

# Patratu Vidyut Utpadan Nigam Ltd

(A subsidiary of NTPC in Joint Venture with JBVNL)

Ref: PVUNL/Phase-I/EC/11

Date: 10.05.2023

To,

The Member Secretary  
Jharkhand State Pollution Control Board  
Township Administration Building  
HEC Complex, Dhurwa, Ranchi-834004

**Sub.: Submission of the Half Yearly Compliance report (01.10.2022 - 31.03.2023) for Environmental Clearance for Patratu Super Thermal Power Project, Phase-I (3 X 800 MW), Patratu.**

Ref: MoEF letter ref. no. J-13012/21/2015-IA.I(T) dated 07.11.2017

Sir,

Enclosed please find the Half yearly Compliance Report (01.10.2023 - 31.03.2023) on Environment Clearance conditions stipulated vide above referred MoEF&CC letter for the Patratu Super Thermal Power Project, Phase-I (3 X 800 MW), Patratu. This is in consent with the competent authority of PVUNL.

Thanking you,

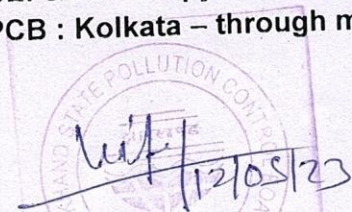
Yours Sincerely,

*R. Mukhopadhyay*  
10/5/23

R. Mukhopadhyay  
AGM(EMG)  
PVUNL, Patratu

Copy to :

1. MoEF&CC – Copy & through PARIVESH portal
2. CPCB : Kolkata – through mail





# Patratu Vidyut Utpadan Nigam Ltd

(A subsidiary of NTPC in Joint Venture with JBVNL)

Date: 10.05.2023

Ref: PVUNL/Phase-I/EC/11

To,

Additional Principal Chief Conservator of Forests (C),  
Ministry of Environment, Forest and Climate Change,  
2<sup>nd</sup> Floor, Jharkhand State Housing Board,  
Harmu Chawk,  
Ranchi - 834 002

Sub.: Submission of the Half Yearly Compliance report (01.10.2022 - 31.03.2023) for Environmental Clearance for Patratu Super Thermal Power Project, Phase-I (3 X 800 MW), Patratu.

Ref: MoEF letter ref. no. J-13012/21/2015-IA.I(T) dated 07.11.2017

Sir,

Enclosed please find the Half yearly Compliance Report (01.10.2022 - 31.03.2023) on Environment Clearance conditions stipulated vide above referred MoEF&CC letter for the Patratu Super Thermal Power Project, Phase-I (3 X 800 MW), Patratu. This is in consent with the competent authority of PVUNL.

Kindly note that the compliance has also been submitted through PARIBESH Portal.

Thanking you,

Yours Sincerely,

*Arind*  
*12/5/23*  
*Received*



*R. Mukhopadhyay*  
*9/5/23*

R. Mukhopadhyay  
AGM(EMG)  
PVUNL, Patratu

रविशंकर  
अपर  
पतरातु विद्युत् उत्पादन निगम लि.  
पतरातु, रामगढ़ (झारखण्ड), 829119

Copy to :

1. JSPCB, Ranchi – Copy
2. CPCB : Kolkata – through mail



# Patratu Vidyut Utpadan Nigam Ltd

(A subsidiary of NTPC in Joint Venture with JBVNL)

## Half Yearly Compliance Report

(01.10.2022-31.03.2023)

of

Patratu STPP, Phase-I (3X800 MW)

Under Construction

As per Environmental Clearance conditions

vide MoEF&CC letter no. J-13012/21/2015-IA.I (T) dated 07.11.2017

### A. SPECIFIC CONDITION:

Sr. No.	Conditions	Compliance as on 31.03.2023
i	Forest land of 431.522 ha is involved in the proposed project. The FC is in the name of M/s Jharkhand Bijli Vitaran Limited. Now, the present PP viz. M/s PVUNL must get this diversion changed in its name before carrying out any work in the diverted forest land under the provisions of Forest (Conservation) Act, 1980.	162.602 acre out of 431.522 acre of land had already been de-notified vide letter no. 1042-R dtd. 09.05.1963, Revenue Department, Govt. of Bihar. For change of FC in the name M/s PVUNL for remaining 268.920 acre of land, matter is being expedited with Forest department/Govt. of Jharkhand (Land is in acres)
ii	Fly ash deposits along the water body shall be excavated immediately. The removal of fly ash deposits in the water bodies shall be completed before the onset of next monsoon.	Removal of Fly ash deposition from Bawandhara nallah (adjoining to the ash dyke) was completed by October 2019. Survey of ash deposition along the Nalkari river, from Bawandhara nallah – Nalkari river confluence to Nalkari river - Damodar river confluence and 500 meters downstream of the Damodar river was carried out. Intermittent ash deposition has been found in riverbed covered with soil, silt & bushes. It is further observed that most of the stretches of the riverbed are non-approachable due to lack of road and covered with boulders and bushes/jungles. Detailed survey report along with action plan was submitted with HYC report (01.09.20-31.10.20). Removal of ash from Nalkari river of approx. 1 km length (from Nalkari-Bhawandhara nallah confluence) was completed by February 2022. Award for ash removal from next 1.5 km of Nalkari river has been placed.
iii	If ash in the existing pond is not evacuated as per the recommendations given by previous sub-committee, embankment shall be constructed around the periphery of ash pond. A retaining wall shall also be constructed alongside of the stream to prevent wash off.	The comprehensive work for the ash dyke including construction of embankment, gabion wall, spillways, drain on the toe, slope protection, etc. based on the design provided by NTPC-Engineering had been completed. Photos submitted with the HYC report (01.09.20-31.10.20).
iv	The ash pond shall be covered with sweet soil of sufficient width so that surface runoff can be controlled and also can act as slope stabilization.	Work Completed
v	Reclamation and stabilization of the existing ash pond shall be carried out in scientific	The comprehensive work of ash dyke stabilization has been completed.



	manner (both biological and engineering measures).	
vi	All other measures such as constructing gabian wall, spillways & filters, drains on the toe, slope protection, etc. shall be implemented. Regional Office of the Ministry shall inspect the progress at least once in three months. The status of the ash pond and dredging of ash deposits shall be submitted along with the six-monthly compliance report to Regional Office as well as MoEF&CC, New Delhi.	The comprehensive work for ash dyke including construction of embankment, gabion wall, spillways, drain on the toe, slope protection, etc. based on the design provided by NTPC-Engineering has been completed. Photos submitted with previous HYC report (01.09.20-31.10.20).
vii	If the breach of ash pond is reported in future, PP shall have to evacuate the total ash from the pond.	Noted and shall be complied
viii	Construction and demolition waste from dismantling the existing power plant shall be disposed of in accordance with the Construction and Demolition Waste Management Rules, 2016.	Noted and being complied
ix	Minimum distance of 500m from the HFL of Nalkari river shall be maintained. Ash mound shall be developed in 340 acres and the height of the ash mound shall be restricted to 35 m (in two benches of 20 m and 15 m height each).	Stipulated minimum distance from Nalkari river will be maintained. Ash mound shall be developed as per guidelines.
x	Ash mound shall be used only in case of emergency. Fly ash utilisation shall be done as per the fly ash notification and its subsequent amendments issued from time to time.	Fly ash utilization shall be done as per the fly ash notification and its subsequent amendments issued from time to time
xi	Garland drains along with stone pitching and gabian wall around the ash mound/ existing ash pond shall be constructed so that no wash off is let out into the Nalkari river.	Construction of garland drains and other requisite measures will be constructed around ash mound. For existing ash pond the work has been carried out as in point no. III & VI.
xii	Action plan for dredging and de-silting of ash deposited along the streams, rivers and reservoirs including Damodar and Nalkari as recommended by Sub-group in their site visit on 28.1.2013 shall be submitted within three months.	There are no reservoirs along flow path of the stream-Nalkari-Damodar river. Action plan for ash removal based on initial survey was submitted to regional office MOEFF&CC – Ranchi vide PVUNL letter dated 09.02.2018 and 07.05.2018. Further a detailed ash deposition survey along the riverbed was carried out and based on that an action plan was submitted to MoEF RO Ranchi vide letter dated 02.09.2020 and along with HYC report (01.09.20-31.1.20).
xiii	Volume of ash pond and quantity of fly ash shall be assessed. Time bound action plan for evacuating and using fly ash before starting the operations of proposed project.	Estimated quantity of pond ash was approx. 8.5 lakh tons. Agreement for use of approx. 3 lac cum of pond ash for construction of Ranchi ring road, Section –VII, a part of which was lifted. However as stipulated in specific condition no. (iii) the stabilization work of the ash dyke has been completed as in point no. VI.
xiv	Authenticated as well as primary baseline data for flora, fauna and bio diversity shall be submitted within one month.	The primary baseline data for flora fauna and biodiversity duly authenticated by DFO, Ramgarh was submitted to MoEF&CC vide PVUN letter dated 17.01.2018.
xv	Time bound action plan along with financial break-up for implementing CSR activities and public hearing commitments shall be submitted within three months.	Community development (CD) plan based on Need base assessment survey and EC recommendations, approved by DC, Ramgarh and PVUN/NTPC management, submitted with the 4 <sup>th</sup> HYC report (April'19-Sep'19). A revised and approved time bound



		action plan with financial breakup was submitted with HYC report (01.10.20-31.03.21)
xvi	Action plan (area, species, density, financial allocation) for achieving 33% green belt development of the total project area shall be submitted within three months.	Action plan for green belt development submitted to MoEF&CC-RO Ranchi vide letter dated 02.09.2020 and with HYC report (01.04.20-30.09.20). Green belt development inside of plant area will be taken up after completion of plant construction expected by March 2025. 8000 trees was planted through Forest Department (Ramgarh) at the total cost of Rs.1,98,77,670/-. Plantation on 10.75 acres and 97.5 acres of land had been initiated in 2020 and 2022 through the forest department, Ramgarh at an estimated cost of Rs. 29,79,202/- and Rs.2,97,82,002/- respectively (10 years depository work : documents submitted with earlier HYC). Further a request letter has been sent to DFO, Ramgarh for taking up of plantation on approx. 100 acres of land in 2023. <b>(Annexure-I)</b> .
xvii	As per the Revised Tariff Policy notified by Ministry of Power vide dated 28.01.2016, project proponent shall explore the use of treated sewage water from the Sewage Treatment Plant of Municipality/local bodies/ similar organization located within 50 km radius of the proposed power project to minimize the water drawl from surface water bodies.	The Minutes of Meeting for the agreement of supply of treated sewage water including lying of cross-country pipeline from Ranchi STP to PSTPP plant, chaired by Secretary, UD&HD, Govt. of Jharkhand, dated 18.07.19 was issued by UD&HD. Accordingly, a draft for agreement between RMC, JUIDCO and PVUN was submitted by PVUNL to GoJ on 7.01.20 for review & comments. However, based on the new order (March 2020) from Ministry of Power, for transportation of sewage water from Municipality STP to a power Plant, a revised draft agreement was submitted to Commissioner, Ranchi Municipal Corporation, GOJ on 27 <sup>th</sup> March 2020 for review & comments. A follow up meeting with commissioner RMC was held on 06.02.21. Follow up letter send on 04.10.21 for meeting regarding draft agreement in light of CEA guidelines for secondary STP water quality. Further revised CEA guidelines for use of treated sewage water in power is under preparation. Waiting for the formal notification/ guidelines by CEA/MoP.
xviii	Compliance of EC conditions, E (P) Act, 1986, Rules and MoEF&CC Notifications issued time to time shall be achieved by a qualified environment officer to be nominated by the Project Head of the Company who shall be responsible for implementation and necessary compliance.	A qualified environment officer will be deputed during operation phase of the plant. However, an Environment Management group is in place in PVUN Limited to carry out environment related activities in PVUNL.
xix	MoEF&CC Notification S.O.3305 (E) dated 7.12.2015 and subsequent notifications issued time to time shall be implemented with respect to specific water consumption, zero liquid discharge and revised emission standards. The PM, SO <sub>2</sub> , NO <sub>x</sub> and Hg emissions shall not exceed 30 mg/Nm <sup>3</sup> , 100mg/Nm <sup>3</sup> , 100mg/Nm <sup>3</sup> and 0.03mg/Nm <sup>3</sup> respectively. The specific water consumption shall not exceed 2.5m <sup>3</sup> /MWh and zero wastewater discharge shall be achieved.	MoEF & CC Notification S.O.3305 (E) dated 07.12.2015 and subsequent notifications shall be complied. High efficiency Electrostatic precipitators (ESP), flue gas desulphurisation (FGD) system, NO <sub>x</sub> emission control systems to maintain emissions within the prescribed limit will be installed in Patratu STPP. Stipulation on specific water consumption and zero liquid discharge shall also be complied.
xx	MoEF&CC Notifications on fly ash utilization S.O. 763(E) dated 14.09.1999,S.O. 979(E) dated 27.08.2003, S.O. 2804(E) dated 3.11.2009, S.O. 254(E) dated 25.01.2016 and	As per MoEF&CC Notifications on fly ash utilization shall be complied during operation phase of the plant.



	subsequent amendments shall be complied with	
xxi	Separate Environmental Clearance may be obtained for the proposed Township as applicable under EIA Notification 2006.	Environment clearance for the township has been accorded by SIEAA, Jharkhand vide Letter No.-EC / SEIAA / 2018-19 / 2088 / 2018 / 52 dated 07/02/2019
xxii	Solar rooftops shall be installed in the surrounding villages as part of CSR activities.	Solar streetlights (167 no.) - Erection & commissioning completed.  Installation of 13 no. solar lighting mast & 650 nos. of solar street lights in surrounding villages – Under tendering process.
xxiii	Skill mapping of the Project Affected People (PAF) be carried out on a long term basis for their livelihood generation. A report is to be submitted within 3 months to the Ministry from the date of issuance of environmental clearance.	The land for PatratuSTPP is transferred by Govt. of Jharkhand to PVUN, so as such there is no Project affected people. However, skill development programs / activities are planned for livelihood generation of local people. Skill mapping is done through Need Assessment Survey by Xavier Institute of Social Science, Ranchi. The Perspective Plan, Suggestions & Conclusion was submitted with 4 <sup>th</sup> compliance report. Details report is available with PVUN.
xxiv	Modern methods of agriculture organic farming, compost/ vermin culture making and utilization, drip/direct to root irrigation) to be promoted in and around the Project area.	54 farmers got benefitted from soil health & improved production programme organized in the month of June, 22 at Balkudra. Training on Agriculture allied activities is planned for 2023-24.
xxv	While implementing CSR, <ul style="list-style-type: none"> <li>• Women empowerment is important. Therefore, proper skill based training/ long term livelihood revenue generation be created for all them.</li> <li>• Computer facilities may be provided in the school along with a trained computer teacher to inculcate computer skill among the youths.</li> <li>• Water supply provisions shall be made for all the bio-toilets under Swachh Bharat Abhiyan.</li> <li>• Preventive health programme may be preferred than the curative health programme such as nutrition development of small children in and around the project.</li> </ul>	<ul style="list-style-type: none"> <li>• Teen health awareness programme organized at KGBV, Patratu</li> <li>• Utkarsh Merit Scholarship Award to 24 students.</li> <li>• Multi-sports kits to Govt. schools &amp; PTVs</li> <li>• Various supports to PTVs towards organize various cultural activities.</li> <li>• Celebration of National Day with villagers.</li> <li>• Computer sets to Govt. Primary schools</li> <li>• Mega medical camps at PTVs</li> <li>• Augmentation of Pipeline water to Kasturba Gandhi Residential School.</li> <li>• Development of infrastructure at PTVs &amp; near by vicinity.</li> </ul>
xxvi	Vision document specifying prospective plan for the site shall be formulated and submitted to the Regional Office of the Ministry within six months.	Vision document Submitted along with 1st half yearly compliance report.
Xxvi i	Harnessing solar power within the premises of the plant particularly at available roof tops shall be carried out and status of implementation including actual generation of solar power shall be submitted along with half yearly monitoring report.	Scheme for harnessing solar power from rooftops of the upcoming plant has been included in the EPC Package of the upcoming plant. Status of implementation and actual generation of solar power will be submitted after construction and operation of the solar system.
xxvii i	A long-term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute and results thereof analysed every two year and reported along with monitoring reports. 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.	Long-term study on heavy metals and radioactivity contents in coal and ash will be carried out through reputed an institute periodically during the operational phase of the plant as per amendment from MoEF&CC vide letter dated 16.03.2022.



xxix	Online continuous monitoring system for stack emission, ambient air and effluent shall be installed.	Shall be complied.
xxx	High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 30 mg/Nm <sup>3</sup> or as would be notified by the Ministry, whichever is stringent. 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 vulnerable dusty areas shall be provided along with an environment friendly sludge disposal system.	High Efficiency Electrostatic Precipitators (ESP) will be installed in order to comply with particulate emission norms. Dust extraction and water spray systems are included in the design of the plant to suppress/avoid dust emissions from coal & ash handling areas along with suitable sludge disposal systems.
xxxii	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 vulnerable dusty areas shall be provided.	Shall be complied.
xxxiii	Monitoring of 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 also be undertaken and results/findings submitted along with half yearly monitoring report.	Surface water from Nalkari river/ Patratu dam and no ground water, is being used for construction of the plant. Quality of surface water from upstream and downstream of Nalkari river, adjacent Bawandhara nallah, ground water collected from a borewell located outside but adjacent to plant area are being monitored on monthly basis. Report of the surface and ground water analysis (Oct'22-Mar'23) is given in <b>Annexure-II</b> . Quantity of surface water to be used for operation will be provided during operational phase of the plant.
xxxiv	A well-designed rainwater harvesting system shall be put in place within six months, which shall comprise of rain water collection from the built up and open area in the plant premises and detailed record kept of the quantity of water harvested every year and its use.	Rainwater harvesting system has been envisaged in the design of the plant and will be implemented. Records shall be maintained during operation phase of the plant.
xxxv	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.	The stipulation is being complied during construction phase and will be complied during operation phase of the plant.
xxxvi	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	Additional soil for leveling of the proposed site is being done using soil generated within the site so as to protect natural drainage system of the area.
xxxvii	Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) shall be monitored in the bottom ash. No ash shall be disposed of in low lying area	Fly ash shall be collected in dry form and stored in intermediate and main silos for direct supply of dry ash to potential users. No ash will be disposed off in low lying areas. Periodic monitoring of mercury and other Heavy metals (Ag, Hg, Cr, Pb etc.) shall be conducted in the bottom ash during operational phase of the plant.
xxxviii	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.	Noted and shall be complied if mine void filling to be adopted as an option for ash utilization.



xxx viii	Fugitive emission of fly ash (dry or wet) shall be controlled such that no agricultural or non-agricultural land is affected. Damage to any land shall be mitigated and suitable compensation provided in consultation with the local Panchayat.	Fugitive emission of fly ash and dust will be controlled, and other points will be complied.
xxx x	Green Belt consisting of three tiers of plantations of native species all around plant and at least 50 m width shall be raised. Wherever 50 m width is not feasible a 20 m width shall be raised, and adequate justification shall be submitted to the Ministry. Tree density shall not be less than 2500 per ha with survival rate not less than 80%.	Green belt will be developed after completion of construction of the plant in the free spaces wherever available inside the plant.
xi	Green belt shall also be developed around the Ash Pond over and above the Green Belt around the plant boundary.	Green belt will be developed around the ash mound during operational phase of the plant.
xli	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.	A Corporate environment Policy was submitted with EIA report. An Environment Management group (EMG) will be formed to ensure adherence to the policy and compliance with all statutory requirements during operational phase of the plant.
xlii	CSR schemes identified based on need based assessment shall be implemented in consultation with the village Panchayat and the District Administration starting from the development of project itself. As part of CSR prior identification of local employable youth and eventual employment in the project after imparting relevant training shall be also undertaken. Company shall provide separate budget for community development activities and income generating programs.	All the CD activities are being implemented in consultation with local representatives & administration in the field of Education, Skill Building, Women Empowerment, Health, Water & Sanitation, Infrastructure Development, Welfare & Culture, Sports, Environment, Covid Care & Others. Total allocated fund for Community development: Rs. 55.4 Crores. Expenditure on CD activities is given in <b>Annexure – III</b> .
xliii	For proper and periodic monitoring of CSR activities, a CSR committee or a Social Audit committee or a suitable credible external agency shall be appointed. CSR activities shall also be evaluated by an independent external agency. This evaluation shall be both concurrent and final.	The project is under construction and accordingly community development activities are being executed. CSR activities will be taken up during operation/ revenue earning phase of the project. However, a CSR Committee has been constituted vide PVUNL board resolution dated 10.06.2020.

## B. GENERAL CONDITIONS

Sr. No.	Conditions	Compliance as on 31.03.2023
i	The treated effluents conforming to the prescribed standards only shall be re-circulated and reused within the plant. Arrangements shall be made that effluent and storm water does not get mixed.	Zero liquid discharge (ZLD) system shall be implemented in the plant for reuse of treated effluents conforming to the prescribed standards. An independent drainage system will be constructed to ensure that plant effluents do not mix with the storm water drainage.



ii	A sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt/plantation.	All sewage emanating from plant will be treated in a sewage treatment plant. The treated sewerage water conforming to prescribed standards shall be utilized for plantation and raising green belt to the extent possible.
iii	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.	Adequate firefighting system to check/ minimize fire in coal stockyard and entire power station including all the auxiliaries and buildings will be implemented in the plant. Copy of these measures with full details will be submitted after commissioning of the systems.
iv	Storage facilities for auxiliary liquid fuel such as LDO/ 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.	Storage facilities for auxiliary liquid fuel LDO/HFO are designed conforming to the safety standards. Sulfur content in the liquid fuel to be used in the plant will not exceed 0.5%. Disaster management plan for the plant has been prepared.
v	First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	All arrangements related to first aid and sanitation for workers during construction phase of the project have been made and kept under the scope of EPC contractor.
vi	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 85 dB(A) from source. 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 audio metric record and for treatment for any hearing loss including shifting to non-noisy/less noisy areas.	Design specification for the equipment has been made to comply with the stipulation. Personal protective equipment has been arranged through contractors during construction phase. The workers in high noise area will be provided with appropriate ear protection devices during operational phase. Periodic examination and necessary treatment of the workers during operation phase shall be done as stipulated.
vii	Regular monitoring of ambient air ground level concentration of SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>2.5</sub> & PM <sub>10</sub> 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 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.	Ambient air ground level concentration of SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>2.5</sub> & PM <sub>10</sub> and Hg around the construction site of the plant is being measured on monthly basis. The analysis result (Oct'22-Mar'23) is placed in <b>Annexure II</b> . Location of AAQMS has been confirmed by JSPCB vide letter no. 1057 dtd 30.11.22. Other stipulation will be complied during operational phase of the plant.
viii	Utilization of 100% Fly Ash generated shall be made from 4th year of operation. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.	Ash utilization in compliance with various stipulations shall be carried out during operational phase of the project. The status of ash utilization shall be submitted to regional office of the Ministry during operational phase.
ix	Provision shall be made for the housing of construction labour (as applicable) 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	Necessary infrastructure & facilities such as housing, sanitation, toilet, medical facilities, safety, drinking water supply etc. are being provided to construction labour through EPC contractor.



	etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	
x	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 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 the Website of MoEF&CC at <a href="http://envfor.nic.in">http://envfor.nic.in</a> .	Complied.  The information on accord of Environmental clearance by MOEF&CC was published in widely circulated newspapers in the region namely: 1 Times of India (English) dated 13.11.2017. 2 Hindustan (Hindi) dated 14/11/2017
xi	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, ZilaParisad/ Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Copy of environmental clearance letters were submitted to concerned panchayats, zila parishad on 30.01.18.  The environmental clearance letter is also uploaded in PVUN website: <a href="https://pvunl.co.in">https://pvunl.co.in</a>
xii	The proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their web site and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM (PM2.5&PM10), SO2, NOx (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.	The Half yearly compliance of environmental conditions is being submitted to regional office (ECZ) MoEFF & CC, Ranchi, JSPCB, CPCB Kolkata and also upload on PVUN website.  Ambient air quality in terms of SO <sub>2</sub> , NO <sub>x</sub> , PM 2.5 & PM10 shall be displayed at convenient location near main gate of company during the operation phase of the project.
xiii	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 environmental clearance conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	The environment statement for each financial year ending 31st March in Form-V will be submitted to the Jharkhand State Pollution control Board (JSPCB) and will also be put on website of the company during operational phase of the plant.
xiv	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to MoEF&CC, 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 by e-mail to the Regional Office, MoEF&CC.	Noted and being complied
xv	The progress of the project shall be submitted to CEA on six monthly basis.	Noted and being complied.



xvi	Regional Office of the MoEF&CC 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 upload the compliance status in their website and up-date the same from time to time at least six monthly basis. Criteria pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the power plant.	The environmental Impact Assessment report & Environment Management plan submitted to regional office (ECZ) MoEFF & CC, Ranchi vide PVUN letter dated 20.11.2017. Other points are noted and being complied. Criteria pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the power plant during operational phase of the plant.
xvii	Separate funds shall be allocated for implementation of environmental protection measures along with item-wise break-up. These cost 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-/expenditure should be reported to the Ministry.	A separate fund for Environment protection measures is allocated. The funds earmarked for the environment protection measures shall not be diverted for other purposes.
xviii	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.	Date of financial closure- 30.10.2017. Date of final approval of the project- 07.11.2017. Date of start of land development-19.06.2018 Other dates will be intimated as and when the stipulated activities are initiated/ completed.
xix	Full cooperation shall be extended to the Scientists/ Officers from the Ministry/ Regional Office of the Ministry/ CPCB/ SPCB who would be monitoring the compliance of environmental status	Full cooperation shall be extended to the Scientists/Officers from the Ministry/Regional office of the ministry at Ranchi/CPCB/Jharkhand SPCB during monitoring the compliance of environmental status.
xx	An as built or as completed report on EMP to be submitted stating the scope/ extent of work envisaged in the EIA along with estimated cost vis-à-vis the actual completed works and cost incurred. A certificate/ completion certificate accordingly, shall have to be submitted before commissioning of the TPP.	Noted
xxi	The Ministry reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction. The Ministry may also impose additional environmental conditions or modify the existing ones, if necessary.	Noted
xxii	The environmental clearance accorded shall be valid for a period of 7 years from the date of issue of this letter to start operations by the power plant.	Noted
xxiii	Concealing factual data or submission of false/ fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Noted
xxiv.	In case of any deviation or alteration in the project proposed including coal transportation system from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of the condition(s) imposed and to add additional environmental protection measures required, if any.	Noted



xxv	The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.	Noted
xxvi	Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.  This issues with the approval of the Competent Authority.	Noted



Annexure – I

Letter to DFO, Ramgarh for plantation on 100 acres of land through forest department, Ramgarh in 2023.

PVUNL

PATRATU

**Patratu Vidyut Utpadan Nigam Ltd**

(A subsidiary of NTPC in Joint Venture with JBVNL)

Ref. : PVUNL/Plantation/2023/1

Date : 18.10.2022

To,

The Divisional Forest Officer,  
Ramgarh Forest Division  
Ramgarh, Jharkhand

2023/1

**Sub. : Request for plantation on approx. 100 acre of land as depository work through Forest Department, Ramgarh in 2023 rainy season.**

Dear Sir,

For compliance of the tree felling permission, granted by DFO, Ramgarh and Environmental clearance, granted by MoEF&CC for construction of Patratu Super Thermal Power Project (3X 800 MW) by Patratu Vidyut Utpadan Nigam Limited (PVUNL), tree plantation is being carried out by PVUNL on regular basis. PVUNL intends to carry out plantation on approx. 100 acres of land through forest department as depository work (block plantation) in the coming monsoon (2023). As discussed, the area for plantation may be identified in **Patratu block or in and around the upcoming power plant.**

It is requested to kindly grant permission for the plantation work (block plantation) on approx. 100 acres of land as depository work in the rainy season, 2023. Budgetary estimate for the plantation work may please be provided for necessary approval at our end.

Thanking you

With regards

R. Mukhopadhyay 18/10/22

Rabi Mukhopadhyay

AGM(EMG)

PVUNL, Patratu

रविशंकर मुखोपाध्याय  
अपर महाप्रबंधक (पर्यावरण)  
पत्रातु विद्युत उत्पादन निगम लिमिटेड  
पत्रातु, रामगढ़ (झारखण्ड) 829119



**Patratu Vidyut Utpadan Nigam Limited**

**Patratu STPP (Phase-I, 3X800 MW)**

Tested & Analysed by Shiva Test House, Patna

Recognised as Environmental Laboratory by MoEFCC, GOI, by Deptt. Of Industry, Forests & Environment, Govt. of Bihar and State Pollution Control Board & Accredited by NABL

Original Test Report are with PVUNL

*Annex - I*

Ambient Air Quality (µg/m <sup>3</sup> )																													
Date	Location	PM10				PM2.5				SO2						NO2						Hg				ANL (dB(A))			
		D1	D2	D3	Avg.value	D1	D2	D3	Avg.value	D1	D2	D3	D4	D5	D6	Avg.value	D1	D2	D3	D4	D5	D6	Avg.value	D1	D2	D3	Avg.value	Day Time	Night Time
21.10.22	Open Storage Yard (West Corner)	88.2	72.3	79.5	80.0	50.4	25.8	40.6	39.0	30.3	25.0	14.7	10.8	8.8	26.4	19.3	39.2	36.7	29.9	29.3	33.9	29.9	33.2	<0.001				70.2	55.0
	North Corner, Corridor for Transmission Line	78.7	85.8	80.7	81.8	60.2	29.5	46.7	45.4	27.1	19.2	16.7	18.8	19.8	30.2	22.0	41.1	34.7	38.3	30.5	31.8	34.0	35.1	<0.001				65.8	51.6
	South Corner, Railway Siding	74.7	73.0	72.1	73.3	45.4	28.2	35.6	36.4	25.1	16.4	10.0	12.1	11.0	16.1	15.1	35.5	41.6	29.4	28.7	28.0	36.9	33.4	<0.001				61.9	54.7
	East Corner, Railway Siding	78.8	66.0	68.8	71.2	45.4	31.9	38.1	38.5	23.2	17.5	13.1	14.1	13.1	21.2	17.1	35.0	42.7	33.6	28.8	28.3	32.9	38.5	<0.001				63.5	50.7
22.11.22	Open Storage Yard (West Corner)	72.4	65.0	85.2	74.2	46.7	34.1	37.9	39.6	16.8	16.0	9.4	12.6	18.9	14.7	14.7	37.0	37.8	32.0	32.8	37.5	31.3	34.7	0.61				69.9	56.2
	North Corner, Corridor for Transmission Line	82.3	74.0	67.8	74.7	48.2	32.9	39.2	40.1	11.7	15.0	7.8	18.6	15.6	13.7	13.7	44.5	35.9	29.9	25.2	30.5	39.2	34.2	<0.001				66.1	51.9
	South Corner, Railway Siding	73.2	65.6	82.2	73.7	44.1	35.3	37.8	39.1	12.8	12.1	9.9	8.9	11.9	15.8	11.9	36.3	33.6	30.2	25.5	39.6	40.3	34.2	0.43				62.1	55.0
	East Corner, Railway Siding	80.7	67.4	72.3	73.4	44.3	32.9	39.2	38.8	17.1	11.3	9.1	15.1	14.1	11.1	13.0	38.3	37.0	33.5	26.0	30.1	28.7	32.3	0.62				62.3	51.2
27.12.22	Open Storage Yard (West Corner)	72.4	65.0	85.2	75.9	46.7	34.1	37.9	40.9	16.8	16.0	9.4	12.6	18.9	14.7	15.6	37.0	37.8	32.0	32.8	37.5	31.3	40.9	<0.001				68.2	55.3
	North Corner, Corridor for Transmission Line	87.2	77.4	69.5	78.0	48.2	35.5	41.8	41.8	15.6	12.0	7.8	10.7	11.7	15.6	12.2	41.1	35.9	29.9	25.2	30.5	39.2	33.6	<0.001				64.5	50.8
	South Corner, Railway Siding	74.9	64.0	83.9	74.3	45.4	35.3	40.3	40.3	22.7	12.1	9.9	8.9	11.9	15.8	13.5	43.0	33.6	30.2	25.5	39.6	40.3	40.3	<0.001				63.4	54.8
	East Corner, Railway Siding	82.3	69.1	75.6	75.7	44.3	35.4	40.5	40.1	17.1	11.3	9.1	15.1	14.1	18.1	14.1	38.3	37.0	33.5	26.0	30.1	42.4	34.6	<0.001				64.2	50.9
23.01.23	Open Storage Yard (West Corner)	76.1	65.4	88.0	76.5	48.0	34.1	43.0	41.7	16.8	16.0	9.4	12.6	13.6	17.8	14.4	41.3	37.8	32.0	32.8	37.5	42.7	37.3	<0.001				68.5	54.7
	North Corner, Corridor for Transmission Line	88.0	77.9	71.4	79.1	48.2	35.5	43.1	42.2	16.6	14.0	8.8	10.7	12.7	17.6	13.4	41.1	38.0	29.9	25.9	32.5	39.2	34.4	<0.001				64.6	50.2
	South Corner, Railway Siding	76.6	65.1	84.6	75.4	46.6	35.3	42.8	41.6	22.7	17.1	9.9	8.9	12.9	18.8	15.0	43.0	33.6	30.2	25.5	39.6	44.3	36.0	<0.001				63.4	53.7
	East Corner, Railway Siding	84.0	69.6	76.4	76.7	43.0	34.2	40.5	39.2	18.1	11.3	9.1	10.1	12.1	17.1	13.0	38.3	35.6	32.1	26.0	28.7	41.0	33.6	<0.001				62.3	50.2
24.02.23	Open Storage Yard (West Corner)	78.4	69.9	77.3	75.2	42.0	35.8	39.5	39.1	26.9	12.7	11.4	9.3	12.4	21.7	15.7	45.0	41.7	32.4	28.8	33.8	36.6	36.1	<0.001				67.5	52.3
	North Corner, Corridor for Transmission Line	78.1	74.1	81.0	77.7	44.4	37.0	42.0	41.1	19.3	13.5	11.2	12.2	14.2	17.2	14.6	42.1	37.3	32.4	29.6	33.8	37.9	35.5	<0.001				63.8	51.2
	South Corner, Railway Siding	76.6	65.1	84.6	75.4	46.6	35.3	42.8	41.6	22.7	17.1	9.9	8.9	12.9	18.8	15.0	43.0	33.6	30.2	25.5	39.6	44.3	36.0	<0.001				64.1	52.0
	East Corner, Railway Siding	77.7	73.7	75.9	75.8	41.8	35.7	38.1	38.5	15.6	13.8	11.5	10.5	11.5	13.5	12.7	39.7	35.4	29.8	30.5	34.7	36.8	34.5	<0.001				62.4	50.0
20.03.23	Open Storage Yard (West Corner)	76.1	73.9	71.9	74.0	43.0	32.8	41.7	39.2	19.9	12.8	8.4	9.4	11.5	21.0	13.8	41.3	34.9	29.9	30.6	34.9	37.0	39.2	<0.001				68.7	54.5
	North Corner, Corridor for Transmission Line	77.6	69.9	73.2	73.6	43.1	32.9	41.8	39.3	24.4	13.0	7.8	8.8	10.7	21.5	14.4	34.5	30.5	27.9	28.5	29.2	36.5	31.2	<0.001				65.1	51.2
	South Corner, Railway Siding	79.8	75.2	71.4	75.5	47.9	34.0	42.8	41.6	20.7	13.1	9.9	9.9	11.9	18.8	13.9	36.3	33.6	28.2	28.9	30.9	38.9	41.6	<0.001				64.5	53.1
	East Corner, Railway Siding	80.9	70.1	77.4	76.1	43.0	32.9	40.5	38.8	22.1	13.4	7.0	10.1	15.1	21.1	14.8	43.8	34.2	28.7	29.4	35.6	38.3	35.0	<0.001				65.3	51.5

**Ground Water Sample**

Date	Parameters	Location	Date	Parameters	Location
		Shah Colony			Shah Colony
		Results			Results
22.10.22	pH	7.34	22.11.22	pH	7.3
	Dissolved Oxygen, mg/l.	4.6		Dissolved Oxygen, mg/l.	5.6
	BOD (3 days at 27°C), mg/l.	<1.0		BOD (3 days at 27°C), mg/l.	0.2
	COD, mg/l.	1.0		COD, mg/l.	1.0
	Total Suspended Solids, mg/l.	34.0		Total Suspended Solids, mg/l.	39.0
	Total Dissolved Solids, mg/l.	340.0		Total Dissolved Solids, mg/l.	362.0
	Conductivity (µmhos/cm.)	507.0		Conductivity (µmhos/cm.)	597.0
	Turbidity, NTU	0.7		Turbidity, NTU	0.8
	Total Alkalinity as CaCO <sub>3</sub> , mg/l.	188.0		Total Alkalinity as CaCO <sub>3</sub> , mg/l.	200.0
Total Hardness as CaCO <sub>3</sub> , mg/l.	172.0	Total Hardness as CaCO <sub>3</sub> , mg/l.	190.0		



Sodium as Na, mg/l.	40.1	Sodium as Na, mg/l.	42.1
Sulphate as SO4, mg/l.	20.8	Sulphate as SO4, mg/l.	23.1
Nitrate as NO3, mg/l.	1.8	Nitrate as NO3, mg/l.	2.1

28.12.22	pH	7.31		Iron, mg/l.	0.42
	Dissolved Oxygen, mg/l.	4.4		Copper, mg/l.	<0.01
	BOD (3 days at 27°C), mg/l.	0.0		Manganese, mg/l.	<0.03
	COD, mg/l.	1.0		Mercury, mg/l.	<0.001
	Total Suspended Solids, mg/l.	26.0		Cadmium, mg/l.	<0.003
	Total Dissolved Solids, mg/l.	340.0		Selenium, mg/l.	<0.01
	Conductivity (µmhos/cm.)	572.0		Arsenic, mg/l.	<0.01
	Turbidity, NTU	0.9		Cyanide, mg/l.	<0.01
	Total Alkalinity as CaCO3, mg/l.	164.0		Lead, mg/l.	<0.01
	Total Hardness as CaCO3, mg/l.	172.0		Zinc, mg/l.	0.41
	Sodium as Na, mg/l.	42.1		Total Chromium, mg/l.	<0.01
	Sulphate as SO4, mg/l.	18.2		Aluminium, mg/l.	<0.1
	Nitrate as NO3, mg/l.	1.7		Boron, mg/l.	<0.1
				Total Coliform, CFU/100 ml.	Absent
		E.coli, CFU/100 ml.	Absent		

24.01.23	pH	7.42		25.02.23	pH	7.28
	Dissolved Oxygen, mg/l.	4.7			Dissolved Oxygen, mg/l.	4.9
	BOD (3 days at 27°C), mg/l.	<0.1			BOD (3 days at 27°C), mg/l.	<0.1
	COD, mg/l.	1.0			COD, mg/l.	1.0
	Total Suspended Solids, mg/l.	41.0			Total Suspended Solids, mg/l.	20.0
	Total Dissolved Solids, mg/l.	371.0			Total Dissolved Solids, mg/l.	265.0
	Conductivity (µmhos/cm.)	614.0			Conductivity (µmhos/cm.)	458.0
	Turbidity, NTU	0.9			Turbidity, NTU	0.8
	Total Alkalinity as CaCO3, mg/l.	194.0			Total Alkalinity as CaCO3, mg/l.	194.0
	Total Hardness as CaCO3, mg/l.	186.0			Total Hardness as CaCO3, mg/l.	166.0
	Sodium as Na, mg/l.	47.1			Sodium as Na, mg/l.	41.1
Sulphate as SO4, mg/l.	21.2	Sulphate as SO4, mg/l.	22.4			
Nitrate as NO3, mg/l.	2.20	Nitrate as NO3, mg/l.	1.80			

21.03.23	pH	7.44		Iron, mg/l.	0.34
	Dissolved Oxygen, mg/l.	4.5		Copper, mg/l.	<0.01
	BOD (3 days at 27°C), mg/l.	<0.1		Manganese, mg/l.	<0.03
	COD, mg/l.	1.0		Mercury, mg/l.	<0.001
	Total Suspended Solids, mg/l.	14.0		Cadmium, mg/l.	<0.003
	Total Dissolved Solids, mg/l.	342.0		Selenium, mg/l.	<0.01
	Conductivity (µmhos/cm.)	522.0		Arsenic, mg/l.	<0.01
	Turbidity, NTU	0.9		Cyanide, mg/l.	<0.01
	Total Alkalinity as CaCO3, mg/l.	182.0		Lead, mg/l.	<0.01
	Total Hardness as CaCO3, mg/l.	190.0		Zinc, mg/l.	0.42
	Sodium as Na, mg/l.	44.1		Total Chromium, mg/l.	<0.01
	Sulphate as SO4, mg/l.	20.2		Aluminium, mg/l.	<0.01
	Nitrate as NO3, mg/l.	2.5		Boron, mg/l.	<0.01
				Total Coliform, CFU/100 ml.	Absent
		E.coli, CFU/100 ml.	Absent		

### Surface Water Sample

Date	Parameters	Location			Date	Parameters	Location		
		Upstream Nalkari River, Near Patratu Dam	Downstream Nalkari River, Near Jai Nagar	Bawandhara Nallah			Upstream Nalkari River, Near Patratu Dam	Downstream Nalkari River, Near Jai Nagar	Bawandhara Nallah
		Results	Results	Results			Results	Results	Results
	pH	8.35	7.90	7.62		pH	7.52	7.46	7.2
	Dissolved Oxygen, mg/l.	7.0	6.8	7.0		Dissolved Oxygen, mg/l.	7.0	6.9	6.0



22.10.22	BOD (3 days at 27°C), mg/l.	1.1	1.2	1.5
	COD, mg/l.	16.0	20.0	20.0
	Total Suspended Solids, mg/l.	17.2	49.0	49.0
	Total Dissolved Solids, mg/l.	106.0	128.0	196.0
	Conductivity (µmhos/cm.)	225.0	239.0	395.0
	Turbidity, NTU	7.3	7.0	10.1
	Total Alkalinity as CaCO <sub>3</sub> , mg/l.	88.0	96.0	188.0
	Total Hardness as CaCO <sub>3</sub> , mg/l.	92.0	96.0	172.0
	Sodium as Na, mg/l.	35.07	36.07	31.06
	Sulphate as SO <sub>4</sub> , mg/l.	17.2	18.3	29.6
Nitrate as NO <sub>3</sub> , mg/l.	0.5	0.7	0.6	

22.11.22	BOD (3 days at 27°C), mg/l.	1.3	1.3	1.8
	COD, mg/l.	13.0	16.0	27
	Total Suspended Solids, mg/l.	162.0	164.0	165.0
	Total Dissolved Solids, mg/l.	355.0	359.0	289.0
	Conductivity (µmhos/cm.)	480.0	499.0	498.0
	Turbidity, NTU	4.8	5.2	2.4
	Total Alkalinity as CaCO <sub>3</sub> , mg/l.	172.0	174.0	192.0
	Total Hardness as CaCO <sub>3</sub> , mg/l.	178.0	186.0	240.0
	Sodium as Na, mg/l.	37.1	41.1	37.1
	Sulphate as SO <sub>4</sub> , mg/l.	23.2	25.7	23.2
Nitrate as NO <sub>3</sub> , mg/l.	0.8	0.8	0.8	

28.12.22	pH	7.54	7.41	7.27
	Dissolved Oxygen, mg/l.	7.6	7.4	7.3
	BOD (3 days at 27°C), mg/l.	1.4	1.6	1.4
	COD, mg/l.	12.0	16.0	8.0
	Total Suspended Solids, mg/l.	122.0	136.0	31.0
	Total Dissolved Solids, mg/l.	304.0	314.0	302.0
	Conductivity (µmhos/cm.)	452.0	464.0	484.0
	Turbidity, NTU	5.2	5.3	2.1
	Total Alkalinity as CaCO <sub>3</sub> , mg/l.	122.0	156.0	172.0
	Total Hardness as CaCO <sub>3</sub> , mg/l.	156.0	164.0	180.0
Sodium as Na, mg/l.	40.1	42.1	35.1	
Sulphate as SO <sub>4</sub> , mg/l.	21.4	24.4	19.2	
Nitrate as NO <sub>3</sub> , mg/l.	0.7	0.74	0.6	

22.11.22	Iron, mg/l.	0.62	0.66	0.54
	Copper, mg/l.	<0.01	<0.01	<0.01
	Manganese, mg/l.	<0.5	<0.5	<0.01
	Mercury, mg/l.	<0.001	<0.001	<0.001
	Cadmium, mg/l.	<0.01	<0.01	<0.001
	Selenium, mg/l.	<0.01	<0.01	<0.01
	Arsenic, mg/l.	<0.01	<0.01	<0.01
	Cyanide, mg/l.	<0.05	<0.05	<0.01
	Lead, mg/l.	<0.01	<0.01	<0.01
	Zinc, mg/l.	0.59	0.6	0.43
	Total Chromium, mg/l.	<0.05	<0.01	<0.01
	Aluminium, mg/l.	<0.01	<0.01	<0.01
	Boron, mg/l.	0.11	0.1	<0.1
	Total Coliform, CFU/100ml.	Present	Present	Absent
	E.coli, CFU/100 ml.	Present	Present	Absent

24.01.23	pH	7.61	7.54	7.48
	Dissolved Oxygen, mg/l.	7.8	7.4	7.2
	BOD (3 days at 27°C), mg/l.	1.2	1.6	1.8
	COD, mg/l.	8.0	12.0	16.0
	Total Suspended Solids, mg/l.	92.0	104.0	147.0
	Total Dissolved Solids, mg/l.	244.0	272.0	279.0
	Conductivity (µmhos/cm.)	427.0	462.0	494.0
	Turbidity, NTU	4.0	4.4	2.8
	Total Alkalinity as CaCO <sub>3</sub> , mg/l.	124.0	148.0	152.0
	Total Hardness as CaCO <sub>3</sub> , mg/l.	136.0	140.0	168.0
Sodium as Na, mg/l.	32.1	35.1	35.1	
Sulphate as SO <sub>4</sub> , mg/l.	17.3	18.1	20.8	
Nitrate as NO <sub>3</sub> , mg/l.	0.5	0.58	0.60	

25.02.23	pH	7.78	7.72	7.36
	Dissolved Oxygen, mg/l.	7.3	7.0	6.0
	BOD (3 days at 27°C), mg/l.	1.3	1.5	1.5
	COD, mg/l.	16.0	19.0	20.0
	Total Suspended Solids, mg/l.	70.0	78.0	92.0
	Total Dissolved Solids, mg/l.	242.0	254.0	224.0
	Conductivity (µmhos/cm.)	418.0	438.0	387.0
	Turbidity, NTU	4.1	4.4	8.2
	Total Alkalinity as CaCO <sub>3</sub> , mg/l.	122.0	132.0	136.0
	Total Hardness as CaCO <sub>3</sub> , mg/l.	132.0	140.0	130.0
Sodium as Na, mg/l.	34.1	37.1	31.1	
Sulphate as SO <sub>4</sub> , mg/l.	17.4	18.7	16.4	
Nitrate as NO <sub>3</sub> , mg/l.	0.50	0.68	0.54	

21.03.23	pH	8.0	7.81	6.81
	Dissolved Oxygen, mg/l.	7.4	6.9	7.2
	BOD (3 days at 27°C), mg/l.	1.5	1.7	1.5
	COD, mg/l.	10.0	14.0	15.0
	Total Suspended Solids, mg/l.	57.0	68.0	75.0
	Total Dissolved Solids, mg/l.	240.0	245.0	254.0
	Conductivity (µmhos/cm.)	398.0	412.0	436.0
	Turbidity, NTU	3.8	4.1	4.3
	Total Alkalinity as CaCO <sub>3</sub> , mg/l.	148.0	152.0	158.0
	Total Hardness as CaCO <sub>3</sub> , mg/l.	164.0	168.0	170.0
Sodium as Na, mg/l.	38.1	42.1	36.1	
Sulphate as SO <sub>4</sub> , mg/l.	18.8	20.4	22.1	
Nitrate as NO <sub>3</sub> , mg/l.	0.59	0.62	0.61	

22.11.22	Iron, mg/l.	0.52	0.54	0.56
	Copper, mg/l.	<0.01	<0.01	<0.01
	Manganese, mg/l.	<0.5	<0.5	<0.01
	Mercury, mg/l.	<0.001	<0.001	<0.001
	Cadmium, mg/l.	<0.01	<0.01	<0.001
	Selenium, mg/l.	<0.01	<0.01	<0.01
	Arsenic, mg/l.	<0.01	<0.01	<0.01
	Cyanide, mg/l.	<0.05	<0.05	<0.01
	Lead, mg/l.	<0.01	<0.01	<0.01
	Zinc, mg/l.	0.44	0.52	0.56
	Total Chromium, mg/l.	<0.05	<0.01	<0.01
	Aluminium, mg/l.	<0.01	<0.01	<0.01
	Boron, mg/l.	0.09	0.11	0.14
	Total Coliform, CFU/100ml.	Present	Present	Present
	E.coli, CFU/100 ml.	Present	Present	Present



Annexure -III

**Community Development Activities**

**Patratu Super Thermal Power Project (3X800 MW, Phase-I)**

All the CD activities are being implemented in consultation with local representatives & administration in the field of Education, Skill Building, Women Empowerment, Health, Water & Sanitation, Infrastructure Development, Welfare & Culture, Sports, Environment, Covid Care & Others.

Total allocated fund for Community development: Rs. 55.4 Crores.

Sl.No	Activities/Events	Expenditure in	Total expenditure till
		October'22 – March'23	31 <sup>st</sup> March 2023
		Rs. (Lakhs)	Rs. (Lakhs)
1.0	EDUCATION, SKILL DEVELOPMENT & WOMEN EMPOWERMENT	0.53	262.47
2.0	HEALTH & SANITATION	0.0	44.02
3.0	SAFE DRINKING WATER	0.99	39.78
4.0	INFRASTRUCTURE	13.4	517.35
5.0	WELFARE & CULTURAL EVENTS	0.88	81.62
6.0	ENVIRONMENT & OTHERS	0.00	27.22
7.0	MID DAY MEAL	0.00	148.04
	<b>Total</b>	<b>15.8</b>	<b>1120.50</b>