(low lying area), Colony,Warehouse,SVM School(ITPS), Rengali School	-do-	2006-07	11,500		10,000		
Inside Plant campus	-do-	2007-08	1,800		1200		
Distribution of fruit bearing tree in Periphery villages	-do-	2008-09	3,000	Mango, Lemon	2300		
Block Plantation in association with District Environmental Society	Majhi		4,000	Teak	2100		
Fruit bearing tree plantation at Gujapar and in Schools	do		3,000	Mango	2500		
CHP & Learning Centre on Earth Day	Self	2009-10	350	Neem	75		
World Env Day	Self		120	Mango	90		
Govt. Land near Rengali Nursery	Karunakar Sahu		150	Neem, Karanja, Kadamba, chakunda etc	2000		
Vatarika & Adhapada Mandir- 150 nos fruit & flower tree, Inside Colony vacant place- 100 neem trees, World Env day- 150 neem & Devdaru tree inside Plant Premises, Gujapahar- 200 Fruit bearing trees, 800 Fruit bearing, Radha Chuda etc planted in Binika & Banaharpali through villagers	Self & through villagers	2010-11	5000	Neem, Devdaru,Radhachura, Mango, Guava, Lemon, Jamun, Coconout, Lichi & Flower Plants	900	1227.5	425
Vacant space in between Boiler area scrap yard & clarifiers	Self	2010-11	100	Neem	70		
Inside Colony Vacant Places	Self	2011-12	150	Mango, Lemon, Guava	100		
Vacant space at Coal Handling Plant	Self	2012-13	350	Neem, Devdaru	200		
Distribution of fruit bearing & Forest plant species in Periphery villages, 2000 nos	Self	2012-13	2000	Teak, Mango, Lemon	1000		

Avenue Plantation at Banharpali & Ash Pond Road & 100 nos inside Plant premises	Self	2013-14	1300	Kadamba, Limba, Karanga, Radhachuda. Teak, Devdaru etc	900	
Sapling Distribution, 6000 nos	through nearby villagers		6000	Teak, Guava, Jackfruit, Dalimb etc	3000	
Sapling Distribution, 5000 nos	through nearby villagers	2014-15	5000	Teak, Guava, Teak,etc	2500	
Block & Avenue Plantation (OPGC old Pump House vacant space , old Adhapada Shiv Temple premises near Banaharpali & Tarrini Temple premises at Pump House Para)	Self		3000		1050	
Sapling Distribution	through nearby villagers, 4480 nos	2015-16	4480	Teak, Baula, Guava, Lemon, Karanj etc	2100	
Plantation inside Plant and Colony	Self		700		650	
Plantation inside Plant and Colony	Self	2016-17	200	Baula, Mango	192	
Plantation inside Plant	Self		8000	Karanja, Neem, Baula	8000	
Saplins Distributed, 15000 nos	Others			Grafted Mango, Guava, Teak, etc		
Plantation inside plant & township * 4000 Nos of mango sapling distributed	Self	2017-18	1885	Kadamba, Neem, Bakul, Siris & Karanja	1880	
Gap Plantation	Self	2018-19	10725	Baula, Neem, Karanj, Mango, Arjun, Sisoo, Teak.	10725	
Plantation inside Plant and Colony	Self	2019-20	265	Karanj, Neem Bakul	265	
Plantation inside Plant and Colony	Self	2020-21	300	Bakul	250	
Plantation inside Plant and Colony	Self	2021-22	200	Bakul, Neem, Karanj, Sisoo	200	
Plantation inside Plant and Colony	Self	2022-23	850	Terminalia, Baula, Neem, Karanja, Arjun	950	
Total			323,749		244,094	
% Survival				75.4		
Green Belt%				34.73		
						1.25
						426.25

Total Area of Green Belt

In addition to above plantation at ITPS ,Compensatory Afforestation has been done by OPGC over 260 Ha. non-forest land in Deogarh, through Forest Department, Govt. Of Odisha.

Parthasarathi Panda
Manager Environment

ANNEXURE-VI																
ODISHA POWER GENERATION CORPORATION LTD																
IB THERMAL POWER STATION																
ENVIRONMENTAL MONITORING REPORTS																
Period-April 2022 to September 2022																
A. STACK EMISSION																
PARAMETER	NORM	INTERNAL MONITORING			THIRD PARTY MONITORING			INTERNAL MONITORING			THIRD PARTY MONITORING					
		STACK 3			STACK 4			STACK 3			STACK 4					
		MAX.	MIN.	AVE.	MAX.	MIN.	AVE.	MAX.	MIN.	AVE.	MAX.	MIN.	AVE.			
SPM(mg/Nm ³)	100	39	31	35	39	22	33	38	24	29	40	22	27			
SOX	NA	1258	1161	1217	1247	1120	1215	2063	967	1254	1235	966	1043			
NOX	NA	396	381	392	396	384	389	368	303	327	440	312	361			
B. AMBIENT AIR QUALITY																
PARAMETER	NORM	INTERNAL MONITORING			THIRD PARTY MONITORING			INTERNAL MONITORING			THIRD PARTY MONITORING					
		MAX.	MIN.	AVE.	MAX.	MIN.	AVE.	MAX.	MIN.	AVE.	MAX.	MIN.	AVE.			
PM ₁₀ (µg/m ³)	100	95	23	60	31	25	28	31	25	28	31	25	28			
PM _{2.5} (µg/m ³)	60	58	9	34	22.4	15	18	22.4	15	18	22.4	15	18			
SO ₂ (µg/m ³)	80	18	8	13	10	6	8	10	6	8	10	6	8			
NO ₂ (µg/m ³)	80	31	13	22	20	12	14	20	12	14	20	12	14			
C. AMBIENT NOISE LEVEL																
NORM	INTERNAL MONITORING				THIRD PARTY MONITORING				INTERNAL MONITORING				THIRD PARTY MONITORING			
	INDUSTRIAL NOISE LEVEL,dB(A)		RESIDENTIAL NOISE LEVEL,dB(A)		INDUSTRIAL NOISE LEVEL,dB(A)		RESIDENTIAL NOISE LEVEL,dB(A)		INDUSTRIAL NOISE LEVEL,dB(A)		RESIDENTIAL NOISE LEVEL,dB(A)		INDUSTRIAL NOISE LEVEL,dB(A)		RESIDENTIAL NOISE LEVEL,dB(A)	
	Day time	Night time	Day time	Night time	Day time	Night time	Day time	Night time	Day time	Night time	Day time	Night time	Day time	Night time	Day time	Night time
Minimum	66	64	39	36	67	60	52	40	66	64	39	36	67	60	52	40
Maximum	73	72	49	42	70	60	52	43	73	72	49	42	70	60	52	43
Average	69	68	44	39	65	55	42	42	69	68	44	39	65	55	42	42
D. LIQUID INDUSTRIAL EFFLUENT QUALITY																
PARAMETERS	UNIT	NORM	INTERNAL MONITORING		THIRD PARTY MONITORING		PARAMETERS	UNIT	NORM	INTERNAL MONITORING		THIRD PARTY MONITORING				
			MAX.	MIN.	MAX.	MIN.				MAX.	MIN.					
Temp(In)			-	-	pH		6.0 - 9.0	-	-							
Temp(Out)	°C	T(O) - T(I) = <5°C	-	-	TSS	PPM	100	-	-							
pH at 25°C	NA	5.5-9.0	-	-	O & G	PPM	10	-	-							
Chloride as Cl	PPM	1000 max	-	-	BOD	PPM	30	-	-							
D.Phos as P	PPM	5.0 max	-	-	COD	PPM	250	-	-							
O & G	PPM	10.0 max	-	-	Fe	PPM	3	-	-							
TSS	PPM	100 max	-	-	Total Chromium	PPM	2	-	-							
TDS	PPM	2100 max	-	-	Copper (as Cu)	PPM	3	-	-							
Res chlorine	PPM	1.0 max	-	-	Zinc(as Zn)	PPM	5	-	-							
BOD	PPM	30 max	-	-												
COD	PPM	250 max	-	-												
E. STP OUTLET																
PARAMETERS	UNIT	NORM	INTERNAL MONITORING		THIRD PARTY MONITORING		PARAMETERS	UNIT	NORM	INTERNAL MONITORING		THIRD PARTY MONITORING				
			MAX.	MIN.	MAX.	MIN.				MAX.	MIN.					
pH		6.5 - 9						7.3					6.5			
TSS	PPM	20						11					8			
BOD	PPM	10						14					8			
COD	PPM	50						72					32			
Total Nitrogen	PPM	10						24					5			
Ammonical Nitrogen	PPM	5						19					3			
Faecal Coliform	MPN/100ml	<100						94					70			
Total Coliform	MPN/100ml	5						260					180			

Pankaj Saran (Manager - Environment)

Annexure - I

S.N	Project Theme	Project Description	Name of the Village	Name of Gram Panchayat	Oper. Area	Approved Budget by CSR Committee & BOD in Rs. Lakhs	Project Status As on 20-09-2018
1	Water & Sanitation	Drinking water project	Sarbahal	Sanghumda	MGR	16.00	Awarded & Ongoing
2		Water Sanitation & Hygiene (WASH) Project	08 villages of Telenpali G.P	Telenpali	Power Plant	359.00	Completed
3		Water Sanitation & Hygiene (WASH) Project	08 Villages of Kusuraloi G.P	Kusuraloi	MGR	416.00	Awarded & Ongoing
4		Water Sanitation & Hygiene (WASH) Project	22 Villages of Tilia G.P	Tilia	N. Ash Pond	600.00	Awarded & Ongoing
5		Water Sanitation & Hygiene (WASH) Project at Rengali Village in all 05 Hamlet & habitations	Rengali	Kumarbandh	Power Plant	125.00	Awarded & Ongoing
6		Installation of drinking water project	Beleituda	Rajpur	MGR	22.00	Awarded & Ongoing
7		Toilet for Girls in High School	Phatapali	Tilia	N. Ash Pond	5.00	Completed
8		Kumarbandh Education Complex (School & College) Drinking Water Project	Kumarbandh	Kumarbandh	Power Plant	5.00	Completed
9		Kumarbandh College Sanitation Project	Kumarbandh	Kumarbandh	Power Plant	10.00	Completed
10		Kumarbandh Police Station Sanitation Project	Kumarbandh	Kumarbandh	Power Plant	5.00	Completed
11		Construction of Toilet Facility at District Police Line	Jharsuguda	Jharsuguda	Power Plant	30.00	Completed
12		Drinking water Project at Bhaludole & Sargipali village	02 Villages	Kumarbandh	Power Plant	20.00	Estimate Stage
13	Education	Cycle stand for 100 Children in High School	Phatapali	Tilia	N. Ash Pond	5.00	Completed
14		Construction of High School Building	Remenda	Remenda	Power Plant	40.00	Completed
15		Construction of School Building & Anganwadi Centre	Telenpali	Telenpali	Power Plant	25.00	Completed
16		Construction of 02 Additional Class Rooms in High School	Banharpali	Telenpali	Power Plant	15.00	Completed

S.N	Project Theme	Project Description	Name of the Village	Name of Gram Panchayat	Oper. Area	Approved Budget by CSR Committee & BOD in Rs. Lakhs	Project Status As on 20-09-2018
17	Ed	Construction of Cycle Stand at U.P. School	Banharpali	Telenpali	Power Plant	5.00	Completed
18		Construction of two Classrooms at School	Bargad	Kusuraloi	MGR	15.00	Awarded & Ongoing
19		Basic materials to Primary School Hostel (PSH) at Kanaktura (Sundargarh District)	Kanaktura	Kanaktura	MGR	4.00	Completed
20		Leveling of Pathway at Kantatikira Project U.P School	Kantatikira	Kumarbandh	Power Plant	1.25	Awarded & Ongoing
21	Rural Development	Deepening of village pond at Saradhapali village	Saradhapali	Kumarbandh	Power Plant	2.75	Awarded & Ongoing
22		Construction of Kalyan Mandap	Kechubahal	Chandnimal	MGR	35.00	Awarded & Ongoing
23							
		Excavation of new Pond	Sarbahal	Sanghumda	MGR	10.00	Awarded & Ongoing
24		Deepening of village Pond	Kanaktura	Kanaktura	MGR	5.00	Completed
25		Construction of Bathing Ghat	Kechubahal	Chandnimal	MGR	3.00	Completed
26		Renovation of Pond (Gheemunda) Rohidas Para	Chandnimal	Chandnimal	MGR	5.00	Completed
27		Digging of village Pond	Gaudmal	Gaudmal	MGR	12.00	Completed
28		Renovation of Pond & Construction of Bathing Step (Bada Kanta)	Rajpur	Rajpur	MGR	10.00	Completed
29		Deepening of Village Pond	Ambdhar	Rajpur	MGR	10.00	Completed
30		Construction of New School Building	Sarbahal	Sanghumda	MGR	14.00	Awarded & Ongoing
31		Repair and Annual Maintainance Contract (AMC) of Street Light		Rajpur	MGR	15.00	Estimate Stage
32		Repairing of Road from Telenpali gate to Pump House Chawk	Telenpali	Telenpali	Power Plant	45.00	Cancelled
33		Construction of Road to village	Gaudmal	Gaudmal	MGR	12.00	Awarded & Ongoing
34		Construction of Community Centre	Chandnimal	Chandnimal	MGR	10.00	Awarded & Ongoing
35		Construction of Community Centre	Sarbahal	Sanghumda	MGR	10.00	Completed
36	Construction of community centre	Junanimunda	Rajpur	MGR	8.00	Awarded & Ongoing	
37	Construction of community centre	Beleituda	Rajpur	MGR	8.00	Awarded & Ongoing	
38	Ramela Pada Community Centre	Badsarua	Tilia	N. Ash Pond	8.00	Completed	
39	Phatapali (Saharapada) Community Centre	Phatapali	Tilia	N. Ash Pond	8.00	Completed	

S.N	Project Theme	Project Description	Name of the Village	Name of Gram Panchayat	Oper. Area	Approved Budget by CSR Committee & BOD in Rs. Lakhs	Project Status As on 20-09-2018
40		Community Centre (Near Bus Stand)	Tilia	Tilia	N. Ash Pond	8.00	Completed
41		Community Centre (near Tilia market)	Nuapada	Tilia	N. Ash Pond	8.00	Completed
42		Community Centre at Pudhipali	Tilia	Tilia	N. Ash Pond	8.00	Completed
43		Community Centre	Binika	Telenpali	Power Plant	8.00	Completed
44		Bhagabanpali Kanta (Birtia) Renovation	Bhagbanpali	Tilia	N. Ash Pond	4.00	Completed
45		Singhda bandh Pond Renovation	Singheipali	Tilia	N. Ash Pond	4.00	Completed
46		Shabandh (Kantatikra) Pond Renovation	Kantatikira	Tilia	N. Ash Pond	4.00	Completed
47		Thorapali Pond Renovation	Thorapali	Tilia	N. Ash Pond	4.00	Completed
48		Sivakanta Bathing Steps (two)	Badsarua	Tilia	N. Ash Pond	3.50	Completed
49		Nua Kanta Bathing Steps (two)	Pudhipali	Tilia	N. Ash Pond	3.50	Completed
50		Pipal Kanta Bathing Steps (two)	Kantatikira	Tilia	N. Ash Pond	3.50	Awarded & Ongoing
51		Tali Kanta Bathing Steps (two)	Phatapali	Tilia	N. Ash Pond	3.50	Completed
52		Renovation of pond at Charmal	Nuapada	Tilia	N. Ash Pond	7.00	Completed
53		Rengali Bandha 02 Bathing Steps	Rengali	Kumarbandh	Power Plant	3.50	Completed
54		Pond Renovation	Bhaludole	Kumarbandh	Power Plant	4.00	Awarded & Ongoing
55		Pond Renovation	Banikdera	Kumarbandh	Power Plant	4.00	Completed
56		Pond Renovation	Kantapali	Kumarbandh	Power Plant	4.00	Completed

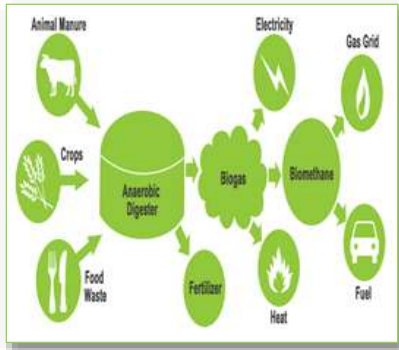
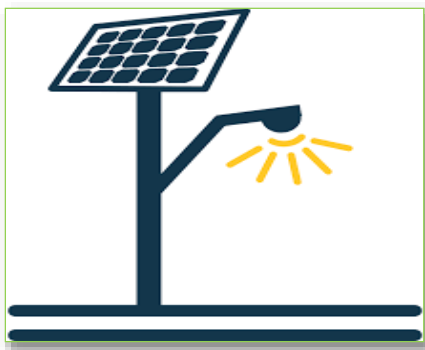
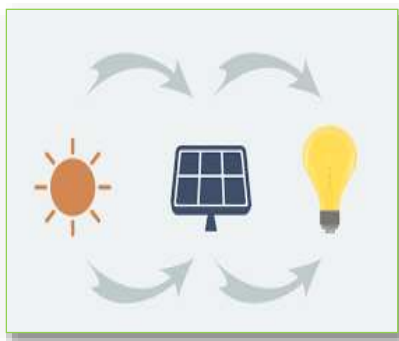
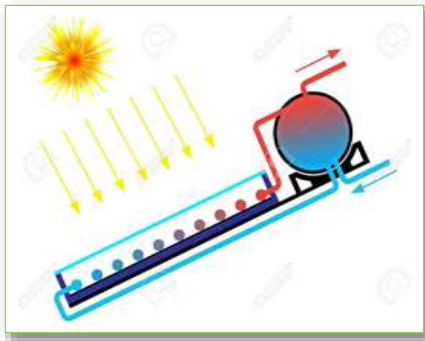
S.N	Project Theme	Project Description	Name of the Village	Name of Gram Panchayat	Oper. Area	Approved Budget by CSR Committee & BOD in Rs. Lakhs	Project Status As on 20-09-2018
57		Dunguri Kisan Pada Pond Renovation & 02 Bathing Steps	Rengali	Kumarbandh	Power Plant	7.00	Completed
58		Sajni Kanta Pond Renovation	Budhapali	Kumarbandh	Power Plant	4.00	Completed
59		Birtia Kanta Renovation and 02 Bathing Steps	Barihapali	Sunari	Power Plant	7.00	Completed
60		Renovation of Rani Sagar Pond	Old Adhapada	Telenpali	Power Plant	4.00	Completed
61		Telenpali Upper Bandh 02 Bathing Ghats	Telenpali	Telenpali	Power Plant	3.50	Completed
62		Construction of Community Centre	Sargipali	Kumarbandh	Power Plant	15.00	Completed
63		Construction of Community Centre	Kantatikira	Kumarbandh	Power Plant	10.00	Completed
64		Electrification of Village(Part of WASH Project)	Sahareipada	Telenpali	Power Plant	7.00	Completed
65		Construction of Bus Stop	Kusuraloi	Kusuraloi	MGR	5.00	Completed
66		Construction of Kalyan Mandap at Suitable Place	Telenpali G.P	Telenpali	Power Plant	30.00	Awarded & Ongoing
67		Kalyan Mandap at Ambdhar	Ambdhar	Rajpur	MGR	35.00	Estimate Stage
68		LED Street Light on Main Road	Banharpali	Telenpali	Power Plant	5.00	Completed
69		LED Street Light on Main Road	05 G.P	05 G.P	Power Plant	150.00	Completed
70		Installation of High Mast light	Adhapada	Kusuraloi	MGR	9.00	Completed
71		2.1 K.M LED Street Light on Main Road	Belpahar Municipality	Belpahar Municipality	MGR	30.00	Completed
72		LED Street Light Project in Tilia Revenue Village (including all its hamlets/ constituent padas)	Tilia	Tilia	N. Ash Pond	50.00	Awarded & Ongoing
73		Erection/ Construction of New Electrical Infrastructure in Bargad Village near ITPS	Bargad	Kusuraloi	Power Plant	50.00	Estimate Stage
74		Bus Stop at Telenpali Market Bus Stand	Telenpali	Telenpali	Power Plant	5.00	Completed
75		Renovation of Asthai Kanta	Adhapada	Kusuraloi	MGR	10.00	Completed
76		Deepening of Village Pond & 02 Bathing Steps	Phalsamunda	Kusuraloi	MGR	7.00	Completed
77		Deepening of Naik Kanta	Khandsa	Kusuraloi	MGR	4.00	Completed
78		Renovation of Village Pond	Bargad	Kusuraloi	MGR	4.00	Completed

S.N	Project Theme	Project Description	Name of the Village	Name of Gram Panchayat	Oper. Area	Approved Budget by CSR Committee & BOD in Rs. Lakhs	Project Status As on 20-09-2018
79		Multi-purpose Training Hall Inside PHC Building along with Filtered Drinking Water Facility	Adhapada	Kusuraloi	MGR	15.00	Completed
80		06 (six) Bathing Ghats in four villages of Kushraloi	Kerualbahal etc	Kusuraloi	MGR	10.00	Completed
81		Community Centre	Adhapada	Kusuraloi	MGR	11.00	Completed
82		Repair/ Extension of Community Centre	Phalsamunda	Kusuraloi	MGR	5.00	Completed
83		Tali Kanta Irrigation Project	Telenpali	Telenpali	Power Plant	25.00	Completed
84		Construction of Canal from Asthai Kanta to Goucharmal at Adhapada	Adhapada	Kusuraloi	MGR	15.00	Completed
85		Big Community Centre/ Kalyan Mandap project in Tilia Revenue Village	Tilia	Tilia	N. Ash Pond	34.00	Awarded & Ongoing
86		Electrification of Dhobadera & Sapali Village	02 Villages	Telenpali	Power Plant	36.00	Completed
87	Physical Monitoring of projects, documentation, training and capacity building, overheads, etc.	Baseline survey in peripheral villages	37 villages	11 G.P's	Power Plant	20.00	Completed
88		Production of Video Films	37 villages	11 G.P's	Power Plant	10.83	Completed
89		Physical Monitoring of projects, documentation, training and capacity building, overheads, etc.	-	-	Power Plant	19.17	Awarded & Ongoing
Total CSR Budget (OPGC II- Unit 3&4) Approved by CSR Committee						2691.00	

OPGC

Renewable Energy Details

Engg & Efficiency Dept.



Renewable Initiatives:

- Solar Photovoltaic Roof top plants
- Solar Powered LED Street Lights.
- Solar Water Heaters.
- Biogas plant.

1. Roof top PV Plants :

Area	Switch yard	Ash Pond	DM Plant	CW Pump House	Plant Canteen	Service Building	Total
Installed Capacity	3 KW	6 KW	9 KW	3 KW	9 KW	9 KW	39 KW

a. PV Solar System at Switch Yard Roof:

3 KW PV Solar system installed at switchyard control room building commissioned in **April-2016**.

- **Connected load:** All indoor lighting of Switch yard control room, Front & rear halogen lights of Switch yard control room building.

b.PV Solar System at Ash Pond Control Room Roof:

2x3 KW PV Solar system installed at Ash Pond Control Room roof top commissioned in **June-2017**.

- **Connected load:** All indoor lighting of Switch gear control room, Battery room, Front & rear halogen lights of Ash pond switch gear room, all outdoor lighting of Ash Pond 33/6.6KV Switch yard.

c. PV Solar System at DM Plant Building Roof:

3x3 KW PV Solar system installed at DM Plant building Roof commissioned in **June-2018**.

- **Connected load:** All indoor lighting of control room, MCC room, Office rooms, Efficiency Lab, GCV Room & coal laboratory.

d. PV Solar System at CW Pump House Roof:

3 KW PV Solar system installed at CW Pump house roof commissioned in **June-2018**.

- **Connected load:** All indoor lighting of MCC room& outside lights.

e. PV Solar System at Plant Canteen building Roof:

9 KW PV Solar system installed at Plant Canteen roof commissioned in **April-2019**.

Connected load: All indoor lighting of Canteen dining, fans, Water cooler, TV, Insect killers & Portable strip warmers.

f. PV Solar System at Plant Canteen building Roof:

9 KW PV Solar system installed at Service Buiding roof commissioned in **March-2021**.

- **Connected load:** 3rd floor indoor lighting's, Fans & water cooler.



Solar PV Plant in Canteen.



Solar PV Plant in DM Plant.



Solar PV Plant in Ash Pond.



Solar PV Plant in Service building

2.Solar Powered LED Street Lights:



Solar Powered LED Street Light at Ash pond-C

- Total **60 no's** of solar 50 watt powered 30 watt LED's Street lights are installed in Ash Pond –C area.
- The total capacity of the system is **3KW**.
- Specific Features of the street lights: Pole Mounted type, Inbuilt Maintenance free Lithium Ion Battery With Motion Sensor.
- Lights are in service on an average 11 hours daily i.e. 6 pm to 5am .
- **Electrical Energy saved in a month** =60 no's x 30 watt x 11 hours x 31 days = **614 kWh**.

3. Solar Water Heater:

a.Solar Water Heater:



Solar Water Heater at Plant

900 Litre/day Solar Water Heater installed at roof of plant canteen commissioned in **March-2017**

- 3 Hot water tap points are provided at different locations inside plant canteen: for full filling the hot requirements like cooking, utensil cleaning, tea making, and vegetable washing & cleaning.

b. Solar Water Heater at Guest House&Colony:

Sl. No.	Location	Total Capacity (LPD)	Remarks
1	D1 type Buildings -	14000	7 nos X 2000 LPD
2	D3 type Buildings	6000	3 nos X 2000 LPD
3	Guest House(Existing)	2000	(2 nos X 500 LPD) + (1 no X 1000 LPD)
Total		22000 LPD	LPD- Litter Per Day

Purpose: To serve the hot water requirement to the individual houses &rooms.

4.Biogas Plant

a. Biogas supplied to guest house for cooking purpose (Total of 1113 Hrs. of Bio Gas supplied to Guest House in FY-2020-21)