SIX MONTHLY COMPLIANCE REPORT
(October 2020 to March 2021)
Of

Environmental Clearance for 2x600 MW Thermal Power Plant and CRZ Clearance of Sea Water Pipeline of Udupi Power Corporation Limited

Submitted to

Regional Office Ministry of Environment, Forest & Climate Change (MoEF&CC),

Zonal Office Central Pollution Control Board,

Karnataka State Pollution Control Board

Submitted By

Udupi Power Corporation Limited

Yelluru Village, Pilar Post, Padubidri,

Udupi District, Karnataka

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UDUPI POWER CORPORATION LIMITED (UPCL):

Udupi Power Corporation Limited is a 2X600 MW imported coal based power project in the Udupi District of Karnataka. Situated in the western coastal region of India, the plant is situated in the village of Yellur, between Mangalore and Udupi.

UPCL is the first independent power project (IPP) using 100% imported coal as fuel in the country. The Udupi Power Project supplies power to the State of Karnataka.

LOCATION OF THE PROJECT

State	Karnataka
District	Udupi
Village	Yelluru (in Padubidri Industrial Area)
Geographical Coordinates	$13^0 9' 00''$ N $74^0 47' 00''$ E $13^0 10' 30''$ N $74^0 48' 40''$ E

Both units of 600 MW at UPCL has sub critical coal fired steam generator each connected to a reheat type condensing steam turbine and generator with water cooled condenser and all other required auxiliaries. Each steam generator of 600MW is rated to generate about 2028 tons/hour of superheated steam at a pressure of about 175 kg/cm^2 and superheat temperature of 540^{0}C. The steam generators are equipped with facilities for HFO/LDO firing for startup and flame stabilization at low loads. Each steam turbine is 3000 rpm rated speed, tandem compound, single re-heat, condensing type machine with extractions for regenerative feed water heating. The turbine is designed for main stream pressure of 170 kg/cm^2 (a) and inlet temperature of 537^{0}C.

Being coastal area with perennial availability of seawater, usage of seawater is envisaged for condenser cooling and fresh water requirement. Re-circulating type of circulating water (CW) system with natural draft cooling towers is installed. Due to availability of Fresh water in this area is seasonal and limited; desalination of seawater is installed for meeting the freshwater requirement for the plant. About 10000 m^3/hr of makeup sea water is required for both the Unit-1 & Unit-2.

The plant has all latest Pollution Control Equipment like, High Efficiency ESP's, Flue gas desulphurization plant, Low NO_x burners and 275 m height chimney.

UPCL has obtained Environmental Clearances from Ministry of Environment & Forest (MoEF&CC), Consent to Establish and Consent for Operation (CFO) from Karnataka State Pollution Control Board (KSPCB). UPCL has also obtained all necessary statutory/mandatory clearances.

Ambient Air quality Monitoring Stations were established in 4 locations inside the plant area for continuous monitoring of Ambient Air Quality. One meteorological

station has also been installed for monitoring of meteorological data. UPCL is monitoring the environmental parameters in and around the plant area through NABL accredited Laboratory.

Environmental clearance was accorded to the project for 2x500 MW fully imported coal based units on 20 March 1997. This EC was amended on 25 Jan 1999 and 09 Sept 2009 permitting enhancement of capacity to 2x507.5 MW and subsequently to 2x600 MW. These amendments in EC were consolidated on 01 Sept 2011 by MoEF&CC.

Detailed compliance status of Consolidated Environment Clearance from MoEF&CC for 2X600 MW Coal based Subcritical Thermal Power plant and CRZ clearance from State Coastal Zone Management Authority for Sea Water Pipeline is being furnished herewith.

S.NO	Conditions	Compliance
A	**Specific Conditions**	
(I)	All the conditions stipulated by the Karnataka State Pollution Control Board issued from time to time should be strictly implemented including the installation of Flue Gas Desulphurization (FGD) Plant. The status of implementation of FGD shall be submitted to the Regional Office of the Ministry at Bangalore.	Complied. All the conditions stipulated by KSPCB are implemented. FGD units are commissioned and are in operation from the inception of Unit-1 & Unit-2 boilers. Unit-I :11th November 2010 Unit-II :19th August 2012
(II)	Sulphur and ash contents in the coal to be used in the project shall not exceed 0.8% and 12 % (average) respectively at any given time. In case of variation of coal quality at any point of time, fresh reference shall be made to the Ministry	Complied for both Sulphur and Ash contents. Average Sulphur and Ash content in coal used for the period of Oct 2020 to Mar 2021 is as below: 1. Sulphur Content: 0.48% 2. Ash Content: 6.79%
(III)	A single bi-flue stack of 275 m height shall be provided with continuous online monitoring equipment's of SO_x, NO_x and Particulate Matter ($PM_{2.5}$ & 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.	A Single bi-flue stack of 275 m height is provided with continuous online monitoring for SO_2, NO_x, Particulate matter and Mercury. Exit velocity of the flue gases from the stack for the period of Oct 2020 to Mar 2021 was 22.8 to 25.2m/s.
(IV)	An instrumented meteorological tower shall be set up for collecting on-site meteorological data.	Complied with. An instrumented meteorological tower is established for online meteorological data. Meteorological data for the period of Oct 2020 to Mar 2021 is enclosed as ***Annexure-I*** for reference.
(V)	High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission from the proposed plant does not exceed	Complied with. High Efficiency Electrostatic Precipitators and low NO_x Burners are installed.

	50 mg / NM^3. Low NO_x Burners shall be installed.	Particulate emissions from the plant are well within the limits. Monitoring values for the period of Oct 2020 to Mar 2021 is enclosed as *Annexure-II* for reference.
(VI)	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.	Complied with. Water Sprinklers are provided in coal yard, coal unloading and coal conveyor systems. Dust Extraction system has been provided at Junction towers Dry Fog dust suppression system is provided in track hopper and bunkers Wind Shield has been provided, photograph enclosed in *Annexure-III* for reference.
(VII)	Transportation of coal from Mangalore Port to the project site shall be undertaken by rail with adequate provisions to prevent fugitive emissions	Complied with. Coal is transported from Mangalore port to plant site is only through rail by BORBN wagons. Wagons are covered with tarpaulin sheets to avoid fugitive emission during transportation.
(VIII)	Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Unutilized fly ash shall be disposed off in the ash pond in the form of slurry. Mercury and other heavy metals (As, Hg, Cr, 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 off in low lying area. To prevent ground water contamination, the ash pond area should be lined with impervious layer.	Complied with. Fly ash is collected in dry form and stored in ash silos. All the generated fly ash is issued to the end users like Cement, RMC, Brick manufactures etc. Fly Ash Utilization details enclosed as *Annexure-IV*. Ash pond is lined with LDPE film as impervious layer to avoid ground water contamination. Mercury and other heavy metals are monitored in the bottom ash through NABL accredited laboratory. No effluent is emanated from ash pond. No ash is disposed in the low lying areas. Test wells are constructed around the ash pond area for water monitoring and monitoring reports for the period of Oct 2020 to Mar 2021 is enclosed as *Annexure-V* for reference.
(IX)	The transportation of dry fly ash to the ash disposal area	Complied with.

	through closed bulkers shall be allowed till 30.03.2012 till the Cement Grinding unit of M/s ACC Ltd. is set up. Monitoring of particulate emissions along the route of transportation shall be carried out	Cement blending unit has installed within the UPCL plant near to Ash silos and ash is transferred from silos to blending unit through closed conduit only. Monitoring is carried out in transportation route. Four no's of online ambient air quality monitoring stations are established for ambient air quality (AAQ) monitoring. AAQ monitoring is also done in transportation route and buffer zone through MoEF&CC and NABL accredited laboratory. Air monitoring reports for the period of Oct 2020 to Mar 2021 is enclosed as ***Annexure-VI*** for reference.
(X)	Extensive monitoring of air quality in and around the power plant and extending up to Western Ghat should be carried out and records should be scientifically maintained. The monitoring Program should cover the key stone species for any potential acid deposition effects.	Complied with. Air quality monitoring is carried through MoEF&CC and NABL accredited laboratory at 8 locations (extending up to Western Ghats) which is finalized in consultation with KSPCB and the monitoring reports are submitted to the KSPCB office monthly. The Monitoring program covers till western Ghats and measure Sulphur dioxide and Nitrogen dioxide, as main precursors for acid rain. Key Stone Species Monitoring is carried once in six months. There is no change noticed. Air quality monitoring reports for the period of Oct 2020 to Mar 2021 is enclosed as ***Annexure-VI*** for reference.
(XI)	No leachate shall take place at any point of time from the Coal storage area and Ash Pond and adequate safety measures such as lining with impermeable membrane / liner shall be adopted. Precautionary measure shall be taken to protect the ash dyke from getting breached and in-built monitoring mechanism shall be formulated.	Complied with. LDPE film is used as impervious layer to avoid ground water contamination from Coal storage and Ash Pond area. Test wells are constructed around the ash pond area for water monitoring and monitoring reports for the period of Oct 2020 to Mar 2021 is enclosed as ***Annexure-V*** for reference.

(XII)	Fugitive emission of fly ash (dry or wet) shall be controlled so 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.	Complied with. Disposal of fly ash is handled through closed conduit within plant. No damage has happened to any land.
(XIII)	COC of at least 1.25 shall be adopted	Complied with.
(XIV)	Closed Circuit Cooling Tower shall be installed and sea water shall be used for cooling purpose. The sweet water requirement shall be met from the desalination plant.	Complied with. Closed circuit cooling tower is provided and sea water is used for cooling purpose. Desalination plant is provided for sweet water requirement.
(XV)	No effluent will be discharged into the Mulki River. The treated effluents shall be discharged through a pipeline in the Arabian Sea ensuring that the differential temperature is maintained at 5^0 C. The area and location of the intake and discharge point shall be finalized in consultation with the National Institute of Oceanography (NIO), Goa/Central Water and Power Research Station, Pune.	Complied with. No effluent is discharged into the Mulki River and there is no connection of UPCL with Mulki River. All the cooling tower blow down and water outlets are discharged back to the sea from Guard Pond through Coro-coated MS-Pipe line at designated place which is finalized in consultation with NIO. The differential temperature is maintained within 5^0 C. All the intake and outfall sea water points are finalized as per recommendations of NIO, Goa.
(XVI)	Brine management from desalination plant, its disposal mechanism and status of implementation shall be submitted to the Regional Office of the Ministry from time to time.	Complied with. Guard pond has been established to collect all the water outlets. Brine from desalination plant is sent to Guard pond and discharged to Sea. Continuous online monitoring system implemented in Guard pond, in addition to that water sample is being collected and analyzed once a week by MoEF&CC and NABL accredited laboratory.

		Guard pond effluent monitoring reports for the period of Oct 2020 to Mar 2021 is enclosed as *Annexure-VII* for your reference.
(XVII)	Possibility for setting up transit storage within plant site for temperature control of effluent before discharging to the sea shall be examined and details submitted to the Ministry **within six months.**	Complied with. Guard pond has been established to collect all the water outlets. Treated effluents, including blow down from the cooling towers are sent back to sea via Guard pond. Effluent temperature maintained within 5^0 C before discharge.
(XVIII)	Monitoring of ground and surface water quality nearby shall 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 or advised by the State Pollution Control Board and records maintained. Monitoring for heavy metals in ground water shall be undertaken.	Complied with. Ground water and Surface water monitoring is carried regularly in the locations finalized in consultation with KSPCB and records are maintained. Monitoring reports are sent to KSPCB once in every month. Monitoring of heavy metals in ground water is carried out monthly. Water monitoring reports for the period of Oct 2020 to Mar 2021 is enclosed as *Annexure-VIII* for reference.
(XIX)	A well designed rain water harvesting system shall be put in place which shall comprise of rain water collection from the built up and open area in the plant premises. Action plan and road map for implementation shall be submitted to the Regional Office of Ministry.	Two Numbers of Rainwater harvesting ponds are constructed and third rainwater harvesting pond is under construction to harvest rainwater. (*Annexure – IX* - Photos Attached)
(XX)	The project proponent shall not hamper the vocation of the fishing community in the area (if any) and it shall be ensured that local fishing community shall be allowed to carry out their vocation. Clearance from the Department of Fisheries in	Complied with. Fishing activity is not hampered. Monitoring of sea water around the intake and outfall points is carried regularly through College of Fisheries, Mangalore. NOC obtained from department of Fisheries, State government of Karnataka.

<table>
<tr><td></td><td>the State Govt. shall be obtained.</td><td>Clearance letter from department of Fisheries Karnataka state government is enclosed as Annexure-X for reference.</td></tr>
<tr><td>(XXI)</td><td>Acquisition of land should be restricted to 550 ha as per the following breakup:
<table><tr><td>Plant area</td><td>180 Ha</td></tr><tr><td>Ash Disposal Area</td><td>150 Ha</td></tr><tr><td>Colony Area</td><td>45 Ha</td></tr><tr><td>In take pipe route</td><td>25 Ha</td></tr><tr><td>Other requirements</td><td>50 Ha</td></tr><tr><td>Rehabilitation, Green belts, Ash utilizations etc.</td><td>100 Ha</td></tr></table></td><td>Complied with.
Following is the current status:
<table><tr><td>Plant area</td><td>170 Ha</td></tr><tr><td>Ash Disposal Area</td><td>46 Ha</td></tr><tr><td>Colony Area</td><td>-</td></tr><tr><td>In take pipe route</td><td>15 Ha</td></tr><tr><td>Other requirements</td><td>8 Ha</td></tr><tr><td>Rehabilitation, Green belts, Ash utilizations etc.,</td><td>82 Ha</td></tr></table></td></tr>
<tr><td>(XXII)</td><td>Green belt of adequate width and density with suitably selected native species should be developed all around the plant area and the ash disposal site. Density of trees shall not be less than 2000 per ha and survival rate not less than 80%. It shall be ensured that at least 1/3rd of the total area is utilized for creation of green belt. Adequate financial provision should be made for this purpose.</td><td>Complied with.
Green belt of about 3,66,955 saplings in 195 acres have been planted.
Survival rate of the plantation is ensured more than 80% by taking appropriate after care methods like Watering, apply manure etc.
Snapshots of Plantation are enclosed as Annexure-XI for reference.
Adequate financial provision for the plantation under Environment budget is made separately. The amount spent for various activities under Environment for the period of Oct 2020 to Mar 2021.
<table><tr><th>Description</th><th>Amount (Rs.)</th></tr><tr><td>Afforestation</td><td>38,22,486</td></tr><tr><td>Environment Monitoring</td><td>47,31,869</td></tr><tr><td>General Environment Management</td><td>60,57,281.94</td></tr><tr><td>Total</td><td>2,54,00,787.88</td></tr></table></td></tr>
<tr><td>(XXIII)</td><td>Local employable youth from Project Affected Family shall be trained in skills relevant to the project for eventual employment in the project itself. The action taken report and details thereof to this</td><td>Complied with.
As per the recommendations from KIADB, project affected families are taken on employment and provided required trainings and skill developments.</td></tr>
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	effect shall be submitted to the Regional Office of the Ministry and the State Govt. Dept. concerned from time to time.	The copy of the letter submitted to KIADB is enclosed as *Annexure-XII* for your reference.
(XXIV)	The project affected people should be rehabilitated and resettled in consultation with the State Govt. of Karnataka. A Rehabilitation Committee should be constituted with representatives from the state of Govt. of Karnataka, affected people, local recognized NGOs, technical institutions, experts etc.	Complied with. Rehabilitation and Resettlement is already provided to the project affected people as per R&R policy of Government of Karnataka.
(XXV)	Status of implementation of R&R including its financial component spent and action pending shall be submitted to the regional Office of the Ministry from time to time.	Complied with.
(XXVI)	Financial requirements for implementations of the environmental mitigative measures should be earmarked and shall not be diverted for the other purposes. Adequate provision should be ensured for enhancement of funds required, if any, in future.	Complied with Financial requirement for Environmental mitigative measures was earmarked at the time of project as per EIA report and measures have been implemented. Operating expenses are earmarked in operation budget on yearly basis. In case of any future requirement funds will be provided as when required.
(XXVII)	The project proponent shall also adequately contribute in the development of the neighboring villages. Special package with implementation schedule for free potable drinking water supply in the nearby villages and schools shall be undertaken in a time bound manner.	Complied with. Potable drinking water supply through RO plant is done. The company is also providing assistance in Medical, Education and Infrastructural facilities etc., to the neighboring villages. Scholarships, green nurturing and school grants are also providing to nearby villages.
(XXVIII)	The project proponent shall formulate sustainable livelihood scheme for landless	Complied with.

	and marginalized section of society (such as landless farmers) in the area who are directly or indirectly affected due to power project.	The Company has engaged local people for various activities like Green belt Development, Area development and other service works like catering etc.,
(XXIX)	At least three nearest village shall be examined for possible adoption and basic amenities like development of roads; drinking water supply, primary health centre, primary school etc shall be developed in co-ordination with the district administration	Complied with. UPCL along with the District Administration has identified various schools in the neighboring villages for adoption and for providing basic amenities like toilet facilities, drinking water, green nurturing, etc.
(XXX)	An amount of Rs. 5.0 Crores shall be earmarked as one time capital cost for CSR programme. Subsequently a recurring expenditure of Rs. 1.0 Crores per annum till the life the plant 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.	Complied with. Rs.5 crore was earmarked onetime cost for CSR during the project phase stage of 2x600 MW plant. Over Rs.1 crore is earmarked and used for all CSR activities every year.
(XXXI)	CSR scheme shall be identified based on need based assessment in and around the villages within 5.0 km of the site and in constant consultation with the village Panchayat and the District Administration. As part of CSR prior identification of local employable youth and eventual employment in the project as required after imparting relevant training shall be also undertaken as necessary.	Complied with. CSR schemes are identified based on need assessment and constant consultation with village Panchayat and the District Administration. CSR team is engaged for assessment and consultation with local villages for CSR activities on a continuous basis. For local youth, scholarships and various other schemes including trainings are provided so as to get them proper education and getting eventual employment opportunities. Snapshots of CSR activities are enclosed as *Annexure-XIII* for reference.
(XXXII)	It shall be ensured that in-built monitoring mechanism for the	Complied with.

	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.	Socio Economic study was carried at the project time as a part of EIA study. Impact assessment of CSR interventions is periodically done internally.
(XXXIII)	A Monitoring Committee should be constituted for reviewing the compliance to various safeguard measures by involving recognized local NGOs. Pollution Control Board, Institutions, Experts etc.	Monitoring Committee is framed comprises of NGO, College Experts and Institution Experts to review Safeguard measures implemented by UPCL.
B	**General Conditions:**	
(I)	A Corporate Environmental Policy shall be formulated and after due approval of the Board of Directors of the Company shall be submitted to the Ministry **with six months.** The policy shall specifically address issues of adherence to environmental policy so formulated and environmental clearance conditions stipulated for the power project and also others including matters related to violations of stipulated conditions (if any) to the Board.	Complied with.
(II)	The treated effluents confirming to the prescribed standards only shall be re-circulated and reused within the plant. Arrangements shall be made that effluents and storm water do not get mixed.	Complied with. All the Effluents are treated through ETP (Effluent Treatment Plant) to meet the effluent standards and the treated water is used for Green belt development/dust suppression.
(III)	A sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt / plantation.	Complied. Modular STP has been installed treating sewage water and discharging for green belt development.

(IV)	A well designed rainwater harvesting shall be constructed. Central Groundwater Authority / Board shall be consulted for finalization of appropriate rainwater harvesting technology within **a period of three months** from the date of issue of clearance and details shall be furnished to the Regional Office of the Ministry.	Two numbers of Rainwater harvesting ponds are constructed to harvest rainwater. Construction of one more rainwater harvesting pond is underway.
(V)	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.	Complied with. Adequate safety measures like fire hydrant, fire extinguishers, smoke detectors, hose reel, hose house, water monitor, D.V system, Fire water pump house, fire tenders are available to prevent from spontaneous fires.
(VI)	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.	Storage facilities in the plant for auxiliary liquid fuel are provided and the facilities are approved by Department of Explosives, Nagpur. Liquid fuel is procured from Oil Companies (GOI Undertakings) and Sulphur content condition is complied with. Environment and disaster preparedness plan is in place and approved by Inspector of Factories and Boilers.
(VII)	Regular monitoring of ground water level shall be carried out by establishing a 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	Complied with. Regular monitoring is being carried in existing wells and test wells constructed around ash pond area and reports are submitted monthly to KSPCB office and the same is submitted to RO-MoEF&CC once in six months. Monitoring reports are enclosed as *Annexure-V and Annexure-VIII* for reference.

	with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	The compared baseline data for the period of Oct 2020 to Mar 2021 is enclosed as *Annexure-XIV*
(VIII)	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.	Complied with, Surface water monitoring is carried regularly in the monitoring points finalized in consultation with KSPCB. Monitoring reports are submitted regularly to RO-KSPCB and same is submitted to RO-MoEF&CC once in six months. Monitoring reports for the period of Oct 2020 to Mar 2021 is enclosed as *Annexure-VIII* for reference. However, surface water Quantity measurement is not applicable.
(IX)	First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase	Complied with. All the arrangements are made during the construction phase.
(X)	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 / noise less areas.	Complied with. Enclosures are provided for turbines to control the noise. The persons working in the high noise area are provided with ear plugs/ear muffs All the employees working in the area are examined periodically for audiometric and records are maintained.
(XI)	Regular monitoring of ground level concentration of SO_2, NO_x, $PM_{2.5}$ & PM_{10} and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to	Complied with. Regular monitoring is carried as per NAAQ standards in all the locations finalized by KSPCB.

	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 Quality Monitoring stations are established in the plant for continuous monitoring of pollution levels. Monitoring reports are regularly submitted to KSPCB and RO-MoEF&CC and copy of the report along with the data is being kept on company website in six monthly compliance reports http://www.adanipower.com/downloads
(XII)	Provision shall be made for the housing of construction labor (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 etc. The housing may be in the form of temporary structures to be removed after the completion of the project	Complied with. All the arrangements are made during the construction phase
(XIII)	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	Complied with
(XIV)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / 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 project proponent.	Complied with Clearance letter is displayed in company website as part of the Six monthly compliance report of EC conditions. http://www.adanipower.com/downloads

(XV)	An Environmental Cell shall be created at the project site itself and shall be headed by an officer of appropriate seniority and qualification. It shall be ensured that the head of the Cell shall directly report to the Head of the Organization. The status report on the functioning of the Cell shall be submitted to the regional office of the Ministry periodically. The Cell shall comprise of an expert in Marine Biology, Fishery and Mangroves preservation.	Complied with. A well-qualified Environment cell is established. Head of the Environment department is directly reporting to station head. Director & Research Karnataka veterinary, Animal & fisheries sciences University Bidar is a member of Environmental Monitoring committee is providing necessary technical assistance in Marine Biology, Fishery and Mangroves preservation issues.
(XVI)	The proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website 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 ($PM_{2.5}$ & PM_{10}), 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.	Complied with. Status of compliance of the stipulated environmental clearance conditions including results of monitored data is kept website and shall update on Six monthly basis. http://www.adanipower.com/downloads Monitoring parameters are displayed near main gate. Online Continuous emission monitoring (CEMS) data is supplied to CPCB and displayed in the public domain through the below said website. URL: http://cpcbrtdms.nic.in/ Regularly monitoring data is submitted to Regional Office of MoEF&CC, Regional Office of KSPCB and Zonal Office of CPCB.
(XVII)	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	Complied with. Copy of Environmental statement for the Financial Year 2019-20 is submitted to RO-MoEF&CC and RO-KSPCB. Copy is enclosed as ***Annexure-XV*** for reference. The copy of Environmental statement is kept in six monthly EC compliance report to MoEF&CC. Six monthly report is displayed through company website. http://www.adanipower.com/downloads

	status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	
(XVIII)	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 environment 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, Ministry of Environment and Forests	Complied with. Six monthly compliance reports are regularly submitted to Regional Office of MoEF&CC, Regional Office of KSPCB and Zonal Office of CPCB. The same is displayed in the company website. http://www.adanipower.com/downloads
(XIX)	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 basis. Criteria pollutants levels including NOx (from stack &	Point is noted. Complied with. Complete set of document including EIA/EMP report was submitted to MoEF&CC and KSPCB for project approval. Status of compliance of the stipulated environmental clearance conditions including results of monitored data is kept on website and shall be updated on Six monthly basis. http://www.adanipower.com/downloads

<table>
<tr><td></td><td>ambient air) shall be displayed at the main gate of the power plant.</td><td>Environmental Monitoring parameters are displayed near the main gate.</td></tr>
<tr><td>(XX)</td><td>Separate funds shall be allocated for implantation 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-wise expenditure should be reported to the Ministry.</td><td>Complied with.
Funds for Environmental protection measures were earmarked at the time of project as per EIA report and measures have been implemented.
Yearly environmental budget is part of the yearly operating cost of the project.
The total Environment Expenditure for the period of Oct 2020 to Mar 2021 included the following:
<table>
<tr><th>S.No</th><th>Detail Description</th><th>Amount (Rs)</th></tr>
<tr><td>1</td><td>Afforestation</td><td>38,22,486</td></tr>
<tr><td>2</td><td>Environment Monitoring</td><td>47,31,869</td></tr>
<tr><td>3</td><td>General Environment Management</td><td>60,57,281.94</td></tr>
<tr><td></td><td>Total</td><td>2,54,00,787.88</td></tr>
</table></td></tr>
<tr><td>(XXI)</td><td>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</td><td>Complied with</td></tr>
<tr><td>(XXII)</td><td>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</td><td>Condition is Noted for compliance.</td></tr>
<tr><td>(5)</td><td>The Ministry of Environment and Forests reserves the right to revoke the clearance if</td><td>Condition is Noted</td></tr>
</table>

	conditions stipulated are not implemented to the satisfaction of the Ministry. The Ministry may also impose additional environmental conditions or modify the existing ones, if necessary.	
(6)	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	Condition is Noted
(7)	In case of any deviation or alteration in the project 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	Condition is Noted
(8)	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 and Handling) Rules, 2008 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.	Condition is Noted & complied.

SIX MONTHLY COMPLIANCE STATUS FOR THE PERIOD Oct 2020 to Mar 2021 OF CONDITIONS IN CRZ CLEARANCE NO. 11-14/2010-IA-III dated 18.05.2010 FOR SEA WATER PIPELINE OF 2x600 MW UDUPI POWER CORPORATION LIMITED

S.NO	Conditions	Compliance
5	**Specific Conditions**	
I	**Construction phase:**	
(I)	All the conditions stipulated by the Karnataka State Coastal Zone Management Authority vide letter No. FEE 25 CRZ 2009, dated 16.02.2010 and the commitments/details submitted to KSCZMA shall be strictly complied with.	Condition is noted & complied.
(II)	Regular monitoring shall be carried out before discharging into sea.	All the used water is directed to Guard pond and regular monitoring is done and reports are submitted on monthly basis to KSPCB also.
(III)	A joint meeting of both the monitoring groups every year shall be carried out and send the report to MoEF.	Complied with. Regular joint meeting of UPCL monitoring team and third party MoEF&CC and NABL approved lab is conducted and monitoring reports are submitted to MoEF&CC on six monthly basis.
(IV)	It should be ensured that there shall not be any disturbance to fishing activity.	Condition is noted & complied.
(V)	All safety precautionary measures viz. stability of the pipeline, signal for fishing boats etc. shall be installed.	Sea water pipeline is in fenced area and Emergency contact number is displayed in critical areas like Road Crossing, Village areas. 3 No's of Safety buoys are provided in the underwater pipeline area for safety of fishing boats.
(VI)	There shall be display boards at critical locations along the pipeline giving emergency instructions. Emergency information board shall contain emergency instructions in additions to contact details	Sea water pipeline is in fenced area and caution boards provided with Emergency contact number is displayed in critical areas like Road Crossing, Village areas. Photos of display boards are enclosed as *Annexure-XVI*
(VII)	The project shall be implemented in such a manner that there is no damage to the mangroves/other sensitive coastal ecosystems	The pipeline area does not include any mangroves/other sensitive coastal eco systems.
(VIII)	A continuous and comprehensive post-project marine quality monitoring program shall be taken	Monitoring is carried for sea water quality at intake and outfall points by Fisheries college, Mangalore. Reports

	up. This shall include monitoring of water quality, sediment quality and biological characteristics and the report shall be submitted every six month to Ministry's Regional Office at Bangalore.	are regularly submitted. Monitoring Report of March 2021 is enclosed as *Annexure-XVII* for reference.
(IX)	It shall be ensured that there is no displacement of people and the houses as a result of the project.	Condition is noted & complied.
(X)	There shall be no withdrawal of ground water in CRZ area, for the project.	Condition is noted & complied.
(XI)	Provision shall be made for the housing of construction labor 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.	All the arrangements were made during the construction phase.
(XII)	A First Aid Room will be provided in the project both during construction and operation of the project	Complied with. All the arrangements are made during the construction phase.
(XIII)	Soil and ground water samples will be tested to ascertain that there is no threat to ground water quality	Complied with. All the construction activities are completed.
(XIV)	Any hazardous waste generated during construction phase, should be disposed off as per applicable rules and norms with necessary approvals of the KSPCB.	Complied with. No hazardous waste is generated during construction phase.
(XV)	The diesel generator sets to be used during construction phase should be low Sulphur diesel type and should confirm to Environment (Protection) Rules prescribed for air and noise emission standards.	Construction work involves only excavation and pipe laying work, so DG sets were not used.
(XVI)	The diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from Chief Controller of	Construction work involves only excavation and pipe laying work, so DG sets were not used.

	Explosives shall be taken.	
(XVII)	Vehicles hired for bringing construction material to the site should be in good condition and should have a pollution check certificate and should confirm to applicable air and noise emission standards and should be operated only during non-peak hours.	Complied with condition.
(XVIII)	Ambient noise levels should confirm to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to confirm to the stipulated standards by CPCB/KSPCB	Condition is noted & complied.
(XIX)	Storm water control and its re-use as per CGWB and BIS standards for various applications.	Work involved only in lying of pipeline underground and back filling.
(XX)	Regular supervision of the above and other measures for monitoring should be in place all through the construction phase, so as to avoid disturbance to the surroundings	Condition is noted & complied.
(II)	**OPERATION PHASE**	
(I)	Noise should be controlled to ensure that it does not exceed the prescribed standards. During night time the noise levels measured shall be restricted to the permissible levels to comply with the prevalent regulations	Not applicable in the area because no structure is available in the area.
(II)	The green belt of the adequate width and density preferably with local species along the periphery of the power plant shall be raised so as to provide protection against particulates and noise as suggested by KSCZMA.	Green belt is developed in the power plant area in accordance with environmental clearance.
(III)	Project proponent shall support afforestation activities by way of	Condition is noted & complied.

<table>
<tr><td></td><td>raising and supply of required seedling by the locals within 5KM radius of the plant as suggested by KSCZMA</td><td></td></tr>
<tr><td>(IV)</td><td>The ground water level and its quality should be monitored regularly</td><td>The work involves only laying of pipeline and no other industrial activities are involved. However regular water monitoring is being carried in the test wells constructed in the pipeline area.
Monitoring reports for the period of Oct 2020 to Mar 2021 is enclosed as Annexure-XVIII for reference</td></tr>
<tr><td>(V)</td><td>The mangroves, if any, on the site should not be disturbed in anyway</td><td>Complied with at the time of pipeline construction.</td></tr>
<tr><td>(VI)</td><td>The environmental safeguards contained in the application should be implemented in letter and spirit</td><td>Complied with.</td></tr>
<tr><td>(VII)</td><td>A separate Environment management Cell with suitably qualified staff to carry out various environment related functions shall be set up under the charge of a Senior Executive who will report directly to the Chief Executive of the Company.</td><td>Well qualified environment cell is established which is headed by HOD-Environment who is directly reporting to station head.</td></tr>
<tr><td>(VIII)</td><td>The funds earmarked for environment protection measures shall be maintained in a separate account and there shall be no diversion of these funds for any purpose. A year wise expenditure on environmental safeguards shall be reported to this Ministry's Regional Office at Bangalore.</td><td>Noted and Complied. Funds for Environmental protection measures were earmarked at the time of project as per EIA report and measures have been implemented.
Yearly environmental budget is part of the yearly operating cost of the project.
The Environment Expenditure for the period of Oct 2020 to Mar 2021 included the following:
<table>
<tr><th>S.No</th><th>Detail Description</th><th>Amount (Rs.)</th></tr>
<tr><td>1</td><td>Afforestation</td><td>38,22,486</td></tr>
<tr><td>2</td><td>Environment Monitoring</td><td>47,31,869</td></tr>
<tr><td>3</td><td>General Environment Management</td><td>60,57,281.94</td></tr>
<tr><td>4</td><td>Environment Water Cess</td><td>-</td></tr>
</table></td></tr>
</table>

			Total	**2,54,00,787.88**
(IX)	In case of deviation or alteration in the project including the implementing agency, a fresh reference shall be made to this Ministry for modification in the clearance conditions or imposition of new one for ensuring environmental protection. The project proponents shall be responsible for implementing the suggested safeguard measures.	Condition is noted & compliance.		
(X)	This Ministry reserves the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry	Condition is noted & compliance.		
(6)	**GENERAL CONDITIONS**			
(I)	Adequate provision for infrastructure facilities including water supply, fuel and sanitation must be ensured for construction workers during the construction phase of the project to avoid any damage to the environment.	Complied with. All the arrangements are made during the construction phase.		
(II)	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Condition is noted & complied.		
(III)	Borrow sites for each quarry sites for road construction material and dump sites must be identified keeping in view the following	Not Applicable since no road construction work involved in the CRZ area.		
(a)	No excavation or dumping on private property is carried out without written consent of the owner	Condition is noted & complied.		
(b)	No excavation or dumping shall be allowed on wetlands, forest areas or other ecologically valuable or sensitive locations.	Condition is noted & complied.		
(c)	Excavation work shall be done in close consultation with the Soil Conservation and Watershed Development Agencies working in the area, and	Condition is noted & complied.		

(d)	Construction spoils including bituminous material and other hazardous materials must not be allowed to contaminate water courses and the dump sites for such materials and the dump sites for such materials must be secured so that they shall not leach into the ground water	Condition is noted & complied.
(IV)	Adequate precautions shall be taken during transportation of the construction material so that it does not affect the environment adversely	Complied with. All the precautionary measures are taken during construction time.
(V)	Borrow pits and other scars created during the laying of cable shall be properly leveled and treated	Complied with. Was not applicable.
(VI)	Adequate financial provision must be made in the project to implement the aforesaid safeguards.	Complied with.
(VII)	The project proponent will set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.	Well qualified Environment cell is established which is headed by HOD-Environment who is directly reporting to Station Head.
(VIII)	Full support shall be extended to the officers of this Ministry/Regional Office at Bangalore by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	Noted for compliance.
(IX)	MoEF or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the	Noted for compliance.

	same shall be complied with.	
(X)	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry	Noted for compliance.
(XI)	In the event of a change in the project profile or change in the implementation agency, a fresh reference shall be made to the MoEF	Noted for compliance.
(XII)	The project proponents shall inform the Regional office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work	The pipeline activity is a part of the total power project. The date of financial closure for the total project was 13.06.2007. The MOEF clearance was originally received on 20.03.1997 and the clearance for augmented capacity (from 2 x 507.5 to 2 x 600 MW) was received on 09.09.2009. Consolidated Environmental clearance received on 01.09.2011. The land development work for the pipeline activity was commenced in March 2009.
(XIII)	KSPCB shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's office/Tahsildar's office for 30 days.	Noted as related to KSPCB.
7	These stipulations would be enforced among others under the provisions of Water Act, 1974, Air Act, 1981, Environment Act, 1986, Public Liability Act, 1991 and EIA Notification 2006, including the amendments and rules made thereafter.	Noted for compliance.
8	All other statutory clearances such as the approvals for storage of diesel from CCE, Fire Department, Civil Aviation Dept, Forest Conservation Act, 1980 and Wild life Act, 1972, etc shall be obtained, as applicable by project proponents from the respective competent authorities	Noted. These clearances were not applicable for sea water pipeline work.

9	The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded EC and copies of clearance letters are available with the KSPCB and may also be seen on the website of MoEF at http://www.envfor.nic.in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional Office of this Ministry at Bangalore.	Complied with. A copy of advertisement in local newspaper is submitted to RO-MoEF vide ref letter No: UPCL/B04/2010/1990 dated: 29.05.2010.
10	EC is subject to final order of the Honorable Supreme Court of India in the matter of Goa Foundation Vs Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	Noted for compliance.
11	Any appeal against this EC shall lie with National Environment Appellate Authority, if preferred, within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Act, 1997.	Noted for compliance.
12	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parishad/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.	This is to clarify that the pipeline activity is a part of the main plant for which there was no need for public hearing as mentioned in MoEF&CC letter.113011/23/96-IA-II (T) Part dated 31.01.2005. Hence no representations were received and therefore this clause is not applicable.
13	The proponent shall upload the status of compliance of stipulated EC conditions, including results of monitored data on their website	Compliance status of the stipulated conditions uploaded on the website. However, results of monitoring data is not applicable since the activity

	and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF at Bangalore, the respective Zonal Office of CPCB and the KSPCB. The criteria pollutant levels namely; SPM, RSPM, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	involved is only laying of the water pipeline and no industrial activity involved in the area under discussion (CRZ). The monitoring data of the main plant is uploaded on the website and displayed near the main gate of the project. Reports are displayed in company website. http://www.adanipower.com/downloads
14	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 as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and SPCB	Complied with. Six Monthly reports are regularly submitted to RO-MoEF&CC, RO-KSPCB and ZO-CPCB.
15	The Environmental Statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned KSPCB 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 Office of MoEF at Bangalore by email.	Complied with. Copy of Environmental statement for the Financial Year 2019-20 is submitted to RO-MoEF&CC and RO-KSPCB is enclosed as ***Annexure-XV*** for reference. The copy of the same is displayed through company website as part of the six-monthly EC compliance report. http://www.adanipower.com/downloads

Annexure-I

METEOROLOGICAL DATA *Annexure-I*

UPCL is having own Continuous Meteorological Observatory Station at site to observe below parameters:

- Temperature
- Humidity
- Wind Speed
- Wind Direction
- Rain fall

Table-1: AVERAGE DAILY METEOROLOGICAL DATA of OCT 2020

Date	Temperature (°C)		Relative Humidity (%)		Rain Fall (mm)
	Min	Max	Min	Max	
1/Oct/2020	25.8	33.1	60.7	90.5	1.5
2/Oct/2020	25.1	31.6	68.1	91.4	0.0
3/Oct/2020	24.9	30.9	66.5	90.3	1.8
4/Oct/2020	23.3	31.3	64.6	91.2	28.8
5/Oct/2020	24.7	33.5	59.2	91.9	0.0
6/Oct/2020	25.1	31.9	66.8	91.2	1.8
7/Oct/2020	25.3	32.3	65.7	91.5	0.8
8/Oct/2020	26.2	32.4	69.2	90.9	0.0
9/Oct/2020	25.7	30.3	69.0	91.0	2.5
10/Oct/2020	24.5	30.6	72.7	92.7	34.2
11/Oct/2020	23.2	28.7	67.2	92.8	11.3
12/Oct/2020	24.3	28.0	75.9	92.9	31.4
13/Oct/2020	23.4	27.6	86.6	92.7	123.1
14/Oct/2020	23.4	26.8	83.3	93.7	3.8
15/Oct/2020	23.8	29.1	72.2	92.0	6.7
16/Oct/2020	23.8	28.3	65.9	92.4	1.1
17/Oct/2020	24.4	29.4	57.5	90.4	0.0
18/Oct/2020	25.0	29.7	57.2	89.2	0.0
19/Oct/2020	24.9	30.3	66.5	90.5	2.7
20/Oct/2020	25.2	29.8	72.8	91.1	47.8
21/Oct/2020	23.9	28.1	74.3	93.2	43.5
22/Oct/2020	23.9	27.2	72.5	93.5	0.0
23/Oct/2020	23.7	26.0	76.3	90.6	0.0
24/Oct/2020	24.8	28.8	64.8	89.5	0.0
25/Oct/2020	25.0	28.7	56.2	92.1	0.0
26/Oct/2020	25.5	31.9	61.5	90.8	0.0
27/Oct/2020	25.7	33.0	65.7	90.8	0.0
28/Oct/2020	25.8	33.5	64.9	93.5	0.0
29/Oct/2020	26.2	31.2	50.8	93.0	0.0
30/Oct/2020	25.6	33.6	47.3	89.0	0.0
Min	**23.2**	**26.0**	**47.3**	**87.5**	**342.80**
Max	**26.8**	**33.6**	**86.6**	**93.7**	
Average	**24.8**	**30.3**	**66.4**	**91.4**	

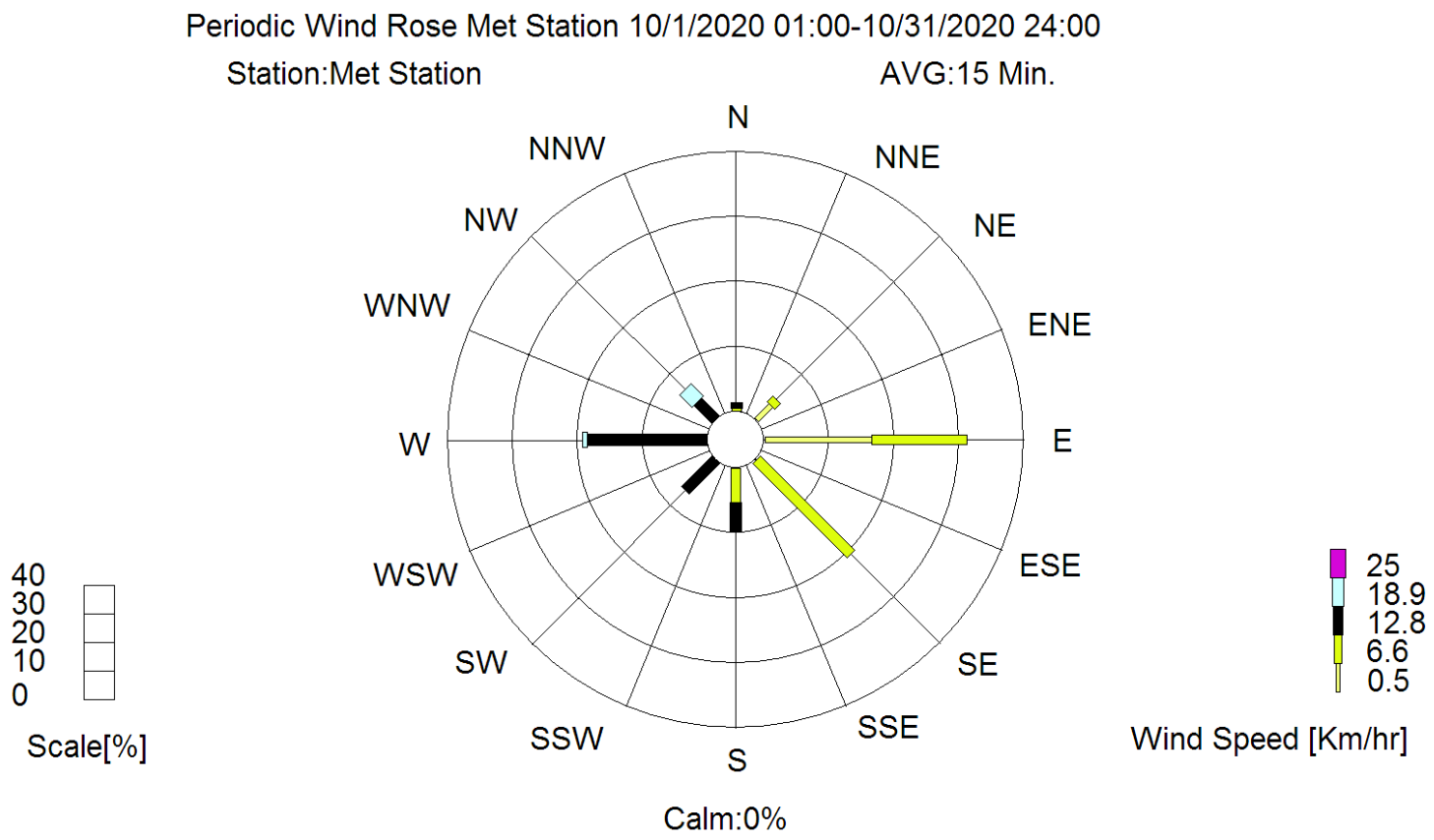

Periodic Wind Rose Met Station 10/1/2020 01:00-10/31/2020 24:00
Station:Met Station
AVG:15 Min.
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
40
30
20
10
0
Scale[%]
25
18.9
12.8
6.6
0.5
Wind Speed [Km/hr]
Calm:0%

Table-2: AVERAGE DAILY METEOROLOGICAL DATA OF NOV 2020

Date	Temperature (°C)		Relative Humidity (%)		Rain Fall (mm)
	Min	Max	Min	Max	
1/Nov/2020	25.8	35.3	58.7	87.9	0
2/Nov/2020	24.6	32.3	65.2	90	0
3/Nov/2020	26.9	33.2	66.5	91.1	0
4/Nov/2020	27.2	33.5	61.1	90	0
5/Nov/2020	26.2	34.9	60.6	89	0
6/Nov/2020	26.6	33.5	62.5	89.5	0
7/Nov/2020	26	34.2	54.3	89.1	0
8/Nov/2020	27.3	36.1	44.7	91.7	1.4
9/Nov/2020	27.7	35.6	56.3	91.8	0
10/Nov/2020	25.7	34.8	33.5	88.5	0
11/Nov/2020	24.5	35	32.7	88.8	0
12/Nov/2020	24.7	32.6	40.4	89.3	0
13/Nov/2020	25	35.6	42.4	89.2	2.7
14/Nov/2020	26.4	34.5	53	90.6	0
15/Nov/2020	27.2	34.4	47.2	91	0
16/Nov/2020	26.9	33.7	53.9	85.6	0
17/Nov/2020	26.1	33.1	46.5	90.6	0
18/Nov/2020	26	33.9	55.5	90.5	0
19/Nov/2020	26.1	33.8	53.4	91.2	0
20/Nov/2020	26.2	32.9	48.5	90.8	0
21/Nov/2020	25.4	34.3	42.9	91.9	0
22/Nov/2020	25.1	33.6	35.7	91.7	0
23/Nov/2020	25	32.4	40.1	89	0
24/Nov/2020	25.7	31.8	43.4	87.4	0
25/Nov/2020	25.3	33.9	51.1	91.4	0
26/Nov/2020	25.3	32	50.9	90.2	0
27/Nov/2020	26.1	32.9	41.4	86.7	0
28/Nov/2020	23.7	31.7	44.8	86.5	0
29/Nov/2020	26.3	33.2	49.9	89.6	0
30/Nov/2020	26.2	34.7	50.7	88	0
Min	**23.7**	**31.7**	**32.7**	**85.6**	**41.10**
Max	**27.7**	**36.1**	**66.5**	**91.9**	
Average	**25.9**	**33.8**	**49.6**	**89.6**	

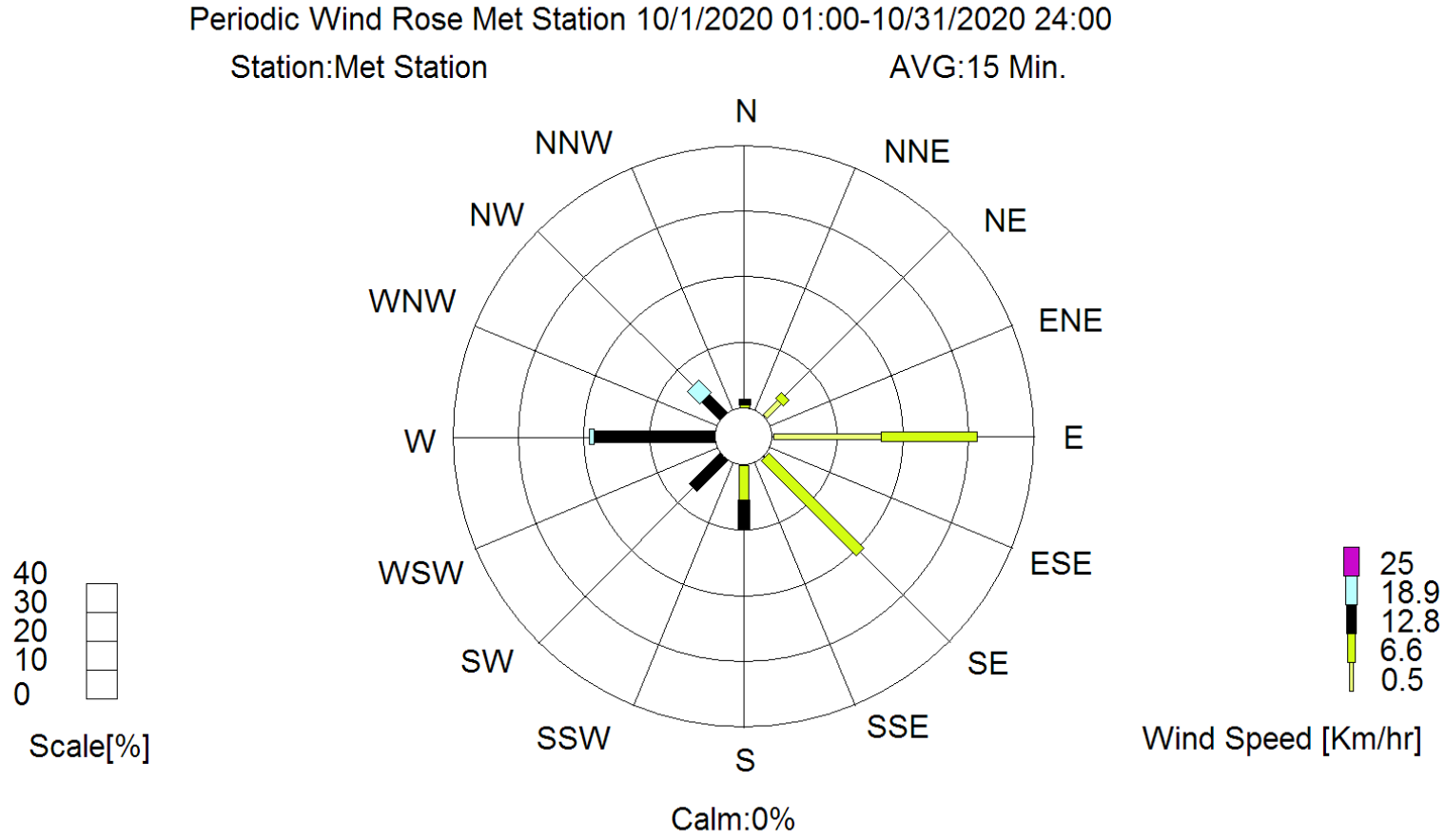

Periodic Wind Rose Met Station 10/1/2020 01:00-10/31/2020 24:00
Station:Met Station
AVG:15 Min.
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
40
30
20
10
0
Scale[%]
25
18.9
12.8
6.6
0.5
Wind Speed [Km/hr]
Calm:0%

Table-3: AVERAGE DAILY METEOROLOGICAL DATA OF DEC 2020

Date	Temperature (°C)		Relative Humidity (%)		Rain Fall (mm)
	Min	Max	Min	Max	
1/Dec/2020	25.8	34.8	54.2	87.9	0
2/Dec/2020	24.6	34.4	39.4	88.7	0
3/Dec/2020	24.9	33.1	46.1	87.6	0
4/Dec/2020	25.7	34.3	47.2	86.2	0
5/Dec/2020	25.6	35.3	46.2	87.5	0
6/Dec/2020	26.7	36	44.7	87.7	0
7/Dec/2020	26.4	35.5	47.5	85.6	0
8/Dec/2020	24.6	33.8	42.4	92.1	6.8
9/Dec/2020	25	34.3	46.3	94	0
10/Dec/2020	26.8	34	50.2	90.6	0
11/Dec/2020	26.2	32.4	59.1	88.2	0
12/Dec/2020	25.5	31.6	65.3	90.5	0
13/Dec/2020	25.8	33.7	55.5	90.9	0
14/Dec/2020	27	33.8	58.8	90.7	0
15/Dec/2020	26.6	34.7	40.7	92	0
16/Dec/2020	26.1	34.6	45.3	90.2	0
17/Dec/2020	26.2	34.7	49.7	86.8	0
18/Dec/2020	27	36	48.3	89.4	0
19/Dec/2020	26.4	35.4	43.2	91.9	0
20/Dec/2020	12.2	31.8	33.7	88.2	0
21/Dec/2020	25.4	34.9	39.8	89	0
22/Dec/2020	24.3	34.4	35.7	89.3	0
23/Dec/2020	27.4	34.7	45.2	85.3	0
24/Dec/2020	26.8	35.2	48.6	87.6	0
25/Dec/2020	18.1	31	50.2	86.1	0
26/Dec/2020	26.2	35.3	47.1	91.1	0
27/Dec/2020	25.2	34.7	35.6	89.4	0
28/Dec/2020	25.9	35.5	43.5	86.6	0
29/Dec/2020	26.2	35.3	35.1	86.8	0
30/Dec/2020	25.4	35	46	89.8	0
Min	**12.2**	**31.0**	**33.7**	**85.3**	**6.80**
Max	**27.4**	**36.0**	**65.3**	**94.0**	
Average	**25.3**	**34.4**	**46.3**	**88.9**	

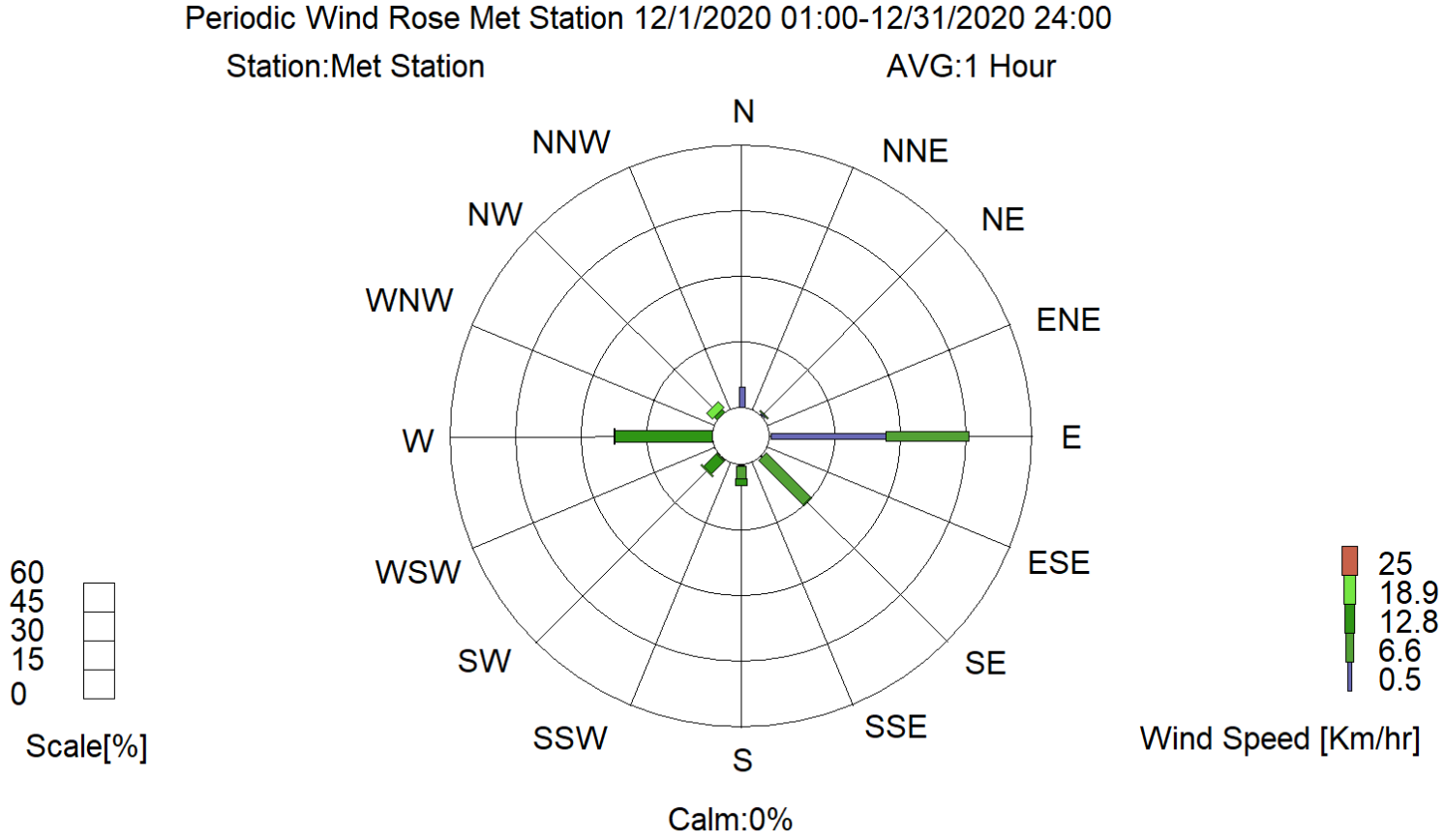

Periodic Wind Rose Met Station 12/1/2020 01:00-12/31/2020 24:00
Station:Met Station
AVG:1 Hour
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
60
45
30
15
0
Scale[%]
25
18.9
12.8
6.6
0.5
Wind Speed [Km/hr]
Calm:0%

Table-4: AVERAGE DAILY METEOROLOGICAL DATA OF JAN 2021

Date	Temperature (°C)		Relative Humidity (%)		Rain Fall (mm)
	Min	Max	Min	Max	
1/Jan/2021	26.2	35.8	46.9	88.9	0
2/Jan/2021	24.6	33.9	41.6	89.4	0
3/Jan/2021	26.1	32.8	46.8	87.5	0
4/Jan/2021	25.4	33	49.9	85.6	0
5/Jan/2021	25.2	34.5	55.6	91	0
6/Jan/2021	23.4	32.4	46.3	93.9	174.4
7/Jan/2021	23.7	33.2	56.1	93.9	0
8/Jan/2021	23.9	29.4	67.8	87.1	0
9/Jan/2021	25.1	32.2	59.9	91.2	0
10/Jan/2021	24.9	32.5	52.6	92.6	0
11/Jan/2021	25.9	33.5	52.4	90.6	0
12/Jan/2021	25.9	32.8	51.1	99.9	0
13/Jan/2021	26.8	32.6	35.2	99.4	0
14/Jan/2021	25.7	34.8	52.3	95.6	0
15/Jan/2021	26.7	32.9	34.8	80.5	0
16/Jan/2021	26.2	33.2	35.4	86.3	0
17/Jan/2021	25.1	32.7	34.7	78.3	0
18/Jan/2021	26.2	32.8	33.4	88.2	0
19/Jan/2021	25.6	34.2	32.9	90.8	0
20/Jan/2021	24.9	34.7	34.1	87.7	0
21/Jan/2021	25	32	32.5	86.5	0
22/Jan/2021	24.8	31.9	33.5	87.1	0
23/Jan/2021	24.7	33	33.5	85.3	0
24/Jan/2021	26.3	34.4	46.6	84.9	0
25/Jan/2021	24.8	35.1	32.4	89.2	0
26/Jan/2021	26.3	33.4	31.7	88.2	0
27/Jan/2021	24.1	32.4	32.6	85.1	0
28/Jan/2021	25.2	33.5	32.8	88.2	0
29/Jan/2021	23.5	34.5	37.6	85.3	0
30/Jan/2021	24.5	32.8	33.5	86.7	0
31/Jan/2021	25.8	32.7	33.6	79.8	0
Min	**23.4**	**29.4**	**31.7**	**78.3**	**174.40**
Max	**26.8**	**35.8**	**67.8**	**99.9**	
Average	**25.2**	**33.2**	**41.9**	**88.5**	

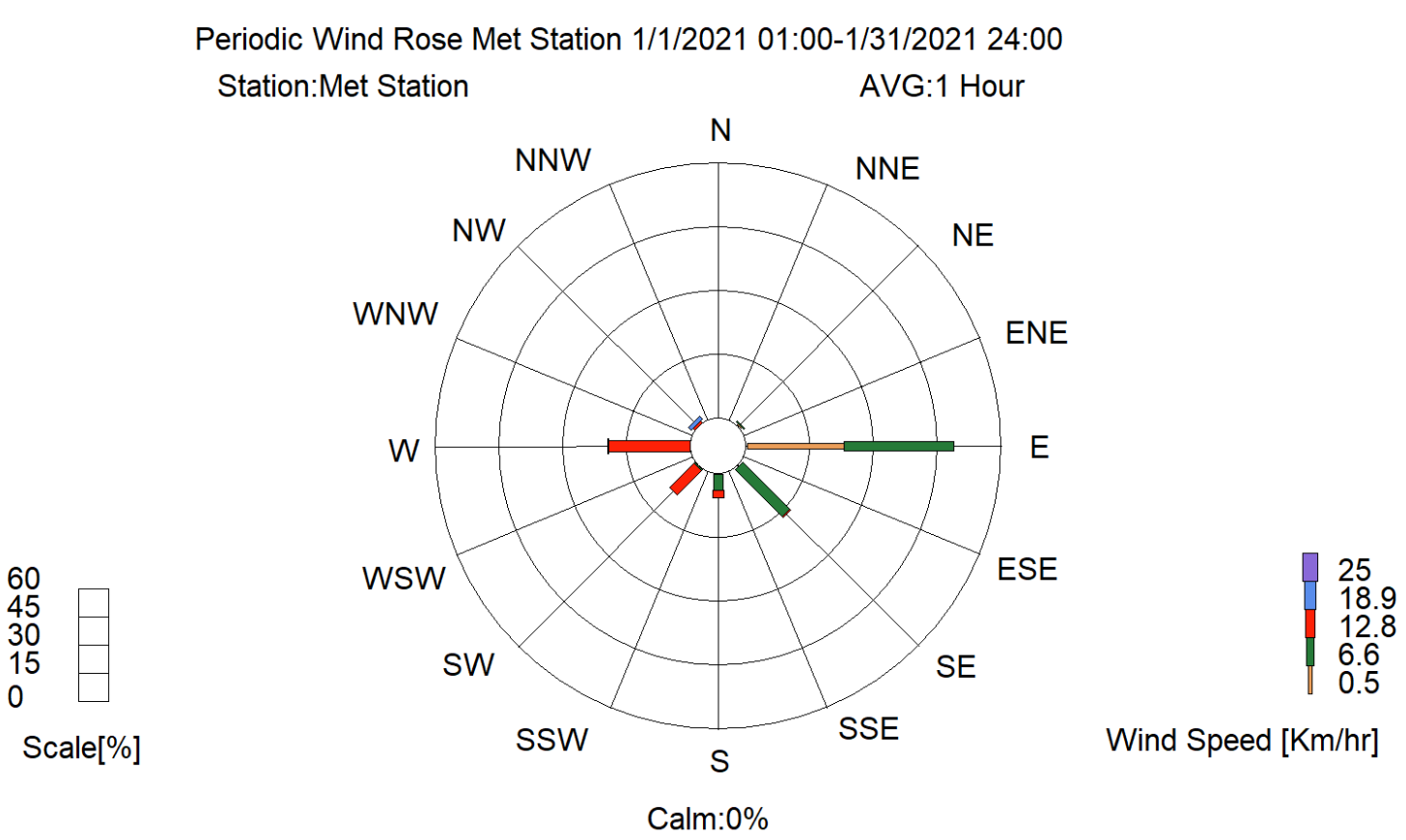

Periodic Wind Rose Met Station 1/1/2021 01:00-1/31/2021 24:00
Station:Met Station
AVG:1 Hour
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
60
45
30
15
0
Scale[%]
25
18.9
12.8
6.6
0.5
Wind Speed [Km/hr]
Calm:0%

Table-5: AVERAGE DAILY METEOROLOGICAL DATA OF FEB 2021

Date	Temperature (°C)		Relative Humidity (%)		Rain Fall (mm)
	Min	Max	Min	Max	
1/Feb/2021	25.1	34.8	39.98	86.88	0
2/Feb/2021	25.8	35.2	30.27	76	0
3/Feb/2021	25.9	32.3	41.18	78.07	0
4/Feb/2021	25.5	33.7	41.64	84.95	0
5/Feb/2021	25.9	33.6	51.21	80.79	0
6/Feb/2021	24.7	33	34.72	86.53	0
7/Feb/2021	25.6	34	34.47	79.37	0
8/Feb/2021	25.2	34.2	29.39	70.66	0
9/Feb/2021	24.5	33.6	37.83	77.11	0
10/Feb/2021	24	33.7	33.32	83.97	0
11/Feb/2021	25.3	32.5	41.91	85.57	0
12/Feb/2021	24.8	33.9	35.6	84.08	0
13/Feb/2021	25.1	33.1	37.93	79.59	0
14/Feb/2021	27.9	34.9	44.28	76.91	0
15/Feb/2021	27.7	34.8	46.82	82.58	0
16/Feb/2021	26.9	33.9	46.25	83.42	0
17/Feb/2021	25.9	34.3	45.72	83.95	0
18/Feb/2021	26.4	34.2	45.63	79.36	0
19/Feb/2021	25.3	33	46.17	82.83	0
20/Feb/2021	23.6	33.3	37.92	74.2	0
21/Feb/2021	24.8	32.1	39.28	73.54	0
22/Feb/2021	24.2	30.2	52.18	81.6	0
23/Feb/2021	23.8	33.3	37.3	77.98	0
24/Feb/2021	25.7	32.5	42.23	84.32	0
25/Feb/2021	26.6	32.9	44.56	87.76	0
26/Feb/2021	26.6	35.2	45.79	86.31	0
27/Feb/2021	25.8	31.7	49.64	90.53	0
28/Feb/2021	25.5	31.6	58.25	88.43	0
Min	**23.6**	**30.2**	**29.4**	**70.7**	**0.0**
Max	**27.9**	**35.2**	**58.3**	**90.5**	
Average	**25.5**	**33.4**	**41.8**	**81.7**	

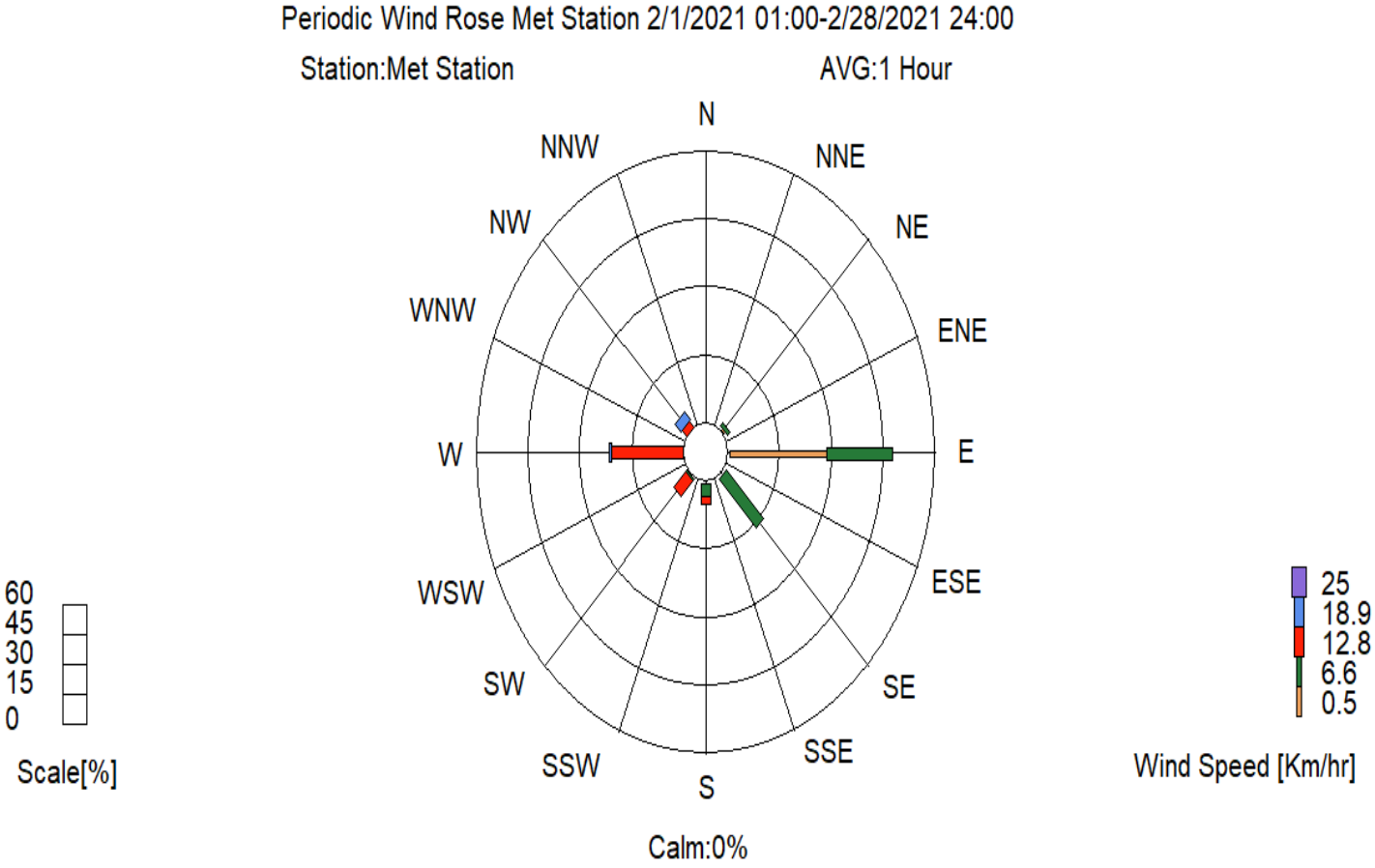
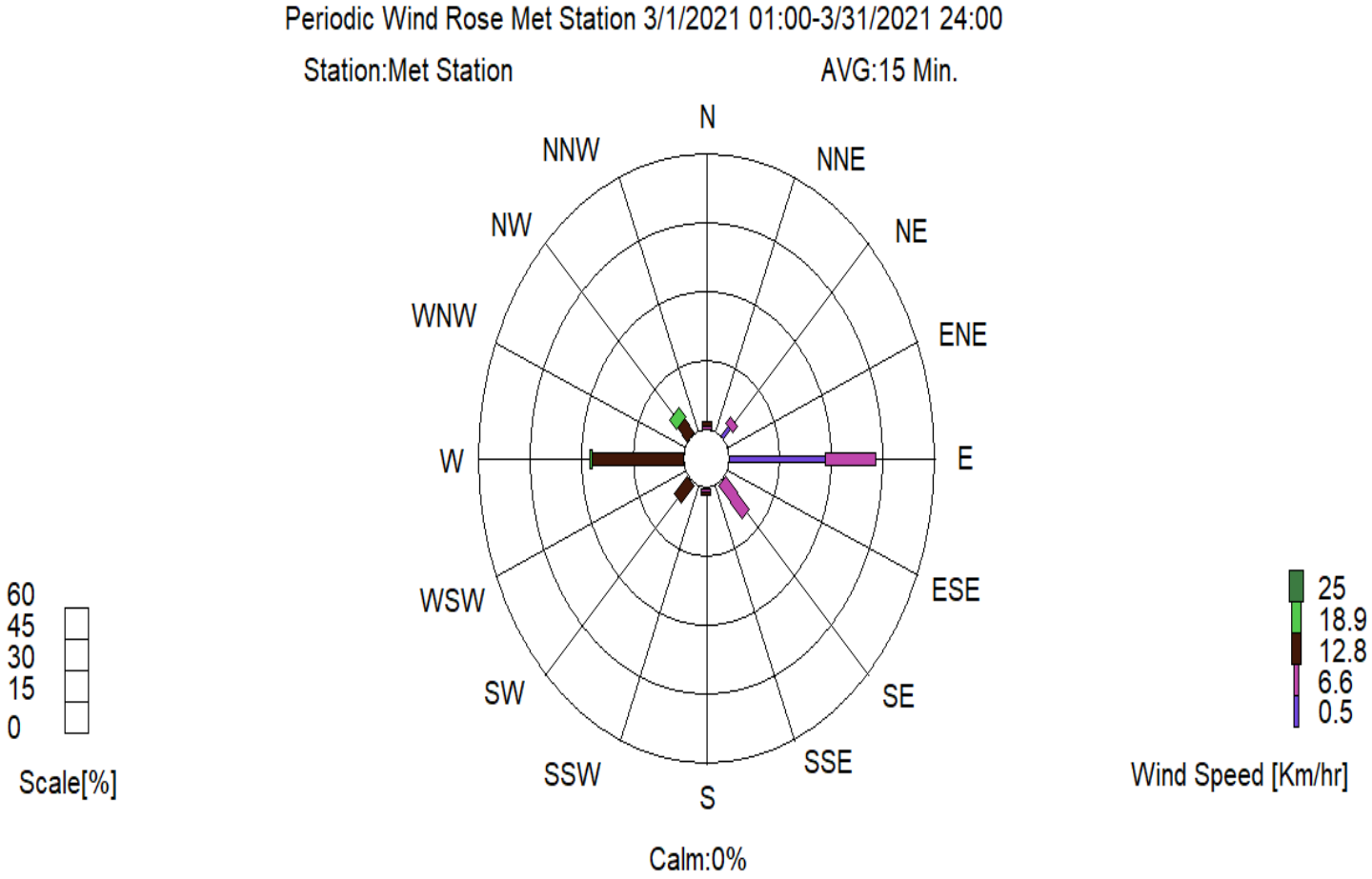

Periodic Wind Rose Met Station 2/1/2021 01:00-2/28/2021 24:00
Station:Met Station
AVG:1 Hour
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
60
45
30
15
0
Scale[%]
25
18.9
12.8
6.6
0.5
Wind Speed [Km/hr]
Calm:0%

Table-6: AVERAGE DAILY METEOROLOGICAL DATA OF MAR 2021

Date	Temperature (°C)		Relative Humidity (%)		Rain Fall (mm)
	Min	Max	Min	Max	
1/Mar/2021	24.6	32.4	57.28	95.36	0
2/Mar/2021	27.3	34.1	50.16	88.42	0
3/Mar/2021	27.4	34.8	50.7	87.63	0
4/Mar/2021	26.8	34.8	25.3	90.25	0
5/Mar/2021	27.4	34.4	43.06	80.03	0
6/Mar/2021	28.1	35	45.36	83.19	0
7/Mar/2021	27.2	35.2	45.35	87.94	0
8/Mar/2021	27.2	32.9	52.76	90.59	0
9/Mar/2021	29.1	35.6	48.29	89.7	0
10/Mar/2021	28.1	34.8	47.84	87.4	0
11/Mar/2021	28	30.8	59.65	86.63	0
12/Mar/2021	26.5	33.4	53.29	86.13	0
13/Mar/2021	28.1	33.4	45.63	82.04	0
14/Mar/2021	27.3	33	48.97	88.36	0
15/Mar/2021	27.2	34	46.38	87.82	0
16/Mar/2021	27	33.2	54.34	83.87	0
17/Mar/2021	28.5	32.3	47.6	86.98	0
18/Mar/2021	27.9	32.3	52.06	86.16	0
19/Mar/2021	27.6	33.6	49.3	86.32	0
20/Mar/2021	27.3	31.5	55.73	87.21	0
21/Mar/2021	26.4	32.4	50.41	82.76	0
22/Mar/2021	27.3	33	47.61	85.75	0
23/Mar/2021	27.8	34.1	48.57	84.84	0
24/Mar/2021	28.1	34.7	46.67	85.66	0
25/Mar/2021	27.2	34.3	49.8	84.77	0
26/Mar/2021	29.3	34.9	53.61	86.71	0
27/Mar/2021	29	34.9	55.25	87.56	0
28/Mar/2021	27.2	34.4	54.61	83.84	0
29/Mar/2021	26.8	34.5	56.14	86.41	0
30/Mar/2021	25.3	34.9	51.32	82.22	0
Min	**24.6**	**30.8**	**25.3**	**80.0**	**0.0**
Max	**29.3**	**35.6**	**63.0**	**95.4**	
Average	**27.5**	**33.8**	**50.2**	**86.4**	


Periodic Wind Rose Met Station 3/1/2021 01:00-3/31/2021 24:00
Station:Met Station
AVG:15 Min.
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
60
45
30
15
0
Scale[%]
25
18.9
12.8
6.6
0.5
Wind Speed [Km/hr]
Calm:0%

Annexure-II

STACK MONITORING

Annexure-II

Stack Monitoring has been carried out by NABL accredited laboratory in the frequency of once in fifteen days per month. The monitoring reports for both the units during the period of OCT 2020 to MAR 2021 are as Table-1 below.

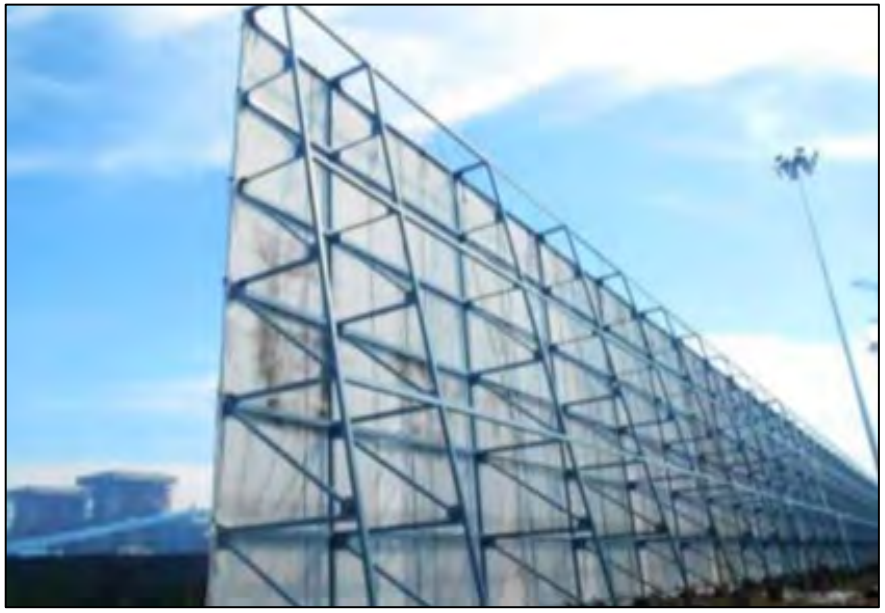
Table-1: Stack monitoring report for the period of OCT 2020 to MAR 2021

Stack	Parameters	Oct-20		Nov-20		Dec-20		Jan-21		Feb-21		Mar-21		Average
		10.10.2020	23.10.2020	07.11.2020		12.12.2020	26.12.2020	08.01.2021	27.01.2021	09.02.2021	12.02.2021	06.03.2021	25.03.2021	
Boiler-I	Particulate Matter (mg/Nm³)	SD	23.7	25.9	SD	24.8	24.2	SD	SD	SD	24.13	26.6	16.2	23.6
	SO2 (mg/Nm³)		1228	965		885.3	881.2				912.3	1241.5	1183.7	1042.4
	NOx (mg/Nm³)		201.4	220		196.4	195.9				192.23	171.4	118.7	185.1
	Mercury mg/Nm³)		BDL	BDL		BDL	BDL				BDL	BDL	BDL	BDL
	Flue Gas Velocity (m/s)		23.1	23.5		23.4	25				24.6	24.15	23.1	23.8
	Flow Rate (Nm³/hr)		2178670	2259506		2238713	2317016				2374554	2322340	3018574	2387053.3
											27.02.2021			
Boiler-II	Particulate Matter (mg/Nm³)	20.6	12.8	26.5	SD	20.3	21.2	32.1	25.87	37.21	28.2	28.8	SD	25.4
	SO2 (mg/Nm³)	1412	1436	1050		839	841.2	779.2	753.2	749.9	1045	968		987.4
	NOx (mg/Nm³)	157.2	160.3	190		147	148.2	201.2	189.7	186.2	195.4	176.8		175.2
	Mercury (mg/Nm³)	BDL	BDL	BDL		BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
	Flue Gas Velocity (m/s)	23.3	22.7	25		22.8	23.1	23.8	24.1	25.2	23.7	24.2		23.8
	Flow Rate (Nm³/hr)	2232647	2073140	23913.07		2205340.5	2178670	2238363	2345279	3296137	2209070	2345746		2114830.6

Note: SD= Shut down

Annexure-III

CHP Wind Shield *Annexure - III*



Annexure-IV

Annexure-IV

Fly Ash Generation & Utilization for the period of Oct 2020 to Mar 2021

Month	Ash Generation			Ash Utilization			
	Fly Ash (MT)	Bottom Ash (MT)	Total Ash Generation (MT)	Fly Ash (MT)	Bottom Ash (MT)	Pond Ash (MT)	Total Ash Utilization (MT)
Oct-2020	5505	759	6264	6003	759	0	6762
Nov-2020	3085	542	3627	4285	542	0	4827
Dec-2020	14010	1440	15450	8184	1440	456	10080
Jan-2021	4891	604	5495	6155	604	2450	9209
Feb-2021	5596	638	6234	7096	638	460	8194
Mar-2021	6949	896	7845	6949	896	2500	12395
Total	**40036**	**4879**	**44915**	**38672**	**4879**	**5866**	**51467**

Annexure-V

TEST WELLS MONITORING AROUND ASH POND *Annexure-V*

Ash pond is lined with LDPE film of 500 µ thickness as an impervious layer to avoid ground water leachate contamination.

Water samples from Test wells (4 Nos) around the ash pond area are analyzed for Ground water monitoring. Monitoring reports for the period of Oct 2020 to Mar 2021 is presented in the Table-1 to Table-4 as shown in below:

The nomenclature for test wells is as below:

1. Test well constructed on North Side of the Ash Pond
2. Test well constructed on South side of the Ash Pond
3. Test well constructed on East Side of the Ash Pond
4. Test well constructed on West Side of the Ash Pond

Table-1: Results of Water Sample from Test Well constructed in North side of Ash Pond sampling period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Min	Max	Average
1	Color	Hazen	5	15	2	2	3	2	3	3	2	2	3
2	pH	-	6.5 - 8.5	No Relaxation	6.98	6.91	6.84	6.96	6.84	6.93	6.98	6.91	6.84
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	0.5	0.8	0.7	3	0.9	1	0.5	3	1.15
6	TDS	mg/l	500	2000	75.2	77.2	84	70	75.2	68	68	84	74.93
7	Alkalinity as $CaCO_3$	mg/l	200	600	56.8	49.27	49.9	42.3	48.4	44.4	42.3	56.8	48.51
8	Total Hardness	mg/l	200	600	37.8	11.19	26.4	42.1	38.3	33.6	11.19	42.1	31.57
9	Calcium as Ca	mg/l	75	200	7.5	4.48	4.5	10.7	8.5	8.4	4.48	10.7	7.35
10	Magnesium as Mg	mg/l	30	100	4.5	BDL (DL 2)	3.6	3.7	4.1	3	3	4.5	3.78
11	Iron as Fe	mg/l	0.3	No relaxation	0.2	0.13	0.2	0.21	0.24	0.21	0.13	0.24	0.20
12	Sulphate as SO_4	mg/l	200	400	5.4	6.34	10.5	12.6	BDL	BDL	5.4	12.6	8.71
13	Chloride as Cl	mg/l	250	1000	18.5	5.53	10.6	19.4	15.4	15.8	5.53	19.4	14.21
14	Boron as B	mg/l	0.5	1	BDL (DL 0.1)	BDL (DL 0.1)	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	1.6	0.57	0.55	1.64	0.55	1.64	1.09
20	Arsenic as As	mg/l	0.01	0.05	BDL	0.2	BDL	BDL	BDL	BDL	0.2	0.2	0.20
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	1	1.5	BDL	BDL	BDL	BDL	1	1.5	1.25
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Nil	Nil	Nil	BDL	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zer

Table-2: Results of Water Sample from Test Well constructed in South side of Ash Pond sampling period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Min	Max	Average
1	Color	Hazen	5	15	1.5	2	4	2	3	3.5	1.5	4	2.67
2	pH	-	6.5 - 8.5	No Relaxation	6.92	6.84	6.86	6.85	6.83	6.81	6.81	6.92	6.85
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	A	A	A
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	A	A	A
5	Turbidity	NTU	1	5	0.5	0.8	0.8	2.6	0.8	1	0.5	2.6	1.08
6	TDS	mg/l	500	2000	105.2	85	105.2	70	76	70.8	70	105.2	85.37
7	Alkalinity as $CaCO_3$	mg/l	200	600	83	61.59	76.9	67.1	48.4	48.8	48.4	83	64.30
8	Total Hardness	mg/l	200	600	79.3	29.84	71.6	26.8	38.3	29.4	26.8	79.3	45.87
9	Calcium as Ca	mg/l	75	200	16.6	7.47	15.1	7.6	10.2	8.4	7.47	16.6	10.90
10	Magnesium as Mg	mg/l	30	100	9.1	5.43	8.2	BDL	3.1	2	2	9.1	5.57
11	Iron as Fe	mg/l	0.3	No relaxation	0.24	0.2	0.2	0.14	0.24	0.24	0.14	0.24	0.21
12	Sulphate as SO_4	mg/l	200	400	BDL	BDL	6.6	8.9	BDL	5.5	5.5	8.9	7.00
13	Chloride as Cl	mg/l	250	1000	18.5	14.74	10.6	17.4	18.9	14.1	10.6	18.9	15.71
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	0.39	BDL	BDL	BDL	BDL	BDL	0.39	0.39	0.39
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	3.25	BDL	3.95	2.21	0.53	4.16	0.53	4.16	2.82
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	BDL	1.6	1.4	1.29	1.29	1.6	1.43
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zero

Table-3: Results of Water Sample from Test Well constructed in East side of Ash Pond sampling period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Min	Max	Average
1	Color	Hazen	5	15	1	3	1	2	3	3	1	3	2.40
2	pH	-	6.5 - 8.5	No Relaxation	6.98	6.78	6.86	6.88	6.79	6.79	6.78	6.98	6.85
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	0.5	0.7	BDL	2	0.7	1	0.5	2	0.98
6	TDS	mg/l	500	2000	460	78	360	70	76	64.8	64.8	460	184.80
7	Alkalinity as $CaCO_3$	mg/l	200	600	8.7	53.37	3.8	45.91	41.52	44.4	3.8	53.37	32.95
8	Total Hardness	mg/l	200	600	181.4	29.84	139.5	30.6	42.6	29.4	29.4	181.4	75.56
9	Calcium as Ca	mg/l	75	200	48.4	5.97	34.7	6.1	8.5	6.7	5.97	48.4	18.40
10	Magnesium as Mg	mg/l	30	100	14.6	3.62	12.8	3.7	5.1	3	3	14.6	7.14
11	Iron as Fe	mg/l	0.3	No relaxation	0.15	0.17	0.2	0.09	0.23	0.22	0.09	0.23	0.18
12	Sulphate as SO_4	mg/l	200	400	120.9	BDL	172.4	96.7	BDL	BDL	96.7	172.4	130.00
13	Chloride as Cl	mg/l	250	1000	64.9	14.74	42.5	21.3	12	14.1	12	64.9	28.26
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	0.32	BDL	0.29	BDL	BDL	BDL	0.29	0.32	0.31
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	0.21	0.1	BDL	2.32	BDL	4.3	0.1	4.3	1.73
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3.N	mg/l	45	No relaxation	1.08	BDL	1.06	BDL	BDL	BDL	1.06	1.08	1.07
29	E.Coli	MPN/ 100 ml	Should Not be Detectable			Absent	Nil	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zero

Table-4: Results of Water Sample from Test Well constructed in West side of Ash Pond sampling period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	3	3	2	3	3	2	3	2.80
2	pH	-	6.5 - 8.5	No Relaxation	7.1	6.76	6.95	6.73	6.78	6.91	6.73	7.1	6.87
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	0.6	0.6	0.8	2.4	0.9	1	0.6	2.4	1.05
6	TDS	mg/l	500	2000	61.2	77.2	75.2	70	75.2	69.2	61.2	77.2	71.33
7	Alkalinity as $CaCO_3$	mg/l	200	600	48	53.3	38.4	38.8	44.9	48.8	38.4	53.3	45.37
8	Total Hardness	mg/l	200	600	26.4	26.11	30.1	34.4	38.3	33.6	26.11	38.3	31.49
9	Calcium as Ca	mg/l	75	200	9	5.97	6	10.7	8.5	8.4	5.97	10.7	8.10
10	Magnesium as Mg	mg/l	30	100	BDL	2.71	3.6	BDL	4.1	3	2.71	4.1	3.35
11	Iron as Fe	mg/l	0.3	No relaxation	0.2	0.2	0.19	0.22	0.23	0.2	0.19	0.23	0.21
12	Sulphate as SO_4	mg/l	200	400	BDL	BDL	8	10.5	5.36	5.9	5.36	10.5	7.44
13	Chloride as Cl	mg/l	250	1000	22.2	14.74	12.7	17.4	17.2	14.1	12.7	22.2	16.39
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	2.21	0.28	3.25	0.67	0.29	2.21	0.28	3.25	1.49
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Nil	Absent	Nil	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zero

Annexure-VI

The Ambient Air Quality samples were collected by representative from NABL accredited laboratory.

Method of Analysis

Pollutants	Method of Measurement
Particulate Matter (PM_{10}) , µg/m^3	Gravimetric
Particulate Matter ($PM_{2.5}$), µg/m^3	Gravimetric
Sulphur dioxide (SO_2), µg/m^3	Improved west and Geake method
Nitrogen Dioxide (NO_2), µg/m^3	Modified Jacob & Hochheiser
Carbon Monoxide (CO), mg/m^3	Non Dispersive Infra-Red

AMBIENT AIR QUALITY MONITORING LOCATIONS

Ambient Air Quality Monitoring (PM_{10}, $PM_{2.5}$, SO_2, NO_X & CO) was done twice a week at following locations:

1. Near DM Plant (Inside Plant)
2. Near Admar Village
3. Near Inna Village
4. Near Hejmady Village
5. Near Baikampady Village
6. Near Paradka Village
7. Near Mudarangadi Village
8. Near Adani Pump House
9. Near Ash Pond

The Monitoring values for the period from Oct 2020 to Mar 2021 in the above said locations are presented in Table-1 to Table-9 as below.

Table-1: Ambient Air Quality Monitoring in Plant Site (Near DM Plant) for the period of Oct 2020 to Mar 2021

Location	Month	PM_{10} (100 µg/m^3)			$PM_{2.5}$ (60 µg/m^3)			SO_2 (80 µg/m^3)			NO_x (80 µg/m^3)			CO (2.0 mg/m^3)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near DM Plant (A1)	Oct 2020	28.4	31.1	29.8	17.9	18.8	18.2	7.2	7.9	7.5	9.1	9.8	9.4	BDL	BDL	BDL
	Nov 2020	30.7	33.4	31.8	19.2	20.8	20.2	7.6	8.3	7.9	9.4	10.3	9.8	BDL	BDL	BDL
	Dec 2020	31.8	34.7	32.9	20.4	21.9	21.3	7.8	8.7	8.3	9.8	10.7	10.2	BDL	BDL	BDL
	Jan 2021	32.9	35.6	34.1	21.5	23.2	22.5	8.1	8.9	8.5	10.1	11.1	10.4	BDL	BDL	BDL
	Feb 2021	34.4	36.8	35.3	22.7	24.5	23.6	8.4	9.2	8.7	10.4	11.5	10.8	BDL	BDL	BDL
	Mar 2021	35.6	37.8	36.3	23.8	25.6	24.8	8.6	9.5	9	10.6	11.8	11.1	BDL	BDL	BDL
	Avg	32.2	34.3	33.2	19.2	20.5	19.9	7.4	8.1	7.7	9.2	10.1	9.5	BDL	BDL	BDL

[BDL-Below Detection Limit]

Table-2: Ambient Air Quality Monitoring at Admar village for the period of Oct 2020 to Mar 20201

Location	Month	PM_{10} (100 µg/m³)			$PM_{2.5}$ (60 µg/m³)			SO_2 (80 µg/m³)			NO_x (80 µg/m³)			CO (2.0 mg/m³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near Admar Village (A2)	Oct 2020	32.3	34.8	33.7	18.8	19.2	19	7.1	8.1	7.6	9.4	10.1	9.7	BDL	BDL	BDL
	Nov 2020	34.3	36.7	35.6	19.7	20.7	20.3	7.5	8.5	8	9.7	10.5	10	BDL	BDL	BDL
	Dec 2020	35.4	37.8	36.8	20.8	22.5	21.7	7.8	8.8	8.4	10.1	11.1	10.5	BDL	BDL	BDL
	Jan 2021	36.8	38.7	37.9	21.9	22.9	22.6	8.1	9.1	8.6	10.4	11.2	10.8	BDL	BDL	BDL
	Feb 2021	37.7	39.8	39	22.8	24.1	23.7	8.3	9.4	8.8	10.7	11.5	11.1	BDL	BDL	BDL
	Mar 2021	38.9	40.9	40.1	23.9	25.3	24.9	8.6	9.7	9.2	11	11.8	11.5	BDL	BDL	BDL
	Avg	35.1	37.0	36.2	20.1	21.2	20.7	7.4	8.4	7.9	9.5	10.2	9.9	BDL	BDL	BDL

[BDL-Below Detection Limit]

Table-3: Ambient Air Quality Monitoring at Inna village for the period of Oct 2020 to Mar 2021

Location	Month	PM_{10} (100 µg/m³)			$PM_{2.5}$ (60 µg/m³)			SO_2 (80 µg/m³)			NO_x (80 µg/m³)			CO (2.0 mg/m³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near Inna Village (A3)	Oct 2020	24.7	28.9	26.9	16.4	17.5	16.9	8.3	9.2	8.7	10.2	10.9	10.6	BDL	BDL	BDL
	Nov 2020	26.5	30.2	28.5	17.7	18.6	18.1	8.6	9.7	9.1	10.6	11.3	10.9	BDL	BDL	BDL
	Dec 2020	27.8	31.5	30.1	18.5	19.7	19.1	8.9	10.1	9.5	10.8	12.1	11.3	BDL	BDL	BDL
	Jan 2021	29.1	32.5	31	19.7	20.8	20.3	9.3	10.4	9.8	11.2	11.9	11.6	BDL	BDL	BDL
	Feb 2021	30.3	33.7	32.2	20.8	21.9	21.4	9.6	10.7	10.1	11.5	12.2	11.9	BDL	BDL	BDL
	Mar 2021	31.5	34.8	33.4	21.8	22.9	22.6	9.9	10.9	10.5	11.8	12.5	12.2	BDL	BDL	BDL
	Avg	27.9	30.9	29.6	18.3	19.6	19.0	8.1	9.1	8.6	10.2	11.0	10.6	BDL	BDL	BDL

[BDL-Below Detection Limit]

Table-4: Ambient Air Quality Monitoring at Hejmady Village for the period of Oct 2020 to Mar 2021

Location	Month	PM_{10} (100 µg/m³)			$PM_{2.5}$ (60 µg/m³)			SO_2 (80 µg/m³)			NO_x (80 µg/m³)			CO (2.0 mg/m³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near Hejamady Village (A4)	Oct 2020	27.4	28.7	27.9	13.6	15.2	14.2	7.2	7.9	7.6	11.6	12.7	12.2	BDL	BDL	BDL
	Nov 2020	28.6	30.2	29.3	14.9	16.3	15.5	7.7	8.4	8	12.8	13.7	13.3	BDL	BDL	BDL
	Dec 2020	29.9	31.7	30.7	15.8	17.8	16.8	8	9.1	8.5	13.2	14.4	13.7	BDL	BDL	BDL
	Jan 2021	31.1	32.4	31.7	16.9	18.2	17.6	8.3	9.1	8.7	13.5	14.4	14	BDL	BDL	BDL
	Feb 2021	32.2	33.6	32.9	17.8	19.8	18.8	8.6	9.4	9	13.8	14.7	14.3	BDL	BDL	BDL
	Mar 2021	33.4	34.8	34	18.9	20.7	19.9	8.8	9.7	9.3	14.1	15.1	14.6	BDL	BDL	BDL
	Avg	29.7	31.1	30.4	16.6	18.2	17.2	7.5	8.3	7.9	11.6	12.5	12.0	BDL	BDL	BDL

[BDL-Below Detection Limit]

Table-5: Ambient Air Quality Monitoring at Baikampady Village for the period of Oct 2020 to Mar 2021

Location	Month	PM_{10} (100 µg/m³)			$PM_{2.5}$ (60 µg/m³)			SO_2 (80 µg/m³)			NO_x (80 µg/m³)			CO (2.0 mg/m³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near Baikampady Village (A5)	Oct 2020	42.3	45.8	43.9	23.1	25.3	24.1	12.9	15.2	13.8	17.7	19.3	18.3	BDL	BDL	BDL
	Nov 2020	44.3	46.7	45.5	24.2	26.5	25.4	13.4	15.5	14.1	18.1	19.7	18.8	BDL	BDL	BDL
	Dec 2020	45.4	48.6	47	25.3	27.9	26.6	13.6	15.8	14.4	18.5	20.1	19.3	BDL	BDL	BDL
	Jan 2021	46.5	49.1	47.8	26.4	28.7	27.6	14.1	16.2	14.9	18.8	20.4	19.5	BDL	BDL	BDL
	Feb 2021	47.7	49.8	48.8	27.5	29.8	28.6	14.5	16.6	15.2	19.1	20.7	19.8	BDL	BDL	BDL
	Mar 2021	48.8	50.8	49.7	28.3	30.7	29.5	14.8	16.9	15.5	19.5	21.1	20.3	BDL	BDL	BDL
	Avg	41.1	43.8	42.4	23.2	25.3	24.3	11.5	13.4	12.3	15.3	16.9	16.1	BDL	BDL	BDL

[BDL-Below Detection Limit]

Table-6: Ambient Air Quality Monitoring at Paradka Village for the period of Oct 2020 to Mar 2021

Location	Month	PM_{10} (100 µg/m³)			$PM_{2.5}$ (60 µg/m³)			SO_2 (80 µg/m³)			NO_x (80 µg/m³)			CO (2.0 mg/m³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near Paradka Village (A6)	Oct 2020	21.4	23.8	22.8	12.6	13.9	13.2	7.1	8.3	7.7	8.4	9.2	8.7	BDL	BDL	BDL
	Nov 2020	23.5	25.8	24.8	13.7	15.2	14.5	7.5	8.6	8	8.7	9.5	9.0	BDL	BDL	BDL
	Dec 2020	24.6	26.9	26	14.8	16.4	15.6	7.8	8.9	8.3	8.9	9.9	9.4	BDL	BDL	BDL
	Jan 2021	25.7	28.6	27.1	15.9	17.5	16.7	8.2	9.1	8.7	9.5	10.2	9.8	BDL	BDL	BDL
	Feb 2021	26.8	29.7	28.3	16.8	18.6	17.9	8.4	9.4	9	9.8	10.5	10.1	BDL	BDL	BDL
	Mar 2021	27.9	30.8	29.4	17.9	19.7	18.9	8.7	9.7	9.3	10.2	10.8	10.4	BDL	BDL	BDL
	Avg	25.8	28.2	27.2	15.5	17.1	16.3	7.2	8.2	7.7	8.6	9.4	9.0	BDL	BDL	BDL

[BDL-Below Detection Limit]

Table-7: Ambient Air Quality Monitoring at Mudarangadi Village for the period of Oct 2020 to Mar 2021

Location	Month	PM_{10} (100 µg/m³)			$PM_{2.5}$ (60 µg/m³)			SO_2 (80 µg/m³)			NO_x (80 µg/m³)			CO (2.0 mg/m³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near Mudarangadi Village (A7)	Oct 2020	27.9	30.6	29.1	17.6	18.7	18.2	8.4	8.8	8.6	9.1	9.6	9.4	BDL	BDL	BDL
	Nov 2020	29.5	32.1	30.9	18.5	19.8	19.3	8.7	9.2	8.9	9.6	9.9	9.8	BDL	BDL	BDL
	Dec 2020	30.7	33.6	32.3	18.8	20.2	19.7	8.9	9.6	9.3	9.9	10.7	10.3	BDL	BDL	BDL
	Jan 2021	31.8	34.8	33.2	19.9	21.4	20.9	9.3	9.9	9.6	10.3	10.8	10.6	BDL	BDL	BDL
	Feb 2021	32.9	35.9	34.4	21.2	22.6	22.1	9.6	10.2	9.9	10.6	11.1	10.9	BDL	BDL	BDL
	Mar 2021	33.8	36.8	35.3	22.5	23.7	23.3	9.9	10.5	10.3	10.9	11.5	11.3	BDL	BDL	BDL
	Avg	30.3	32.7	31.5	18.7	20.1	19.6	8.5	8.9	8.7	9.3	9.8	9.6	BDL	BDL	BDL

[BDL-Below Detection Limit]

Table-8: Ambient Air Quality Monitoring at Adani Pump House for the period of Oct 2020 to Mar 2021

Location	Month	PM_{10} (100 µg/m³)			$PM_{2.5}$ (60 µg/m³)			SO_2 (80 µg/m³)			NO_x (80 µg/m³)			CO (2.0 mg/m³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near Adani Pump House (A8)	Oct 2020	23.4	24.9	24.1	15.7	16.8	16.3	7.6	8.1	7.8	9.1	10.1	9.6	BDL	BDL	BDL
	Nov 2020	25.1	26.3	25.7	16.8	17.9	17.4	7.3	8.5	8.1	9.5	10.5	10	BDL	BDL	BDL
	Dec 2020	26.2	27.5	26.8	17.3	18.3	17.8	7.7	8.8	8.4	9.9	10.9	10.4	BDL	BDL	BDL
	Jan 2021	27.4	28.7	28	18.4	19.4	18.9	8	9.1	8.8	10.3	11.3	10.8	BDL	BDL	BDL
	Feb 2021	28.7	29.8	29.2	19.6	20.5	20.1	8.4	9.4	9.1	10.7	11.6	11.1	BDL	BDL	BDL
	Mar 2021	29.6	31.1	30.3	20.5	21.7	21	8.8	9.7	9.4	10.9	11.9	11.3	BDL	BDL	BDL
	Avg	23.4	24.9	24.1	15.7	16.8	16.3	7.6	8.1	7.8	9.1	10.1	9.6	BDL	BDL	BDL

[BDL-Below Detection Limit]

Table-9: Ambient Air Quality Monitoring at Near Ash Pond for the period of Oct 2020 to Mar 2021

Location	Month	PM_{10} (100 µg/m³)			$PM_{2.5}$ (60 µg/m³)			SO_2 (80 µg/m³)			NO_x (80 µg/m³)			CO (2.0 mg/m³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Near Ash Pond (A9)	Oct 2020	36.3	39.8	37.7	22.1	24.9	23.6	8.2	9.5	8.8	9.5	11.1	10.4	BDL	BDL	BDL
	Nov 2020	37.6	40.9	39.1	23.3	26.8	24.9	8.5	9.8	9.1	9.9	11.5	10.8	BDL	BDL	BDL
	Dec 2020	38.8	42.1	40.3	24.5	27.5	26	8.9	10.1	9.5	10.4	11.8	11.2	BDL	BDL	BDL
	Jan 2021	39.7	42.9	41.3	25.6	28.7	27.1	9.3	10.5	9.8	10.7	12.3	11.5	BDL	BDL	BDL
	Feb 2021	40.9	44.1	42.6	26.8	29.8	28.3	9.6	10.9	10.2	10.9	12.6	11.8	BDL	BDL	BDL
	March 2021	42.1	45.2	43.7	27.8	31.2	29.4	9.9	11.1	10.5	11.2	12.9	12.1	BDL	BDL	BDL
	Avg	36.7	40.2	38.4	22.5	25.4	23.9	8.3	9.6	8.9	9.7	11.4	10.7	BDL	BDL	BDL

[BDL-Below Detection Limit]

Annexure-VII

GUARD POND EFFLUENT WATER MONITORING

Annexure-VII

All the effluents like condenser cooling water, cooling tower blow down and brine discharge from desalination plant is directly discharged to Guard pond, from where the water is going back to the Sea through Coro-coated MS Pipeline. Final discharge point is through guard pond.

Boiler Blowdown, Coal Settling Pond water and Floor washings are treated in ETP and reused in the areas including greenbelt development/ dust suppression.

Continuous Online Monitoring setup is installed in the Guard pond & ETP discharge line to monitor Temp, pH, DO and TSS.

Ash Pond is covered with green belt and the runoff due to rain is collected in the adjacent pond and used for dust suppression within ash pond area. There is no provision of any outlet from Ash pond, Hence there is no effluent generated from the Ash Pond.

Samples are collected weekly and the monitoring values for the period of Oct 2020 to Mar 2021 are presented in Table-1 to Table-3 as below:

Table-1: Guard Pond Effluent sample monitoring for the period of Oct 2020 to Mar 2021

S.No	Parameters	Limits	Units	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Avg
1	Temperature	Not more than 5°C higher than intake sea water	°C	29.40	30.00	30.00	30.00	30.00	30.00	29.90
2	pH (at 25 °C)	5.5 – 9.0	-	7.88	7.65	7.97	7.91	7.98	7.72	7.85
3	Colour	-	-	<1	<1	<1	<1	<1	<1	<1
4	Odour	-	-	A	A	A	A	A	A	A
5	Total Suspended Solids	Not more than 10% higher than intake sea water	mg/l	13.24	5.70	15.20	4.80	BDL	BDL	9.74
6	Oil and Grease	20	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
7	Total Residual Chlorine	1	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
8	BOD	100	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
9	COD	250	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10	Total Chromium	2	mg/l	0.05	BDL	BDL	BDL	BDL	BDL	0.05
11	Hexavalent Chromium	1	mg/l	0.01	0.08	0.16	0.11	0.04	0.02	0.07
12	Phenolic Compounds	5	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13	Mercury as Hg	0.01	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14	Lead as Pb	2	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Arsenic as As	0.2	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Iron	3	mg/l	1.18	0.86	1.79	1.38	1.21	0.97	1.23

Note: A- Agreeable, BDL- Below Detectable Level

Table-2: Cooling Tower Blow down Effluent monitoring for the period of Oct 2020 to Mar 2020

S.No	Parameters	Limits	Units	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	AVG
1	Available Free Chlorine	0.5	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	Zinc	1	mg/l	0.28	0.18	0.25	0.25	0.25	0.24	0.24
3	Chromium	0.2	mg/l	BDL	0.13	0.10	0.08	0.12	0.03	0.09
4	Phosphate	5	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL- Below Detectable Level, SD- Unit under Shut down

Table-3: Boiler Blow down Effluent sample monitoring for the period of Oct 2020 to Mar 2020

S.No	Parameters	Limits	Units	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2020	Mar-2021	AVG
1	Oil & Grease	20	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	Copper	1	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
3	Suspended Solids	100	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
4	Iron	1	mg/l	0.07	0.08	0.17	0.20	0.18	0.13	0.20

Note: BDL- Below Detectable Level, SD- Unit under Shut down

Annexure-VIII

WATER QUALITY MONITORING *Annexure-VIII*

Water quality monitoring is carried in the eleven locations which are finalized in consultation with KSPCB and monitoring carried for the period of Oct 2020 to Mar 2021 is presented in the Table-1 to Table-11 as below:

Water Quality Sampling Location- Ground/Surface:

S.No	Name of the Location	Code	Source
1	Karnire River near Palimar village	SW-1	River
2	Pangala River Water	SW -2	River
3	Santhoor village	GW-1	Open well
4	Nandikur Village	GW-2	Open well
5	Palimar Village	GW-3	Open well
6	Simanthoor Village	GW-4	Open well
7	Admar Village	GW-5	Open well
8	Bappanadu Village	GW-6	Open well
9	Hejamady Village	GW-7	Open well
10	North Side of the UPCL Plant	GW-8	Open well
11	South Side of the UPCL plant	GW-9	Open well

Water Sample Analysis Parameters:

S.No	Parameters	S.No	Parameters
1	Color	16	Fluoride
2	pH	17	Phenolic Compounds
4	Taste	18	manganese
5	Turbidity	19	zinc
6	TDs	20	Arsenic
7	Alkalinity	21	cyanide
8	Total Hardness as $CaCO_3$	22	cadmium
9	Calcium as Ca	23	chromium
10	Magnesium	24	Aluminium
11	Iron	25	Selenium
12	Sulphate as SO_4	26	Lead
13	Chloride	27	Mercury
14	Boron	28	Nitrate nitrogen
15	Residual Free Chlorine	29	E-coli

The Water Quality test results for the period of Oct 2020 to Mar 2021 is presented in the Table-1 to Table-11 as below

Table-1: Water Quality Monitoring carried out in Karnire River (Back Water) (SW-1) for the period of October 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.88	6.85	6.85	6.84	6.92	7.8	6.84	7.8	7.02
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	0.7	BDL	0.5	0.6	0.5	0.5	0.7	0.58
6	TDS	mg/l	500	2000	77	56.4	360	220	250	260	56.4	360	203.90
7	Alkalinity as $CaCO_3$	mg/l	200	600	13.1	12.3	46.1	28.2	34.5	38.6.53.3	12.3	46.1	26.84
8	Total Hardness	mg/l	200	600	18.9	14.9	83.4	45.9	48.1	37.8	14.9	83.4	41.50
9	Calcium as Ca	mg/l	75	200	4.5	2.98	53.3	12.2	15.3	17.6	2.98	53.3	17.65
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	12	3.7	4.2	0.23	0.23	12	5.03
11	Iron as Fe	mg/l	0.3	No relaxation	0.2	0.17	0.13	0.16	0.19	85	0.13	85	14.31
12	Sulphate as SO_4	mg/l	200	400	6.1	10.98	49.9	42.8	45.1	123.1	6.1	123.1	46.33
13	Chloride as Cl	mg/l	250	1000	35.2	22.1	90.5	110.7	117.4	0.28	0.28	117.4	62.70
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	0.35	0.35	0.35	0.35
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	0.64	0.26	0.24	BDL	0.24	0.64	0.38
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	3.8	0.34	0.32	BDL	0.32	3.8	1.49
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3.N	mg/l	45	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL– Zero

Table-2: Water Quality Monitoring carried out in Pangala River (SW-2) for the period of October 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	1	1	3	1	1	1	1	3	1.33
2	pH	-	6.5 - 8.5	No Relaxation	6.94	6.92	6.91	6.82	6.89	7.71	6.82	7.71	7.03
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	1	0.5	0.8	1.1	0.9	0.4	0.4	1.1	0.78
6	TDS	mg/l	500	2000	98	71.2	45.2	40	52	210	40	210	86.07
7	Alkalinity as $CaCO_3$	mg/l	200	600	69.9	16.4	19.23	14.1	15.8	71.04	14.1	71.04	34.41
8	Total Hardness	mg/l	200	600	49.1	18.6	15	22.9	24.2	55.9	15	55.9	30.95
9	Calcium as Ca	mg/l	75	200	12.1	4.4	3.02	4.6	5.9	33.63	3.02	33.63	10.61
10	Magnesium as Mg	mg/l	30	100	4.5	BDL	BDL	2.77	3.5	18.5	2.77	18.5	7.32
11	Iron as Fe	mg/l	0.3	No relaxation	0.22	0.15	0.18	0.16	0.2	0.18	0.15	0.22	0.18
12	Sulphate as SO_4	mg/l	200	400	12.4	9.3	6.8	7.5	12.5	75.2	6.8	75.2	20.62
13	Chloride as Cl	mg/l	250	1000	14.8	25.8	19.1	15.5	17.3	104.6	14.8	104.6	32.85
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	0.24	0.24	0.24	0.24
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	0.62	0.62	0.62	0.62
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	0.24	BDL	BDL	BDL	0.24	0.24	0.24
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Table-3: Water Quality Monitoring Carried out at Open well in Santhoor Village (GW-1) for the period of October 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.89	6.84	6.85	6.87	6.85	6.89	6.84	6.89	6.87
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	3.5	BDL	BDL	BDL	BDL	3.5	3.5	3.50
6	TDS	mg/l	500	2000	32	60	56	40	32	48.4	32	60	44.73
7	Alkalinity as $CaCO_3$	mg/l	200	600	13.1	16.56	19.2	14.1	13.8	22.2	13.1	22.2	16.49
8	Total Hardness	mg/l	200	600	18.9	15.52	15	15.3	21.3	12.6	12.6	21.3	16.44
9	Calcium as Ca	mg/l	75	200	3	3.11	BDL	3	5.1	3.3	3	5.1	3.50
10	Magnesium as Mg	mg/l	30	100	2.7	BDL	BDL	BDL	2	BDL	2	2.7	2.35
11	Iron as Fe	mg/l	0.3	No relaxation	0.24	BDL	0.17	0.15	BDL	0.2	0.15	0.24	0.19
12	Sulphate as SO_4	mg/l	200	400	BDL	7.4	BDL	BDL	BDL	BDL	7.4	7.4	7.40
13	Chloride as Cl	mg/l	250	1000	16.7	2	14.8	0.15	12	14.1	0.15	16.7	9.96
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	11.6	BDL	BDL	11.6	11.6	11.60
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	0.03	BDL	BDL	BDL	0.03	0.03	0.03
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	2.4	1.02	BDL	BDL	1.02	2.4	1.71
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL– Ze

Table-4: Water Quality Monitoring Carried out at Open well in Nandikur Village (GW-2) for the period of October 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.85	6.81	6.84	6.85	6.95	7.01	6.81	7.01	6.89
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	0.5	BDL	0.8	0.3	0.4	0.3	0.8	0.50
6	TDS	mg/l	500	2000	84	99.2	38	100	76	95.2	38	100	82.07
7	Alkalinity as $CaCO_3$	mg/l	200	600	56.8	61.5	7.6	56.5	41.5	57.7	7.6	61.5	46.93
8	Total Hardness	mg/l	200	600	41.5	48.4	7.5	61.2	46.8	58.9	7.5	61.2	44.05
9	Calcium as Ca	mg/l	75	200	7.5	10.4	BDL	10.7	10.2	11.8	7.5	11.8	10.12
10	Magnesium as Mg	mg/l	30	100	5.5	5.4	BDL	8.3	5.1	7.1	5.1	8.3	6.28
11	Iron as Fe	mg/l	0.3	No relaxation	0.18	0.17	0.12	0.14	BDL	0.17	0.12	0.18	0.16
12	Sulphate as SO_4	mg/l	200	400	BDL	6.8	BDL	BDL	5.75	BDL	5.75	6.8	6.28
13	Chloride as Cl	mg/l	250	1000	11.1	12.9	17	17.4	12	14.1	11.1	17.4	14.08
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	2.07	BDL	BDL	BDL	2.07	2.07	2.07
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL– Zero

Table-5: Water Quality Monitoring carried out at Open well in Palimar Village (GW-3) for the period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	7.2	6.92	6.79	6.75	6.85	7.73	6.75	7.73	7.04
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	0.5	BDL	BDL	BDL	BDL	BDL	0.5	0.5	0.50
6	TDS	mg/l	500	2000	150	170	150	130	116	91.2	91.2	170	134.53
7	Alkalinity as $CaCO_3$	mg/l	200	600	69.9	53.3	53.8	52.9	41.5	39.9	39.9	69.9	51.88
8	Total Hardness	mg/l	200	600	90.7	85.7	82.9	80.4	76.6	54.7	54.7	90.7	78.50
9	Calcium as Ca	mg/l	75	200	31.8	26.9	25.6	24.5	23.9	13.5	13.5	31.8	24.37
10	Magnesium as Mg	mg/l	30	100	2.7	4.5	4.5	4.6	4.1	5.1	2.7	5.1	4.25
11	Iron as Fe	mg/l	0.3	No relaxation	0.2	0.22	0.19	0.17	BDL	0.2	0.17	0.22	0.20
12	Sulphate as SO_4	mg/l	200	400	14.2	12.8	19.9	16.8	6.19	BDL	6.19	19.9	13.98
13	Chloride as Cl	mg/l	250	1000	37.1	38.7	38.2	34.9	45.5	14.1	14.1	45.5	34.75
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	0.2	BDL	0.2	0.2	0.20
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	0.024	BDL	BDL	BDL	BDL	0.024	0.024	0.02
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	1.2	1.92	BDL	1.02	BDL	1.02	1.92	1.38
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zer

Table-6: Water Quality Monitoring carried out at Open well in Simanthoor Village (GW-4) for the period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	7.3	6.84	6.84	6.83	6.84	6.83	6.83	7.3	6.91
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	BDL	BDL	BDL	BDL	BDL	0	0	#DIV/0!
6	TDS	mg/l	500	2000	130	55.2	37.2	130	43.2	94	37.2	130	81.60
7	Alkalinity as $CaCO_3$	mg/l	200	600	69.9	16.4	11.53	42.3	10.38	31	10.38	69.9	30.25
8	Total Hardness	mg/l	200	600	75.6	14.92	11.31	80.4	29.8	50.5	11.31	80.4	43.76
9	Calcium as Ca	mg/l	75	200	28.7	5.9	3	24.5	5.1	10.1	3	28.7	12.88
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	BDL	4.6	4.1	6.1	4.1	6.1	4.93
11	Iron as Fe	mg/l	0.3	No relaxation	BDL	BDL	0.22	0.2	BDL	0.21	0.2	0.22	0.21
12	Sulphate as SO_4	mg/l	200	400	13.6	BDL	BDL	BDL	BDL	BDL	13.6	13.6	13.60
13	Chloride as Cl	mg/l	250	1000	18.5	18.4	BDL	36.9	25.8	15.8	15.8	36.9	23.08
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	0.019	BDL	BDL	BDL	BDL	0.019	0.019	0.02
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	1.6	1.98	BDL	1.2	BDL	1.2	1.98	1.59
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zero

Table-7: Water Quality Monitoring carried out at Open well in Admar Village (GW-5) for the period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.92	7.02	6.94	6.73	6.85	7.51	6.73	7.51	7.00
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	0.2	BDL	BDL	BDL	0.7	0.2	0.7	0.45
6	TDS	mg/l	500	2000	26.4	34	33.2	40	34	87.2	26.4	87.2	42.47
7	Alkalinity as $CaCO_3$	mg/l	200	600	4.37	12.3	11.5	24.7	17.3	39.9	4.37	39.9	18.35
8	Total Hardness	mg/l	200	600	7.5	11.1	7.5	26.8	17	50.5	7.5	50.5	20.07
9	Calcium as Ca	mg/l	75	200	BDL	2.98	3	6.1	5.1	11.8	2.98	11.8	5.80
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	BDL	2.7	BDL	5.1	2.7	5.1	3.90
11	Iron as Fe	mg/l	0.3	No relaxation	0.03	0.24	0.14	0.11	BDL	0.23	0.03	0.24	0.15
12	Sulphate as SO_4	mg/l	200	400	BDL	BDL	BDL	BDL	BDL	6.8	6.8	6.8	6.80
13	Chloride as Cl	mg/l	250	1000	14.8	14.7	19.1	19.1	21.2	14.1	14.1	21.2	17.17
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	0.02	BDL	BDL	BDL	BDL	0.02	0.02	0.02
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	1.02	BDL	BDL	BDL	1.02	1.02	1.02
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zer

Table-8: Water Quality Monitoring carried out at Open well in Bappanadu Village (GW-6) for the period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.84	7.6	6.89	6.8	6.92	7.32	6.8	7.6	7.06
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	0.2	BDL	BDL	0.5	BDL	BDL	0.2	0.5	0.35
6	TDS	mg/l	500	2000	48	230	93.2	110	102	92	48	230	112.53
7	Alkalinity as $CaCO_3$	mg/l	200	600	13.1	110.8	11.5	52.9	13.8	53.2	11.5	110.8	42.55
8	Total Hardness	mg/l	200	600	18.9	134.2	30.1	53.6	34	50.5	18.9	134.2	53.55
9	Calcium as Ca	mg/l	75	200	6	40.3	6	12.2	10.2	10.1	6	40.3	14.13
10	Magnesium as Mg	mg/l	30	100	BDL	8.1	3.6	5.5	2	6.1	2	8.1	5.06
11	Iron as Fe	mg/l	0.3	No relaxation	0.12	0.2	0.22	0.18	BDL	0.17	0.12	0.22	0.18
12	Sulphate as SO_4	mg/l	200	400	BDL	30.3	14.4	12.4	BDL	BDL	12.4	30.3	19.03
13	Chloride as Cl	mg/l	250	1000	14.8	23.9	29.7	17.4	41.3	15.8	14.8	41.3	23.82
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	1.8	3.7	BDL	3.69	BDL	1.8	3.7	3.06
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zero

Table-9: Water Quality Monitoring carried out at Open well in Hejmady Village (GW-7) for the period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	7.04	6.87	6.95	7.04	6.83	6.92	6.83	7.04	6.94
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	BDL	BDL	0.7	BDL	BDL	0.7	0.7	0.70
6	TDS	mg/l	500	2000	120	160	90	180	103.2	93.2	90	180	124.40
7	Alkalinity as $CaCO_3$	mg/l	200	600	96.1	69.8	19.23	10.5	13.84	57.7	10.5	96.1	44.53
8	Total Hardness	mg/l	200	600	86.9	78.3	30.1	34.4	34.08	54.7	30.1	86.9	53.08
9	Calcium as Ca	mg/l	75	200	28.7	28.4	6	7.6	11.9	11.8	6.0	28.7	15.73
10	Magnesium as Mg	mg/l	30	100	3.6	BDL	3.6	3.7	BDL	6.1	3.6	6.1	4.25
11	Iron as Fe	mg/l	0.3	No relaxation	0.1	0.17	0.2	0.21	BDL	0.15	0.1	0.21	0.17
12	Sulphate as SO_4	mg/l	200	400	15.5	16.2	10.8	99	BDL	BDL	10.8	99	35.38
13	Chloride as Cl	mg/l	250	1000	16.7	18.4	27.6	BDL	32.7	19.4	16.7	32.7	22.96
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	0.011	BDL	BDL	BDL	BDL	0.011	0.011	0.01
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	3.9	3.5	BDL	3.67	BDL	3.5	3.9	3.69
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zero

Table-10: Water Quality Monitoring carried out at North Side of UPCL Plant site (GW-8) for the period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.81	6.98	6.99	6.9	6.89	6.81	6.81	6.99	6.90
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	BDL	0.2	BDL	0.1	BDL	0.1	0.2	0.15
6	TDS	mg/l	500	2000	25.2	23	33.2	20	24	21.6	20	33.2	24.50
7	Alkalinity as $CaCO_3$	mg/l	200	600	4.3	4.106	11.53	14.1	6.92	8.8	4.106	14.1	8.29
8	Total Hardness	mg/l	200	600	7.5	3.73	7.5	7.6	12.7	8.4	3.73	12.7	7.91
9	Calcium as Ca	mg/l	75	200	BDL	BDL	3	BDL	5.1	3.3	3	5.1	3.80
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	0.17	BDL	BDL	BDL	0.17	0.17	0.17
11	Iron as Fe	mg/l	0.3	No relaxation	0.09	0.19	BDL	0.14	BDL	0.22	0.09	0.22	0.16
12	Sulphate as SO_4	mg/l	200	400	BDL	BDL	17	BDL	BDL	BDL	17	17	17.00
13	Chloride as Cl	mg/l	250	1000	16.7	20.27	BDL	15.5	12	3.5	3.5	20.27	13.59
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	0.03	BDL	BDL	BDL	0.03	0.03	0.03
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	1.06	BDL	BDL	BDL	1.06	1.06	1.06
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zero

Table-11: Water Quality Monitoring carried out at South Side of UPCL plant site (GW-9) for the period of Oct 2020 to Mar 2021

S.No	Parameters	Unit	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.91	6.96	6.80	6.8	6.85	7.39	6.8	7.39	6.95
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	0.6	BDL	0.8	BDL	BDL	0.6	0.8	0.70
6	TDS	mg/l	500	2000	24	95.2	30	190	190	96	24	190	104.20
7	Alkalinity as $CaCO_3$	mg/l	200	600	8.7	12.3	3.84	14.1	20.7	57.7	3.84	57.7	19.56
8	Total Hardness	mg/l	200	600	3.7	14.9	3.7	34.4	38.3	54.7	3.7	54.7	24.95
9	Calcium as Ca	mg/l	75	200	BDL	2.98	BDL	7.6	11.9	13.5	2.98	13.5	9.00
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	BDL	3.7	2	5.11	2	5.11	3.60
11	Iron as Fe	mg/l	0.3	No relaxation	0.06	0.16	0.21	0.17	0.087	0.22	0.06	0.22	0.15
12	Sulphate as SO_4	mg/l	200	400	BDL	5.74	BDL	BDL	BDL	BDL	5.74	5.74	5.74
13	Chloride as Cl	mg/l	250	1000	16.7	42.3	25.2	101	96.4	14.1	14.1	101	49.28
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	0.32	BDL	0.21	BDL	BDL	0.21	0.32	0.27
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	0.0144	BDL	BDL	BDL	BDL	0.014	0.014	0.01
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	2.1	1.58	BDL	BDL	BDL	1.58	2.1	1.84
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Nil	Absent	Absent	Absent	Absent	Absent	Absent

Note: A- Agreeable, BDL- Below Detectable Level, NIL- Zero

Annexure-IX

Rain Water Harvesting Ponds

Annexure - IX

Two No's of Rain Water Harvesting Ponds constructed to conserve Rain Water

Annexure-X

सत्यमेव जयते

INDIA NON JUDICIAL

Government of Karnataka

e-Stamp

Certificate No.	:	IN-KA18483757771281M
Certificate Issued Date	:	14-Aug-2014 01:01 PM
Account Reference	:	NONACC (BK)/ kakscub08/ BANGALORE4/ KA-BA
Unique Doc. Reference	:	SUBIN-KAKAKSCUB08905649827764 31M
Purchased by	:	UDUPI POWER CORPORATION LIMITED
Description of Document	:	Article 12 Bond
Description	:	AGREEMENT
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	GOVERNMENT OF KARNATAKA DEPARTMENT OF FISHERIES
Second Party	:	UDUPI POWER CORPORATION LIMITED
Stamp Duty Paid By	:	UDUPI POWER CORPORATION LIMITED
Stamp Duty Amount(Rs.)	:	200 (Two Hundred only)

For Karnataka State Co-operative Urban Banks Federation Ltd.
Authorised Signatory

Please write or type below this line

AMENDMENT TO AGREEMENT

This Amendment to the Agreement dated 9th March 2000 is made on 14th August 2014 by and between:

Government of Karnataka, Department of Fisheries, represented by the Deputy Director of Fisheries, Mangalore, hereinafter referred to as **"Grantor"** of the one part.

1

(SECOND COPY OF THE AGREEMENT)

Statutory Alert
1. The authenticity of this Stamp Certificate should be verified at 'www.shcilestamp.com'. Any discrepancy in the details on this Certificate and as available on the website renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.

AND

Udupi Power Corporation Limited (formerly known as Nagarjuna Power Corporation Limited), a Company incorporated under the Companies Act, 1956 and having its Registered Office at 2nd Floor, 'Le-Parc Richmonde', No. 51, Richmond Road, Bangalore – 560 025, hereinafter referred to as **"Grantee"** of the other part,

The terms "Grantor and Grantee", individually referred to as Party and collectively as Parties, which includes their successors and assignees.

WHEREAS:

(A) The Grantee was initially establishing 2 x 507.5MW coal fired thermal power station in Udupi District, Karnataka. Subsequently the capacity of the power project of the Grantee was augmented from 2 x 507.5MW to 2 x 600 MW with necessary approvals from Government of Karnataka, Ministry of Environment and Forests (Government of India) and Karnataka State Pollution Control Board.

(B) The parties have entered into an Agreement dated 9th March 2000 (hereinafter referred to as **Agreement**).

(C) Subsequent to entering of the Agreement, the Grantee had sought certain amendments to conditions imposed in the Agreement, for which, the Grantor, after examining the amendments sought, has approved the amendments vide its letter bearing No. ಪಸಂಮಂ:24:ಮಾಪ್ರ:2010 dated 19.06.2014.

(D) The parties have agreed to amend the Agreement to incorporate the amendments approved by the Grantor.

(SECOND COPY OF THE AGREEMENT)

NOW THEREFORE IT IS HEREBY AGREED BY AND BETWEEN THE PARTIES HERETO AS FOLLOWS:

Item No.4, page 2 of the Agreement be read as follows:

"4. Sea water intake point shall be located at a depth of not less than 6.97 m and at a distance of 1430 m inside the sea from the coast."

Item No.5, page 2 of the Agreement be read as follows:

"5. The effluent from the power station shall be discharged at depth of minimum 4.99 m and 670 m inside the Sea from the coast."

All other terms and conditions in the Agreement that are not hereby amended are to remain in full force and effect.

IN WITNESS WHEREOF the parties herein have signed this Agreement on the day, month and year first above written, in the presence of:

Deputy Director of Fisheries
Mangalore

Deputy Director of Fisheries, Mangalore
On behalf of Governor of Karnataka

M. Chandrasekhar Reddy
Director & COC

Director & Chief Operating Officer for and on behalf of Udupi Power Corporation Ltd.,

Witnesses:

1. Sunil L Naik
504, 10th 'A' Main
4th Block 3rd Stage
Basaveshwaranagar, Blore-79

2. SUSHMITHA RAO,
ASST DIR OF FISHERIES,
o/o DY. DIR. OF FISHERIES,
MANGALORE

(SECOND COPY OF THE AGREEMENT)

Annexure-XI

Green Belt development:

Plantation was carried in and around plant premises with local species. Total plantation carried so far is around 366955 No's in 195 acres.

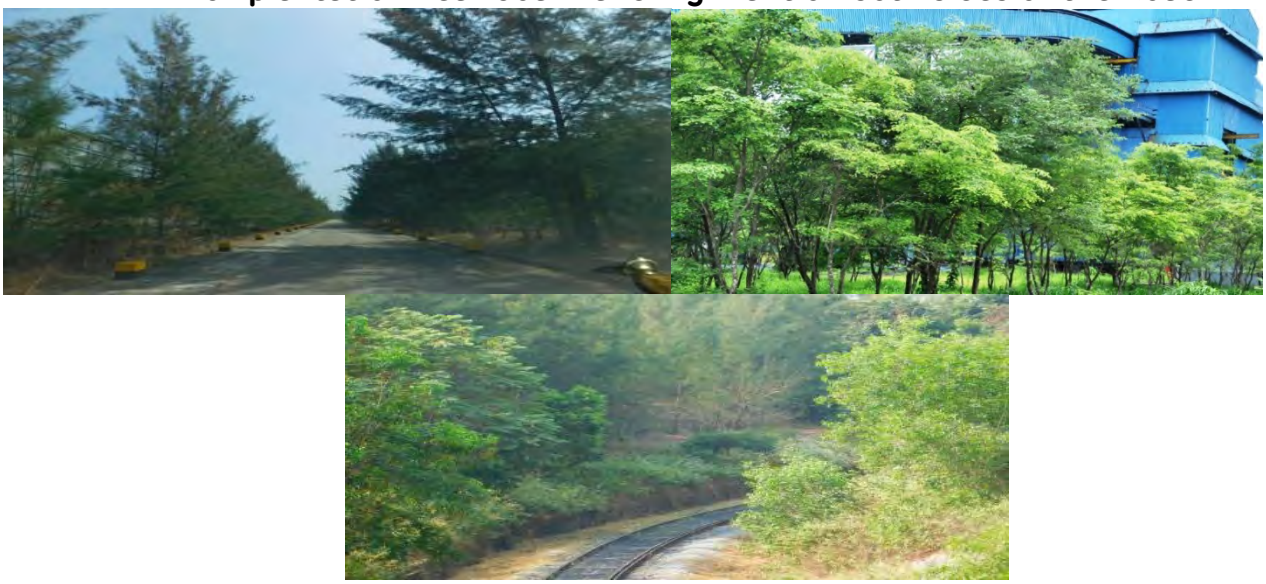
Plantation Details	Area (Acres)
366955	**195**

List of the Plant Species planted in and around the UPCL plant premises

S.No	Species
1	Honge
2	Neem
3	Mahagani
4	T. Rosea
5	Melengia
6	Seetha Ashoka
7	Alstonia
8	T. Arjuna
9	Honne
10	Kadu Badami
11	Lebeka
12	Leqestonia
13	Nerale
14	Peltaform
15	Rain Tree
16	Gulmava
17	Beete
18	Cassurina
19	Holenandi
20	May Flower
21	Palaksha
22	Garige
23	Budubende
24	Surage
25	Dhupa
26	Basavanapada
27	Jack Fruit
28	Ramatre
29	Coconut Plant

Road Side Plantation

Thick plantation near Coal Handling Plant on both sides of the Road



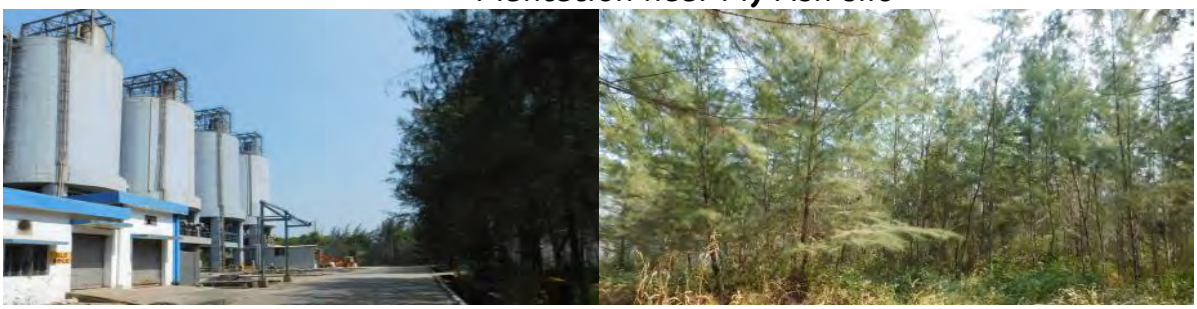
Plantation developed all along the Outside boundary

Plantation developed all along the Inside boundary

Gardening Plantation developed

Vegetable & Fruit Plantation developed

Plantation near Fly Ash silo



Coconut Plantation developed Surrounding Guest House

Annexure-XII

Udupi Power Corporation Limited

(Formerly Nagarjuna Power Corporation Limited)

LANCO
INSPIRING GROWTH

Ref: UPCL/HR/R&R/2011/3298 dated 26th March, 2011

The Special Land Acquisition Officer
Karnataka Industrial Area Development Board
Baikampady Industrial Area
MANGALORE.

Dear Sir,

Subject: Udupi Power Corporation Limited – 1200 MW Thermal Power Project- Providing of employment under Rehabilitation and Resettlement Policy of Government of Karnataka.

References: (i) Your Office Letter No. LAQ/SR 1/92-93/1157, dated 18.02.2008
(ii) Your Office Letter No. LAQ/SR/1/2007-08/1294, dated 29.03.2008
(iii) Your Office Letter No. LAQ/SR:1/08-09, dated 08.01.2010
(iv) Your Office Letter No. LAQ/SR/1/2008-09/189, dated 27.04.2010
(v) Your Office Letter No. LAQ/SR/1/2008-09/399, dated 17.06.2010

*****

This is with regard to above subject and with reference to your letters under references. Please note that, in terms of the Government of Karnataka Order bearing No. RD 118 REN 91 dated 30.04.1997 read with Government of Karnataka Order No. RD 118 REN 91, dated 18.12.1992 and as per the letters issued by you, action taken by Udupi Power Corporation Limited on the 36 applications cleared by your office is furnished in the list enclosed herewith as 'Annexure – A'. It may please be noted that since the nominees mentioned as against the Sl. Nos. 6 and 14 are pursuing Diploma and Engineering course respectively, they may take-up employment with us on completion of their studies i.e., by July, 2011. The issue of employment letters to the nominees mentioned against the Sl. Nos. 12, 15 and 34 are under process.

Contd...2

Registered Office : II Floor, 'Le-Parc Richmonde', No.51, Richmond Road, Bangalore - 560 025.
T +91-080-40254025, F +91-080-40254000

Further it may please be noted that among the applications cleared by your office for providing employment under R&R policy, we found some discrepancies in four applications. The details of the discrepancies and also our observations are given in the 'Annexure-B', which is enclosed herewith. We, therefore, are returning these 4 applications to you along with this letter with a request to provide us necessary clarifications / confirmations so as to consider these applications for employment at the earliest.

We would also request you to inform us of any further applications pending with you for providing employment under R&R Policy and if there are any, the same may be please be forwarded to us with necessary supporting documents.

Thanking you

Yours faithfully
for **UDUPI POWER CORPORATION LIMITED**

M.V. Ramana Rao
Sr. General Manager – H.R

Encl:

1. Annexure – A
2. Annexure – B

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ದಿನಾಂಕ

Annexure-XIII

CSR Focus Areas

IGNITING MINDS

Education	Community Health Care	Sustainable Livelihood Development	Rural Infrastructure Development	Sports & Cultural Development
				
Providing Quality Education to one & all	Basic Healthcare to all through innovative projects	Providing innovative livelihood opportunities for improving Quality of Life	Need based infrastructure for development	Promoting Rural Sports & cultural activities to encourage youth
For a Brighter Future	For a Healthy Life	For Empowered Life	For Better Living	For Disciplined Life

adani Foundation

UPCL's CSR Activities. Reach

UPCL is executing CSR activities in the following villages of Udupi District:

Sl. No	Name of the Grama Panchayat	District	No. of Households	Population	Villages
1	Yellur	Udupi	1483	6404	Yellur, Ullur, Saje, Kemmendelu
2	Mudarangadi	Udupi	1489	7476	Santhoor & Pilar
3	Uchila / Bada	Udupi	2201	8770	Yermal Bada, Bhaskara Nagara, Polya, Mullagudde, Kattinagara, Bada Guthu
4	Tenka	Udupi	1109	3701	Tenka, Admar
5	Padubidri	Udupi	5200	12694	Kanchinadka, Nadsal, Nadsal Budu, Nadipatna, Kadipatna,Padebettu.
6	Palimar	Udupi	1600	6761	Mudupalimar, Nandikoor, Avaralumattu
7	Belapu	Udupi	1211	4965	Belapu & Paniyuru

Other Panchayats covered → Inna, Hejamadi, Moolur, Hejamadi Kodi, Kutyaaru, Mulki & Sooda.

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Activity Head - EDUCATION

Programme – Scholarship

- To recognize and motivate the meritorious students, Scholarship was honoured on 700 students, residing in and around the UPCL plant, in the limits of 12 Grama Panchayats.
- The eligibility of this scholarship is the students who have secured 85% and above marks in their academics year 2019-20.
- Courses considered for Scholarship : SSLC, Diploma, PUC, Graduation, Post Graduation, Engineering course, Medical, Nursing.
- Shri. Lalaji R. Menon, Member of Legislative Assembly (MLA) of Kaup Constituency, presided over the Scholarship distribution programme and Shri. N.H. Nagur, Deputy Director of Public Instructions (DDPI) was the Chief Guest.
- Dignitaries Present on the occasion: Kishore Alva, President & Executive Director of Adani UPCL, Shashikanth Padubidri, Zilla Panchayat Member, U.C. Shekabba, Vice President of Kaup Taluk Panchayat, Neetha Gururaj, Dinesh Kotian, Members of Taluk Panchayat, Yogini Shetty, President of Mudarangadi Grama Panchayat, Jyothi Ganesh, President of Bada Grama Panchayat, Gayatri Prabhu, President of Palimar Grama Panchayat, Ravi Shetty, President of Padubidri Grama Panchayat, Kasturi Praveen, President of Tenka Grama Panchayat, Pranesh, President of Hejamadi Grama Panchayat, Kushal Moolya, President of Inna Grama Panchayat, Shakuntala, Vice President of Bada Grama Panchayat and Jayashree, Vice President of Tenka Grama Panchayat
- Total Amount of Scholarship distributed is Rs. 20 lakhs

adani Foundation

Activity Head - EDUCATION

Programme – Scholarship

Media Coverage:

The New Indian Express – 22.03.21

UPCL, owned by Adani Group, in association with its CSR wing Adani Foundation distributed scholarship worth ₹20 lakh to meritorious students residing in its plant vicinity here on Sunday. The scholarships were distributed to 700 students in the stage programme organised at Buntara Bhavan in Padubidri. Kaup MLA Lalalji R Mendon presided over the programme. N H Nagoor, Deputy Director of Public Instructions, Udupi was the chief guest. Kishore Alva, president and executive director of Adani UPCL, spoke about the CSR initiative of the company.

adani
Foundation

Activity Head – COMMUNITY HEALTH CARE

Programme – Mobile Health Care Unit

- Bringing healthcare at the threshold in the remotest of regions, UPCL, in association with Adani Foundation, is having a unique Mobile Health Service operating in surrounding 12 villages. Under this facility, a sophisticated Ambulance with qualified & experienced Doctor and Male nurse are available at doorsteps of the villagers. The required medicines are being distributed to the villagers and the patients requiring further treatment are being referred to the Multi-Specialty Hospital

Sl. No.	Details	Total
1	**Beneficiary Count**	
1.1	No. of new registration	2510
1.2	No. of old patient seen	11618
1.3	Total Beneficiaries	**14128**
1.4	No. of referrals made	83
2	**Camp Count**	
2.1	No.of days camps run	251
2.2	No. of Camps run/organized	502

- Average number of Patients per day → 56.28

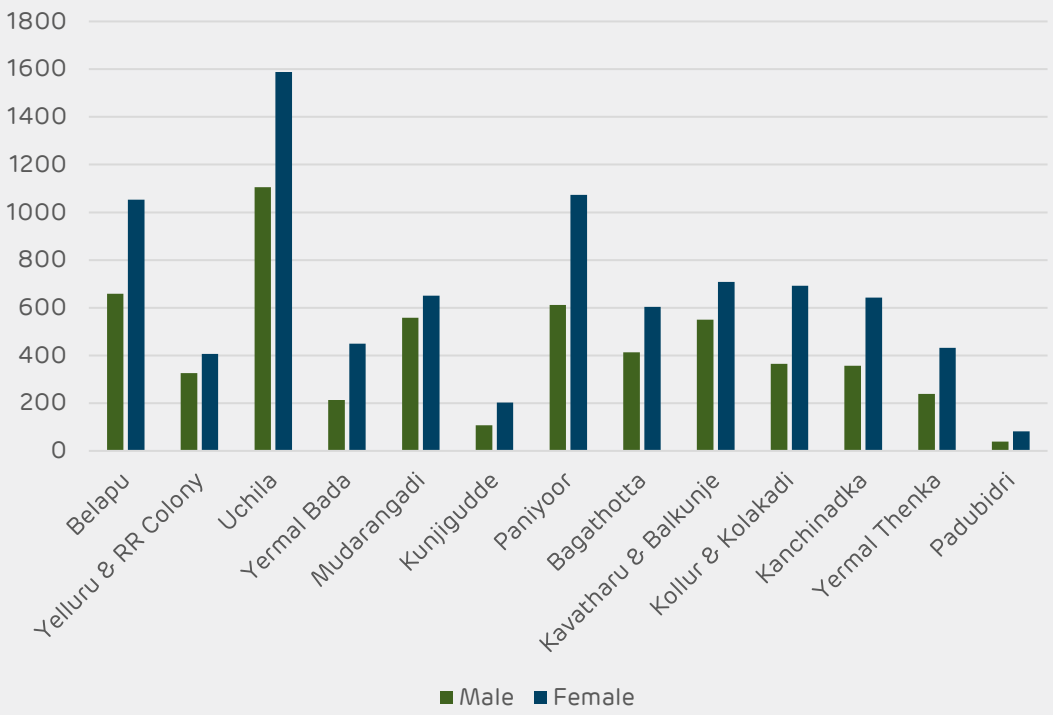
adani Foundation

Activity Head – COMMUNITY HEALTH CARE

Programme – Mobile Health Care Unit

Village-wise, Sex-wise Population benefitted under MHCU:

Sl. No	Village name	Male	Female	Total
1	Belapu	659	1053	1712
2	Yelluru	326	407	733
3	Uchila	1106	1589	2695
4	Yermal Bada	213	449	662
5	Mudarangadi	558	650	1208
6	Kunjigudde	107	203	310
7	Paniyoor	612	1073	1685
8	Bagathotta	413	604	1017
9	Kavatharu & Balkunje	550	708	1258
10	Kollur & Kolakadi	365	692	1057
11	Kanchinadka	357	642	999
12	Yermal Thenka	239	432	671
13	Padubidri	39	82	121
TOTAL		**5544**	**8584**	**14128**



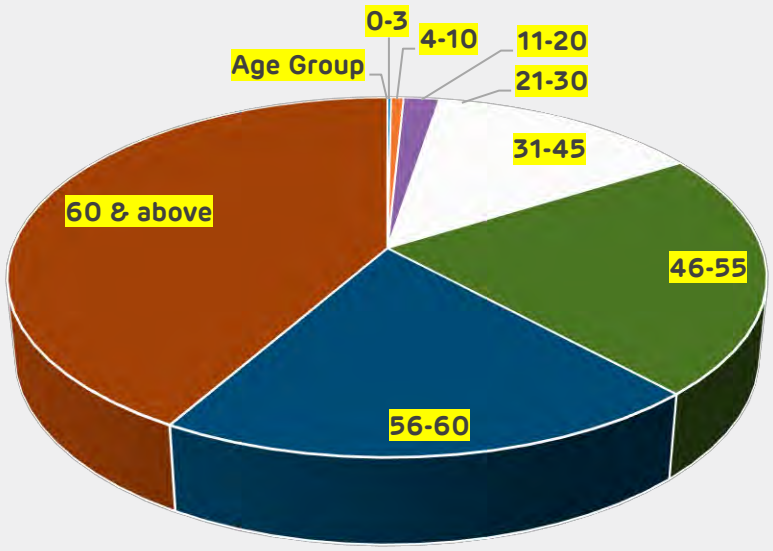
adani Foundation

Activity Head – COMMUNITY HEALTH CARE

Programme – Mobile Health Care Unit

Age Group Population benefitted under MHCU:

Age Group	No. of Beneficiaries
0-3	33
4-10	114
11-20	323
21-30	415
31-45	2060
46-55	4000
56-60	3673
60 & above	7598



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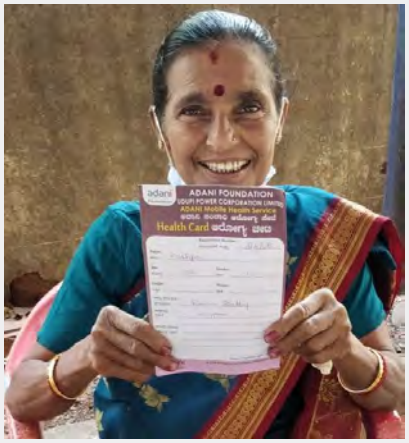
Activity Head – COMMUNITY HEALTH CARE

Programme – Mobile Health Care Unit

Case Studies:



Smt. Pushpa Shetty, Yellur

I am Pushpa Shetty w/o Rama Shetty aged 57 years, a permanent resident of Kunjur, Yellur village. I am having age related health issues like hypertension, diabetes & arthritis. Till 2015-16 I used to spend around 500 rupees per month for my medical needs and I used to travel to Padubidri to visit to Clinic & purchase of medicines from medical shop. Later I came to know about the free medical service of UPCL commonly known as ***Adani Medicine Ambulance.*** *After that every Thursdays, I am visiting Paniyoor School, where the Adani Medical Ambulance is coming every Thursday morning, and getting my BP checked and taking the prescribed medicines from there only that too free of cost. Before I had to depend on someone to go visit doctors clinic in Padubidri or Uchila, but now I am getting a good medical service at my doorstep because of Adani Medicine Ambulance.*

A Big Thanks to ADANI FOUNDATION...

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Activity Head – COMMUNITY HEALTH CARE

Programme – Health Insurance

- To facilitate the needy villagers requiring health treatment in multi-specialty hospitals and to have free medical treatment at private and renowned hospitals, Adani Foundation, has covered the Health Insurance / Medi-claim Insurance from ICICI Lombard General Insurance Company Limited and issued the Adani Aarogya Cards to the villagers of Mudarangadi and Yellur.

- The facility was extended to the free lancer journalists and members of Kapu Press Club

- The Adani Aarogya Card will help villagers of all the age group to have free medical treatment upto a sum insured of Rs.50,000/- per family

- The renewed Insurance Cards were distributed to the respective family members through Grama Panchayats.

- Total Beneficiaries under the Scheme is 9,526 villagers.

- The Total premium amount paid to ICICI Lombard Insurance Company is Rs. 47 lakhs

- The Total sum assured is Rs. 50,000/- per family

- Family means 7 members

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Activity Head – COMMUNITY HEALTH CARE

Programme – Health Insurance

Claims Ratio for the Policy since its inception:

Details of Policy year-wise:

Year	Insurance Company	No. of people covered under Insurance	Premium Amt. paid Rs.	Claim Ratio over the premium amount paid
2016-17	National Insurance Company Limited	9,483	28,37,376	102.00%
2017-18	National Insurance Company Limited	9,483	51,93,180	96.04%
2018-19	ICICI Lombard General Insurance	9,478	51,91,055	92.00%
2019-20	ICICI Lombard General Insurance	9,526	57,01,092	83.00%

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Activity Head – COMMUNITY HEALTH CARE

Programme – Health Insurance

Salient Features of the Adani Health Insurance Policy:

Coverages:

1.	Floater/Non-Floater	: Floater
2.	Pre existing Disease	: Covered
3.	Domiciliary Hospitalisation	: Excluded
4.	30 days waiting period , First year exclusion, 9 months waiting period	: Waive off
5.	Pre-Post Hospitilization	: Pre Hospitalisation and Post Hospitalisation for 30 days & 60 days respectively are covered
6.	Sum Insured (SI)	: SI is restricted to Rs. 50,000/- Per Family during the policy period
7.	Room Rent	: General ward for Normal & General ward for ICU (inclusive of nursing charges). If insured is admitted in a higher category, then insured will bear difference of all medical expenses as in final hospital bill in same proportion
8.	Age Band	: 1 day to 80

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Activity Head – COMMUNITY HEALTH CARE

Programme – Health Insurance

Salient Features of the Adani Health Insurance Policy:

1. Revised Family Definition : Self and any 6 dependent (Dependent includes- Spouse, Kid, Parent, Brother, Sister)
2. Maternity Benefit : For Metro Rs 20000-25000 & For Non Metro Rs 20000-25000 for 2 event
3. Baby Day 1 : Baby covered from 1 day Upto Maternity limit
4. Add-Del of Lives : Premium to be charged on Pro rata Basis for addition/deletion endorsement
5. Ambulance Service : Ambulance Charges limited to 'Rs.' 1000 Per Person
6. Disease wise sublimits : As below
    a. Joint Replacement Including Vertebral Joints Rs. 18,000 Rs. 18,000
    b. Hydrocele Rs. 18,000 Rs. 18,000
    c. Hernia Rs. 18,000 Rs. 18,000
    d. Hysterectomy Rs. 18,000 Rs. 18,000
    e. Cataract Rs. 8,000 Rs. 8,000
7. ID cards : Physical Health Card to be issued
8. 1st year Exclusion : Not Applicable
9. 30 Days Waiting Period : Not Applicable
10. 9 months waiting period : Not Applicable
11. Domiciliary Hospitalization : Excluded

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Activity Head – COMMUNITY HEALTH CARE

Programme – Poor Patients Assistance

- Supporting the people, who are from financially weaker section and need for medical facilities, is one of the activities being taken-up.

  - ✓ A support of Rs. 25,000/- was given to Mr. Sandeep Kotian for medical treatment. Sandeep is a resident of Kolachuru Village, in Yellur and met with a road accident undergone a major surgery in his righthand arm.

  - ✓ A support of Rs. 25,000/- was extended to Mr. Narayana Belchada, resident of Uchila, Bada Grama Panchayat. Mr. Narayana had suffered from left lower limb diabetic foot gangrene and had undergone treatment at Kasturba Hospital, Manipal. Because of gangrene his leg was cut and now looking for fixing of artificial leg.

  - ✓ A support of Rs. 25,000/- was provided to Mr. Mohammed Mohaseen Sabju.

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Activity Head – COMMUNITY HEALTH CARE

Programme – Health Awareness & Campaigns

- Supported Department of Health and Family Welfare, Udupi District, by way of joining hands with them for creating awareness on Pulse Polio Programme in Panchayat limits of Kaup Taluk.

- Provided Ambulance to the Primary Health Centre, Mudarangadi, for the purpose of Pulse Polio Programme.

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Activity Head – SUSTAINABLE LIVELIHOOD DEVELOPOMENT

Programme – Plantation / Social Forestry

- Promoting the greenery and creating awareness to the public about the importance of protecting the environment in the plant vicinity is one of the continuous activity of UPCL.
  - ✓ Nearly 13,000 Fruit Bearing Saplings distributed to 6,400 students of 77 Govt./ Govt. Aided Schools in and around the plant premises.
  - ✓ Social Forestry Programme observed in nearby panchayats.

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Activity Head – SUSTAINABLE LIVELIHOOD DEVELOPMENT INITIATIVE

Programme – Community Engagement through Social / Cultural / Sports Event

- Encouraging and Involving local community / society in promoting rural sports and cultural events is one of the activity being undertaken by UPCL in the plant vicinity.

- This year, the supports have been extended to the following Associations / Institutions:

Sl. No.	Beneficiary	Support Amt. Rs.	Sponsorship Towards
1	SHRI KANAKA SAMSKRUTHIKA VEDIKE	25,000.00	Cultural Programme on the occasion of Krishna Janmasthami
2	BALAGANAPATHI PRASANNA PARVATHI ASSOCIATION	20,000.00	Cultural Programme on the occasion of Annual Day Celebration.
3	KADRI CRICKETERS	118,000.00	Cultural Programme and Rural Sports
4	SAMOOHIKA SRI SATHYANARAYANA POOJA SEVA SAMITI	25,000.00	Cultural Programme on the occasion of Annual Day Celebration
5	YELLURU KAKKETTU BOBBARYA DAIVASTHANA	25,000.00	Cultural Programme and Food Distribution on the occasion of Annual Day Celebration
6	AIKALA KAMBALA SAMITI	5,00,000.00	Annual Kambala Event. Rural Sports – Buffalo Race
7	KOTI CHANNAIAH JODU KERE KAMBALA SAMITI, MOODBIDRI	2,00,000.00	Annual Kambala Event. Rural Sports – Buffalo Race
8	ALL INDIA POSTAL EMPLOYEES' UNION (POSTMEN & MTS) RECEIPTION COMMITTEE	50,000.00	28th All India Conference
9	ROTARY CLUB, UDUPI	20,000.00	32nd District Level General Knowledge Contest
10	SEVA YUVAKA MANDALI, MAHILA MANDALI, KOLAKADI, MULKI.	15,000.00	Cultural Programme and Food Distribution on the occasion of Annual Day Celebration.

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Activity Head – SUSTAINABLE LIVELIHOOD DEVELOPMENT INITIATIVE

Programme – Community Engagement through Social / Cultural / Sports Event

Sl. No.	Beneficiary	Support Amt. Rs	Sponsorship Towards
11	SRI SARVAJANIKA GANESHOTSAVA GOLDEN JUBLIEE COMMITTEE	25000.00	Cultural Programme on the eve of Annual Ganesh Festival
12	THARANGINI MITHRA MANDALI ®	25000.00	Promotion of Cultural Programme "Yakshotsava", a traditional folk art.
13	SAGAR VIDYA MANDIR	25000.00	District Level Kabaddi Tournament
14	YOUTH CLUB	25000.00	Volley Ball Tournament -Youth Trophy -2019
15	SHREE GANESHOTSAVA COMMITTEE	15000.00	Cultural programme on the occasion of Ganeshotsava celebration
16	M/s RAJATHA MAHOTSAVA SAMITHI SARVAJANIKA GANESHOTSAVA SAMITHI, UCHILA	25000.00	Cultural programme on the occasion of Ganesh Festival -2019
17	RESHMA KUNDER	20000.00	Cultural programme on the occasion of Ganesh Festival
18	SUJITH KUMAR	20000.00	Mosaru Kudike Event
19	SARVAJANIKA GANESHOTSAVA SAMITHI	20000.00	Cultural programme on the occasion of Ganesh Festival
20	SARVAJANIKA SRI GANESHOTSAVA SAMITHI, PANIYOOR	50000.00	Cultural programme on the occasion of Ganesh Festival
21	HEAD MASTER GOVT. HR. PRY. SCHOOL MALLAR	15000.00	Zonal level Kho-Kho Tournament
TOTAL		**12,63,000.00**	

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Activity Head – COMMUNITY INFRASTRUCTURE DEVELOPOMENT

Programme – Safe Drinking Water Unit

- To provide the villagers the facility of potable drinking water, Safe Drinking Water Plants on RO technology has been installed at 5 locations in the plant vicinity in the villages of –
  - ✓ Yellur
  - ✓ Mudarangadi
  - ✓ Belapu
  - ✓ Bada
  - ✓ Tenka (Rehabilitation Colony)
- Total number of registered beneficiaries are 6,400

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Activity Head – COMMUNITY INFRASTRUCTURE DEVELOPOMENT

Programme – Development of Village Roads

- The Progress of Village Development / Rural Development depends on the availability of infrastructure facilities. Adani Foundation & UPCL aimed at overall infrastructure development of the villages falling under the limits of 7 Grama Panchayats in its plant vicinity in Kapu Taluk of Udupi District.

At Palimar Grama Panchayat:

- ✓ The newly concreted Hoige Road in Palimar Village was inaugurated and made open to the villagers.
- ✓ The road was inaugurated by Shri. Jeetendra Futrado, President of Palimar Grama Panchayat and Shri. Kishore Alva, President & Executive Director of UPCL, in presence of Panchayat members.

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Activity Head – COMMUNITY INFRASTRUCTURE DEVELOPOMENT

Programme – Development of Village Roads

At Mudarangadi Grama Panchayat:

- ❑ The following completed Infrastructure Development works were inaugurated and unveiled for the usage by the society in the limits of Mudarangadi Grama Panchayat:
  - ✓ Concrete Paving work at the outyard near Sri Subrahmanya temple at Santuru Village.
  - ✓ Concreting of Santuru Bharani Road in Santuru Village.
  - ✓ Interlocking for the floor and roof sheet for Sri Mahalingeshwara Temple at Pilar Village.
  - ✓ Concreting of Prince Point road in Pilar Village.
  - ✓ Compound wall for the premises of Infant Jesus Church in Pilar Village.
  - ✓ Concreting of Road near Infant Jesus Church in Pilar Village.
  - ✓ Paver Blocking of outyard of Infant Jesus Church in Pilar Village.
  - ✓ Toilet block in the premises of Infant Jesus Church in Pilar Village.

Works unveiled by Rev. Fr. DeMello, Parish Priest of Infant Jesus Church, Pilar; Mr. David D'Souza, President of Mudarnagadi Grama Panchayat and Mr. Kishore Alva, President, Adani UPCL, in presence of Church Committee Members and Pilar residents

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Activity Head – COMMUNITY INFRASTRUCTURE DEVELOPOMENT

Programme – Development of Village Roads

At Yellur Grama Panchayat:

- The following Infrastructure Development works at Yellur Village were inaugurated and unveiled for the usage by the society:
  - ✓ Development of road from Admar Main Road to Odiperaguthu Nagabana
  - ✓ Development of road from Mudarangadi Main road to Admar SC ST Colony road near Jagadeesh Shetty's residence.
  - ✓ Development of Road from Paniyoor centre to Gudde Pandu Sherigar's residence
  - ✓ Development of road from Nandikoor Karkala Main road to Kolachur Garadi
  - ✓ Concreting of Road for Ring Road near Masjid in Bellibettu

Inaugurated by Smt. Vasanthi Madhwaraj, President of Yellur Grama Panchayat and Shri. Kishore Alva, President & Executive Director of UPCL, in presence of Panchayat Development Officer and Panchayat members.

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Activity Head – COMMUNITY INFRASTRUCTURE DEVELOPOMENT

Programme – Development of Village Roads

At Belapu Grama Panchayat:

- ✓ Belapu Village, located in the vicinity of UPCL plant, is known as a Model Village in the Asia continent. Belapu Grama Panchayat has received many awards and recognitions into its feathers.
- ✓ The newly concreted roads at Prasad Nagar and Janatha Colony were completed and unveiled for the usage by the public.
- ✓ The roads were inaugurated by Dr. Devi Prasad Shetty, President of Belapu Grama Panchayat, Shri. U.C. Shekabba, Member of Taluk Panchayat and Shri. Kishore Alva, President and Executive Director, Adani UPCL, in presence of panchayat members and local residents.

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Activity Head – COMMUNITY INFRASTRUCTURE DEVELOPOMENT

Status of Committed Works under Community Infrastructure Development Works

Sl. No.	Grama Panchayat	Committed CSR Works for 3 years Rs. in lakhs	in Kriya Yojana submitted by Panchayat Rs. in lakhs	PR raised Rs. in lakhs	Works Completed Rs. in lakhs	Works-in-Progress Rs. in lakhs	Grant-in-aid Rs. in lakhs	Balance of works to be taken-up for execution Rs. in lakhs
A	B	C	D	E	F	G	H	I = (C-F-G-H)
1	Yellur	375.00	389.89	259.39	259.39	0.00		115.61
2	Mudarangadi	465.00	571.51	376.51	376.51	0.00		88.49
3	Tenka	256.00	263.72	137.72	131.72	0.00	10.00	114.28
4	Bada	277.00	248.54	96.04	73.54	22.50		180.96
5	Padubidri	300.00	277.00	132.21	132.21	0.00		167.79
6	Belapu	300.00	304.85	146.85	146.85	0.00	5.00	148.15
7	Palimaru	300.00	241.65	111.65	101.65	0.00	5.00	193.35
TOTAL		**2,273.00**	**2,297.16**	**1,260.37**	**1,221.87**	**22.50**	**20.00**	**1,008.63**

Activity Head – COMMUNITY INFRASTRUCTURE DEVELOPOMENT

Works in Progress:

- ✓ Construction of Compound Wall with Gate for the Training Centre of Bharat Scouts and Guides, Karnataka, spread over in 26 acres of land in Pragati Nagar, Udupi District. Project Cost: Rs. 90 Lakhs

- ✓ Rejuvenation of Mainda Lake (twin lake) located in 5 acres at Santuru Village in Mudarangadi Grama Panchayat. Project Cost: Rs. 1.50 Crores

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Activity Head – OTHER SUPPORTS

Programme – Covid-19 Relief Kits

- The Corona Pandemic outbreak resulted in Nation-wide lock down impacting all the Industries and Service sector except the essential services and utilities.
- This has resulted in many migrated workers / daily-wage basis workers in a difficult situation, as neither they can go for any work to earn for their livelihood, nor they could not go to their domicile place.
- Many migrated workers are located in the villages of Nandikuru, Padubidri, Sooda, Yelluru, Belapu and Uchila, in the vicinity of UPCL plant.
  - ✓ Initially 200 migrated families were provided with the Relief Kits as identified by the Tahashildar and Taluk Magistrate of Kaup Taluk.
  - ✓ 175 free lance journalists were provided with the Relief Kits, based on the request provided by Udupi District Working Journalists Association.
  - ✓ Subsequently, nearly 800 need people / migrated worker and families, staying in the nearby Grama Panchayats of Yellur, Mudarangadi, Bada, Tenka, Belapu, Palimar and Padubidri, were identified and provided with the relief kits.
  - ✓ Each Relief Kit comprised of 10 Kgs. of Rice, 2 Kgs. of Toordhaal, 5 Kgs of Wheat Flour, 1 Kg of Cooking Oil, 1 Kg of Salt, 1 Washing Soap, 1 Bath Soap and Hand Sanitizer
- Total Cost incurred was Rs. 12.50 Lakhs

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Activity Head – OTHER SUPPORTS

Programme – Covid-19 Relief Kits

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MEDIA ARTICLES

Sl. No.	Activity Name	Date of Event	Kannada	English	E-Portal	TOTAL
			TOTAL	TOTAL	Daiji World	
1	Distribution of Covid-19 Relief Kits to 200 Migrated Families	02/04/2020	6	1	1	8
2	Distribution of Covid-19 Relief Kits to 150 Freelance Journalists	04/04/2020	2		1	3
3	Inauguration of Community Infrastructure Development Works in Miudarangadi Grama Panchayat Development works in Infant Jesus Church at Pilar	21/11/2020	2		1	3
4	Social Forestry / Vanamahosava Programme	28/11/2020	3		1	4
5	Scholarship Distribution Programme	21/03/2021	7	1	1	9
TOTAL			**20**	**2**	**5**	**27**

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BENEFICIARIES

Sl. No.	Activity Head	Sub Sl. No.	Description	Budget	No. of Direct Beneficiaries	No of Indirect Beneficiaries	No of Access Beneficiaries	Total Expenditure Rs.	Remarks
1	Education	1.1	Scholarships	AF	700	2800		20,00,000	Director Beneficiaries: Students who have received the scholarsship. Indirect Beneficiaries: 4 members per family for 700 students' family
		1.2	Support to Scouts, Gides and Kannada Seva Trust for the construction of Auditorium / Community Hall (Kannada Bhavan)	AF	5000	20000	690000	38,00,000	Direct Beneficiaries: Scouts and Guides in Moodbidri Taluk. Indirect Beneficiaries: Scouts and Guides in Dakshina Kannada District and Udupi District Access Beneficairies: Total Scouts & Guides population in the State
		1.3	Education Grant	Business	1	4		45,000	Direct Beneficiaries: Student, who has received the grant. Indirect Beneficiaries: Family members of the Student.
2	Community Health	2.1	Mobile Health Care Unit	AF	12404	49616	49773	20,30,624	Direct Beneficiaries: Person who has availed the treatment. Indirect Beneficiaries: Family members of the person got the treatment. Access Beneficiaries: Total population of the villages where AMHS is rendering its service.
		2.2	Health Insurance Adani Aarogya Card	AF	9526			46,78,697	Direct beneficiaries: Adani Health Card Holders.
		2.3	Poor Patients Assistance	AF	2	8		50,000	Direct Beneficiaries: Student, who has received the grant. Indirect Beneficiaries: Family members of the Student.
		2.3.1	Poor Patients Assistance	Business	1	4		25,000	Direct Beneficiaries: Student, who has received the grant. Indirect Beneficiaries: Family members of the Student.

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BENEFICIARIES

Sl. No.	Activity Head	Sub Sl. No.	Description	Budget	No. of Direct Beneficiaries	No of Indirect Beneficiaries	No of Access Beneficiaries	Total Expenditure Rs.	Remarks
3	Sustainable Livelihood Development	3.1	Plantation / Social Forestry & Tree Guards	AF	3500	14000		9,44,000	Direct Beneficiaries: Villagers / Stake Holders who have taken the saplings directly. Indirect Beneficiaries: Family members
		3.2	Community Engagement through Social / Cultural activities	AF	165	825		2,65,000	Direct Beneficiaries: Number of members / office bearers of the Association received the Support. In-Direct Beneficiaries: Number of Associations / Community Centres affiliated to the main Association. Considered 5 Affiliations for each Association
		3.2.1	Community Engagement through Social / Cultural activities	Business	10	1000		9,98,000	Direct Beneficiaries: Number of members / office bearers of the Association received the Support. In-Direct Beneficiaries: Number of Associations / Community Centres affiliated to the main Association. Considered 100 Affiliations for each Association

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BENEFICIARIES

Sl. No.	Activity Head	Sub Sl. No.	Description	Budget	No. of Direct Beneficiaries	No of Indirect Beneficiaries	No of Access Beneficiaries	Total Expenditure Rs.	Remarks
3	Sustainable Livelihood Development	3.1	Plantation / Social Forestry & Tree Guards	AF	3500	14000		9,44,000	Direct Beneficiaries: Villagers / Stake Holders who have taken the saplings directly. Indirect Beneficiaries: Family members
		3.2	Community Engagement through Social / Cultural activities	AF	165	825		2,65,000	Direct Beneficiaries: Number of members / office bearers of the Association received the Support. In-Direct Beneficiaries: Number of Associations / Community Centres affiliated to the main Association. Considered 5 Affiliations for each Association
		3.2.1	Community Engagement through Social / Cultural activities	Business	10	1000		9,98,000	Direct Beneficiaries: Number of members / office bearers of the Association received the Support. In-Direct Beneficiaries: Number of Associations / Community Centres affiliated to the main Association. Considered 100 Affiliations for each Association
4	Community Infrastructure Development	4.1	Safe Drinking Water Unit	AF	6400		16548	8,45,000	Direct Beneficiaries: Registered people, availing the Drinking Water Facility. Access Beneficiaries: Total population strength in the nearby wards of Yellur (2800), Mudarangadi (3752), Bada (4297), Belapu (4965) and residents of R&R colony & Admar, Tenka (734)

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BENEFICIARIES

Sl. No.	Activity Head	Sub Sl. No.	Description	Budget	No. of Direct Beneficiaries	No of Indirect Beneficiaries	No of Access Beneficiaries	Total Expenditure Rs.	Remarks
4	Community Infrastructure Development	4.2	Concreting of Hoige Road in Palimar Grama Panchayat	AF	2991		6761	10,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population Adve - 1065; Nandikuru - 1466; Palimaru / Moodu Palimaru - 3312; Avaralamattu - 918
		4.2.1	Concreting of Paradi Cross Road in Santuru Village, Mudarangadi Grama Panchayat	AF	2461		5682	9,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangi Grama Panchayat.
		4.2.2	Concreting of outyard road of Santuru Subramanya Temple in Santuru Village, Mudarangadi Grama Panchayat	AF	2461		5682	10,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangadi Grama Panchayat.
		4.2.3	Concreting of Santuru - Bharani Road in Santuru Village, Mudarangadi Grama Panchayat	AF	2461		5662	15,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangadi Grama Panchayat.

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BENEFICIARIES

Sl. No.	Activity Head	Sub Sl. No.	Description	Budget	No. of Direct Beneficiaries	No of Indirect Beneficiaries	No of Access Beneficiaries	Total Expenditure Rs.	Remarks
4	Community Infrastructure Development	4.2	Concreting of Hoige Road in Palimar Grama Panchayat	AF	2991		6761	10,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population Adve - 1065; Nandikuru - 1466; Palimaru / Moodu Palimaru - 3312; Avaralamattu - 918
		4.2.1	Concreting of Paradi Cross Road in Santuru Village, Mudarangadi Grama Panchayat	AF	2461		5682	9,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangi Grama Panchayat.
		4.2.2	Concreting of outyard road of Santuru Subramanya Temple in Santuru Village, Mudarangadi Grama Panchayat	AF	2461		5682	10,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangadi Grama Panchayat.
		4.2.3	Concreting of Santuru - Bharani Road in Santuru Village, Mudarangadi Grama Panchayat	AF	2461		5662	15,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangadi Grama Panchayat.

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BENEFICIARIES

Sl. No.	Activity Head	Sub Sl. No.	Description	Budget	No. of Direct Beneficiaries	No of Indirect Beneficiaries	No of Access Beneficiaries	Total Expenditure Rs.	Remarks
4	Community Infrastructure Development	4.2.4	Concreting of SC ST Colony Road in Pilar Village, Mudarangadi Grama Panchayat	AF	3221		5662	20,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangadi Grama Panchayat.
		4.2.5	Development Works for Pilar Mahalingehswara Temple in Pilar Vlillage, Mudarangadi Grama Panchayat	AF	3221		5662	20,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangadi Grama Panchayat.
		4.2.6	Concreting of Cross Road near Infant Jesus Church in Pilar Village, Mudarangadi Grama Panchayat	AF	3221		5662	40,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Mudarangadi Grama Panchayat.
		4.2.7	Construction of Toilet Block and installation of paver blocks near Pilar Infant Jesus Church in Pilar Village, Mudarangadi GP	AF	3221		5662		

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BENEFICIARIES

Sl. No.	Activity Head	Sub Sl. No.	Description	Budget	No. of Direct Beneficiaries	No of Indirect Beneficiaries	No of Access Beneficiaries	Total Expenditure Rs.	Remarks
4	Community Infrastructure Development	4.2.9	Concreting of Kolachuru - Garadi Road in Yellur Village, Yellur Grama Panchayat	AF	985		5453	10,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Yellur Grama Panchayat.
		4.2.10	Concreting of SC ST Colony Road near Admar in Yellur Vilalge, Yellur Grama Panchayat	AF	1028		5453	4,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Yellur Grama Panchayat.
		4.2.11	Concreting of Admar - Odiperaguttu Nagabana Road in Yellur Grama Panchayat limits	AF	1028		5453	20,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Yellur Grama Panchayat.
		4.2.12	Concreting of road from Paniyuru Centre to Gudde Pandusherigar Road in Ward No. 4 of Yellur Village	AF	1234		5453	7,50,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Yellur Grama Panchayat.

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BENEFICIARIES

Sl. No.	Activity Head	Sub Sl. No.	Description	Budget	No. of Direct Beneficiaries	No of Indirect Beneficiaries	No of Access Beneficiaries	Total Expenditure Rs.	Remarks
4	Community Infrastructure Development	4.2.13	Development of Janata Colony Road in Ward No. 3 of Belapu Grama Panchayat	AF	955		4127	10,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Belapu Grama Panchayat.
		4.2.14	Development of Prasad Nagara Road in Ward No. 3 of Belapu Grama Panchayat	AF	955		4127	10,00,000	Direct Beneficiaries: Population strength of that particular ward. Access Beneficiaries: Total village population of Belapu Grama Panchayat.
5	Other Supports	5.1	Covid-19 Relief Kits	Business	1200	4800		12,50,000	Direct Beneficiaries: People who have received the Relief Kits. In-direct Beneficiaries: No. of dependents of the benefitted member.
TOTAL					**69337**	**93057**	**838275**	**3,84,81,321**	

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Annexure-XIV

Comparison of Base Line Data with the analysis report of Mar 2021: *Annexure-XIV*

S.No	Parameters	Karnire (Surface water)		Nandikur Village		Santhoor Village		UNIT	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012
		As Per EIA-507.5 MU	Mar 2021	As Per EIA-507.5 MU	Mar 2021	As Per EIA-507.5 MU	Mar 2021			
1	Color	Colorless	<1	Colorless	BDL	Colorless	<1	Hz	5	15
2	Odour		A		A		A	-	Agreeable	Agreeable
3	Taste		A		A		A	-	Agreeable	Agreeable
4	Turbidity		0.58		3.50		0.50	NTU	1	5
5	TDS	17222	203.90	8	44.73	16	82.07	mg/l	500	2000
6	pH	7.1	7.02	6.2	6.87	6.8	6.89	-	6.5 - 8.5	No relaxation
7	Alkalinity		26.84		16.49		46.93	mg/l	200	600
8	Total Hardness as CaCO3		41.50		16.44		3.7	mg/l	200	600
9	Calcium as Ca		17.65		3.50		10.12	mg/l	75	200
10	Magnesium as Mg		5.03		2.35		6.28	mg/l	30	100
11	Iron as Fe	0.1	0.85	0.3	0.19	1.5	0.16	mg/l	0.3	No relaxation
12	Sulphate as SO4	1096	46.33	1.9	7.40	2.1	6.28`	mg/l	200	400
13	Chloride as Cl	9264	62.70	8.6	9.96	9.6	14.08	mg/l	250	1000
14	Fluoride as F	0.5	0.38	0.05	BDL	0.1	BDL	mg/l	1	1.5
15	Phenolic Compounds	0.04	BDL	0.01	BDL	0.02	BDL (DL 0.001)	mg/l	0.001	0.002
16	Manganese as Mn		BDL		BDL		BDL (DL 0.001)	mg/l	0.1	0.3
17	Zinc as Zn	0.02	1.49	0.02	BDL	0.03	BDL (DL 0.1)	mg/l	5	15
18	Arsenic as As	ND	BDL	ND	BDL	ND	BDL	mg/l	0.05	No relaxation
19	Cyanide as CN		BDL	ND	BDL		BDL	mg/l	0.05	No relaxation
20	Cadmium as Cd	ND	BDL	ND	BDL	ND	BDL	mg/l	0.003	No relaxation
21	Chromium as Cr6+	ND	BDL	ND	0.03	ND	0.012	mg/l	0.05	No relaxation
22	Aluminium as Al		BDL	ND	BDL		BDL	mg/l	0.03	0.2
23	Selenium as Se	ND	BDL	ND	BDL	ND	BDL	mg/l	0.01	No relaxation
24	Lead as Pb	ND	BDL	ND	BDL	ND	BDL	mg/l	0.01	No relaxation
25	Mercury as Hg	ND	BDL	ND	BDL	ND	BDL	mg/l	0.001	No relaxation
26	Boron as B	ND	BDL	ND	BDL	ND	BDL	mg/l	0.5	1
27	Residual Free Chlorine	NT	BDL	ND	BDL	NT	BDL	mg/l	0.2	1
28	Nitrate as NO3-N		BDL	ND	1.71	ND	2.7	mg/l	45	No relaxation
29	E.Coli	280	Absent	350	Absent	1800	Absent	MPN/ 100 ml	Shall not be detectable in any 100 ml sample	

Note: A- Agreeable, BDL- Below Detectable Level, Nil– Zero, ND – Not Detected

Annexure-XV

adani
Power

REF: UPCL/PLANT/O&M/ENV/2020-21/346. 23.09.2020

To,
The Environment Officer,
Karnataka State pollution Control Board,
Regional Office,
Plot No-36-C, Shivalli Industrial Area,
Manipal, Udupi-576104

Sub: Submission of Environment statement for Financial Year 2019-20 in Form-V for 2 X 600 MW coal based Subcritical Thermal Power Plant of Udupi Power Corporation Limited, reg...

Ref: 1) Consent for Operation No: - **AWH - 301645 dated: 15/12/2016.**
2) Environmental Clearance No: - **J-13011/23/1996-IA.II (T) dated: 01.09.2011**

Dear Sir,

With reference to the above cited subject, please find the enclosed Environment Statement in Form-V for the financial year 2019-20 for 2X600 MW coal based Subcritical Thermal Power Plant of Udupi Power Corporation Limited.

Thanking you,

Yours faithfully

Authorized Signatory
Udupi Power Corporation Limited.

ದಿನಾಂಕ: 28/9/2020
ರಂದು ಸ್ವೀಕರಿಸಿದೆ.

Enclosure: Environment Statement in Form-V

Copy to:

Member Secretary, Karnataka State Pollution Control Board, "Parisara Bhavana", 1st to 5th Floor, #49 church street, Bengaluru-560001.

Udupi Power Corporation Ltd
Yelluru Village
Pilar Post Padubidri
Udupi 574 113
Karnataka, India
CIN: U31909KA1996PLC019918

Tel +91 820 270 3500
Fax +91 820 255 0854/ 2703345
info@adani.com
www.adanipower.com

Registered Office: 160, Om Chambers, 2nd Floor, 1st Main Road, Sheshadripuram, Near Total Gaz Pump, Bangalore 560020

ANNEXURE

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March 2020

PART-A

i	Name and address of the owner/occupier of the industry	Pravat Kishore Sundaray Station Head Udupi Power Corporation Limited Yelluru Village, Pillar Post Padubidri, Udupi District Karnataka-574113
ii	Industry category Primary-(STC code) Secondary- (STC Code)	Large scale Industry- Red Category
iii	Production category –Units	2X600 MW Imported Coal based Thermal Power Plant
iv	Year of establishment	Unit-I: 11th Nov 2010 Unit-II: 19th Aug 2012
v	Date of the last environmental statement submitted	Letter No: UPCL/Plant/O&M/ENV/2019-20/0766 dated: 25.09.2019

PART-B

Water and Raw Material Consumption:

i. Water consumption in m3/day

Process	: 157138.01
Cooling	: 800.52
Domestic	: 70.29
Total	: 158008.81
Sea Water returned back to Sea	: 81692.02

Name of Products	Process water consumption per unit of products	
	During the previous financial year (2018-19)	During the current financial year (2019-20)
Power Generation (3277.941 MU)	0.00530 kl/kwh	0.00769 kl/kwh

ii. Raw material consumption

Name of raw materials	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year (2018-19)	During the current financial year (2019-20)
Coal	Power Generation	0.426 kg/kWh	0.430 kg/kWh
Heavy Fuel Oil (HFO)	Flame Stabilization during power generation and start-up	Nil	Nil
Light Diesel oil (LDO)		0.000248 ml/kWh	0.000476 ml/kWh

*Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

UDUPI POWER CORPORATION LIMITED YELLUR

PART-C

Pollution discharged to environment/unit of output

(Parameter as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass/day) i.e., (**Kg/day**)		Concentration of Pollutants discharged (**Mass/Volume**)		Percentage of variation from prescribed standards with reasons
a) Water	Parameter	Results	Parameter	Results	No deviation
	Color & Odor	Agreeable	Color & Odor	Agreeable	
	pH	Not Applicable	pH	7.75	
	TSS	5024.9	TSS, mg/l	61.51	
	BOD	3627	BOD, mg/l	44.40	
	COD	13467.6	COD, mg/l	164.86	
	Oil& grease	236.9	Oil & grease	2.90	
	Arsenic	BDL	Arsenic	BDL	
	Lead	BDL	Lead	BDL	
	Mercury	BDL	Mercury	BDL	
	Total Cr	27.9	Total Cr	0.34	
	Hexavalent Cr	BDL	Hexavalent Cr	BDL	
	Phenolic Compounds	BDL	Phenolic Compounds	BDL	

b) Air	Unit-I (kg/day)		Unit-II (kg/day)	Unit-I (mg/Nm^3)		Unit-II (mg/Nm^3)	No deviation
	PM	252.98	656.44	PM	11.88	20.45	
	SO_X	6773.18	13419.09	SO_X	318.05	418.13	
	NO_X	2593.57	4795.15	NO_X	121.79	149.41	

PART-D

HAZARDOUS WASTE

{As specified under the Hazardous and Other wastes (Management and Transboundary Movement) Rules, 2016}

Hazardous Wastes	Total Quantity (MT)			
	During the previous financial year (2018-19)		During the current financial year (2019-20)	
1) From Process	Used Oil	17.13 MT	Used Oil	20.52 MT
	Oil Soaked Cotton waste	1.53 MT	Oil Soaked Cotton waste	3.17 MT
	Discarded Containers	11.18 MT	Discarded Containers	14.36 MT
	Spent Ion exchange resins containing toxic metals	9.11 MT	Spent Ion exchange resins containing toxic metals	Nil
2) From Pollution Control Facilities	Not Applicable		Not Applicable	

UDUPI POWER CORPORATION LIMITED YELLUR

PART-E

*SOLID WASTES**

Solid Wastes	Total Quantity (MT)			
	During the previous financial year (2018-19)		During the current financial year (2019-20)	
a)From Process (Generation)	Bottom Ash	12669.79	Bottom Ash	10748.87
b)From Pollution Control Facility (Generation)	Fly Ash	112781.69	Fly Ash	76637.11
	Gypsum	634.78	Gypsum	1678.23
c) Quantity recycled or reutilized (utilized for Cement/RMCs/Bricks/ M-Sand)	Fly Ash	112506.28	Fly Ash	73919.95
	Bottom Ash	13749.30	Bottom Ash	14209.56
	Gypsum	573.43	Gypsum	1533.55

PART-F

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

a) Hazardous waste: As per Hazardous and Other Wastes (Management & Transboundary Movement) Rules 2016, hazardous wastes generated in the industry are of five categories i.e., 5.1 Used Oil, 5.2 Oil soaked Cotton Waste, 21.1 Paint Sludge, 33.1 Discarded Containers and 35.2 Spent Ion Exchange resin. All these generated wastes are stored on the concrete platform in designated location and disposed to KSPCB/CPCB authorized vendors.

b) Solid Waste: Solid waste in the industry is generated from process and pollution control facilities.

i. Bottom Ash is generated from the process of burning coal and is collected in the water impounding basin and the same is disposed to brick manufacturers & disposal to ash pond which is 3 km away from the plant.

ii. Fly Ash is generated from the process is trapped in the electro static precipitators (ESPs) in dry form and stored in silos. Fly ash is disposed to various end users like cement manufacturers, brick manufacturers and Ready Mix Concrete works.

iii. Gypsum is generated from the FGD (flue gas desulphurization) units when flue gas is passed through wet lime to remove Sulphur Di-oxides. Generated gypsum is disposed to end users like cement manufacturers, fertilizers industries and plasterboard manufacturers.

iv. Sludge generated from the STP was utilized as manure after drying and composting along with garden waste.

PART-G

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

a) The Ambient Air Quality surrounding the coal handling facility is monitored through Online Continuous Ambient Air Quality Monitoring Stations and the Ambient Air Quality is within the prescribed limits throughout the year.

b) The coal conveyor belts are fully covered and installed with Dust Suppression system at transfer points for arresting the fugitive emissions.

c) The Units are equipped with Pollution Control Equipment such as Low NOx Burner, ESP & FGD (flue gas desulphurization) for controlling the Stack Emission.

d) Fly Ash generated is conveyed in dry form through conduits and stored in silos. Fly Ash is utilized by cement manufacturers, brick manufacturers and RMC works.

e) Gypsum generated is stored in closed yard and disposed to end users like cement manufacturers, fertilizers industries and plasterboard manufacturers.

f) ETP of 7200 KLD is in operation and treated water is reused for green belt development/ gardening.

g) Water Sprinkling is undertaken in the Ash Pond for suppression of dust.

UDUPI POWER CORPORATION LIMITED YELLUR

PART-H

Additional measures/investment proposal for environmental protection including abatement of pollution

a) Wind shield installed in the coal handling plant for controlling fugitive emissions.
b) Rain Harvesting Ponds of capacities 70000 m^3 and 72000 m^3 are constructed for harvesting rain water during rainy season and utilization in Cooling Tower and other purposes.
c) Organic Waste Converter is installed for converting food and green waste into compost and used in green belt/ gardening.
d) Deployment of Road Sweeping machine to reduce fugitive dust emissions.

PART-I

Any other particulars in respect of environmental protection and abatement of pollution

a) UPCL is certified with ISO 9001:2015 – Quality Management Systems, ISO 14001:2015 – Environment Management Systems, ISO 45001:2018 – Occupational Health and Safety Management Systems and ISO 50001:2018 – Energy Management Systems.
b) World Environment Day celebration to create Environmental awareness among employees and community by conducting various environmental competitions, workshops & presentations.
c) Joined hands with Karnataka State Pollution Control Board (KSPCB) for JAATHA (Walkathon) creating awareness on Air Pollution on World Environment Day on 05th June, 2019.
d) Nearly 700 saplings were distributed to the villagers in Belapu to promote social forestry.
e) Mass Plantation drive in the plant on the eve of World Environment day and also nearby villages like Belapu & Mudarangadi grama Panchayat.
f) Nearly 13,000 Fruit Bearing Saplings distributed to 6,400 students of 77 Govt./ Govt. Aided Schools in and around the plant premises
g) A pilot project taken for recharge of Bore wells of 10 Numbers in Mudarangadi Grama Panchayat through CSR activity.
h) SWACHHAGRAHA program conducted across 61 government schools which aims to create awareness among the students for Hygiene & Cleanliness
i) Installation of custom-made dust bins in neighboring villages to ensure hygiene and proper waste disposal
j) As per the request from the Chief Conservator of Forest (CCF), Mangalore and Deputy Conservator of Forest (DCF), Kundapura Division, UPCL have engaged the water tanks for the purpose of watering of plants in vicinity of the plant during the peak summer period.

UDUPI POWER CORPORATION LIMITED
YELLUR

Annexure-XVI

SNAP SHOTS OF CAUTION BOARDS *Annexure-XVI*

Caution Boards are installed at every 500 meters length throughout the 6 km pipeline corridor. Snapshots of the caution boards are placed below:

Annexure-XVII

COASTAL WATER QUALITY MONITORING NEAR THE M/S UPCL SEA WATER INTAKE AND EFFLUENT DISCHARGE POINT OFF PADUBIDRI, UDUPI DISTRICT, KARNATAKA

Submitted to:

M/S UDUPI POWER CORPORATION LIMITED

Kolachure, Yelluru village,

Pilar post, Udupi district - 574113

Prepared by:

DEPARTMENT OF AQUATIC ENVIRONMENT MANAGEMENT

KARNATAKA VETERINARY, ANIMAL AND FISHERIES SCIENCES UNIVERSITY

COLLEGE OF FISHERIES, MANGALORE – 575 002.

MARCH, 2021

CONTENTS

SL. NO.	Description	Page No.
1	Seawater Quality – Hydrographical parameters	1
2	Plankton i. Phytoplankton ii. Zooplankton	2 - 4 5 - 6
3	Macrobenthos	6 - 7
4	Bioassay teast – Lethal toxicity	8
5	Inference	9-10

Table 1. Data on water quality parameters off Padubidri during March 2021.

Sl. No.	Parameters		Stations							
			1	2	3	4	5	6	7	8
1	Water Temperature (^{0}C)	S	31.9	31.8	32.0	31.9	31.8	31.8	31.8	31.8
		SS	31.1	31.2	31.1	30.9	30.7	31.2	30.7	30.8
2	pH	S	8.46	8.12	8.11	8.55	8.18	8.44	8.55	8.22
		SS	8.65	8.31	8.45	8.58	8.50	8.57	8.51	8.32
3	Salinity (psu)	S	29.69	30.31	30.31	30.31	30.63	30.94	30.63	30.14
		SS	30.00	30.31	30.63	30.63	30.94	31.25	31.25	30.54
4	Dissolved Oxygen (mg/l)	S	6.52	6.73	6.52	6.93	6.52	6.52	6.52	6.78
		SS	6.73	6.73	6.93	6.73	6.52	6.52	6.93	6.59
5	BOD_3 at 27^{0}C	S	-	2.65	-	-	2.45	-	1.22	-
		SS		1.43			0.82		1.22	
6	COD (mg/l)	S	-	22	-	-	20	-	18	-
		SS		16			18		16	
7	Transparency (m)		1.81	0.75	0.71	0.38	0.47	0.45	0.28	0.29
8	Total Suspended Solids (mg/l)		-	136	-	-	124	-	116	-
9	Total Dissolved Solids (mg/l)	S	-	23290	-	-	20430	-	20150	-
10	Ammonia (µg-at/l)	S	9.51	8.90	8.13	8.39	9.08	9.16	7.61	7.25
		SS	7.78	8.39	9.60	9.42	9.94	9.16	7.26	7.36
11	Nitrite (µg-at/l)	S	0.21	0.11	0.19	0.15	0.04	0.16	0.10	0.05
		SS	0.25	0.15	0.29	0.19	0.08	0.04	0.21	0.12
12	Nitrate (µg-at/l)	S	0.81	0.41	0.81	0.49	0.81	0.65	0.24	0.25
		SS	0.24	0.65	0.24	1.86	0.65	0.73	0.65	0.36
13	Phosphate (µg-at/l)	S	0.40	0.55	0.40	0.30	0.60	0.45	0.75	0.65
		SS	0.40	0.50	0.40	0.30	0.50	0.65	0.40	0.55
14	Silicate (µg-at/l)	S	8.11	9.08	7.99	8.47	9.32	8.71	11.50	10.9
		SS	10.53	7.87	8.95	10.41	9.56	10.77	8.59	9.45
15	Oil and Grease (mg/l)	S	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

BDL: Below Detectable Level

Table 2. Phytoplankton diversity (no/m^3) and Biomass (mg/m^3) in the coastal waters off Padubidri during March 2021.

Sl. No.	Flora	Depth (m)		
		4	8	12
I	**Diatoms**			
1	*Asterionella*			
	a. *A. japonica*	-	-	-
	b. Others	-	-	-
2	*Bacteriastrum*			
	a. *B. varians*	6000	-	-
	b. Others	500	-	-
3	*Biddulphia*			
	a. *Biddulphia regia*	19000	6000	2000
	b. *B.sinensis*	13000	3000	1200
	c. *Biddulphia mobiliensis*	9500	1500	800
	d. Others	500	522	-
4	*Cerataulina*			
	a. *C. perlagica*	-	-	-
	b. Others	-	-	-
5	*Chaetoceros*			
	a. *C. lorenzianus*	12000	-	4000
	b. *C. decipiens*	6000	-	2000
	c. *C. compressus*	3000	-	1000
	d. *C. curvisetus*	1000	-	1000
	e. Others	500	-	-
6	*Coscinodiscus*			
	a. *C. oculus iridis*	7000	3000	1500
	b. *C. lineatus*	3000	1500	1000
	c. *C. excentricus*	1500	800	500
	d. Others	500	500	200
7	*Cyclotella*			
	a. *C. stelligera*	-	-	-
	b. Others	-	-	-
8	*Dynobryon setularia*	-	-	-
9	*Ditylum*			
	a. *D. brightwelli*	17000	3000	2800
	b. Others	500	600	200
10	*Eucamphia*			
	a. *E. zoodiacus*	-	-	-
	b. Others	-	-	-

11	*Fragillaria*			
	a. *F. oceanica*	-	-	-
	b. Others	-	-	-
12	*Gyrosigma*			
	a. *G. balticum*	2500	-	-
	b. Others	500	-	-
13	*Lauderia*			
	a. *L. borealis*	12000	-	30000
	b. Others	50000	-	2000
14	*Leptocylindricus*			
	a. *L. danicus*	8500	100	-
	b. Others	500	100	-
15	*Melosira*			
	a. *M. monilifornas*	-	-	400
	b. Others	-	-	-
16	*Navicula*			
	a. *N. longa*	-	-	-
	b. Others	-	-	-
17	*Nitzschia*			
	a. *N. closterium*	-	-	-
	b. *N. striata*	-	-	-
	c. *N. longissima*	-	-	-
	d. Others	-	-	-
18	*Planktoniella*			
	a. *P. sol*	-	-	-
	b. Others	-	-	-
19	*Pleurosigma*			
	a. *P. normanii*	16000	4500	-
	b. *P. elongatum*	7500	2000	-
	c. Others	500	500	-
20	*Rhizosolenia*			
	a. *R. stolterfothii*	18000	9000	1000
	b. *R. shrubsolei*	12000	4000	700
	c. *R. stliformis*	4500	1500	-
	d. Others	500	500	-
21	*Skeletonema*			
	a. *S. costatum*	-	-	-
	b. Others	-	-	-
22	*Staurastrum* sp.	-	-	-
23	*Streptotheca*			
	a. *S. thamensis*	5500	9000	2000
	b. Others	500	300	200
24	*Thalassiothrix*			
	a. *T. decipiens*	1000	1500	300
	b. *T. longissima*	500	600	-

	c. Others	-	-	-
25	*Triceratium*			
	a. *T. reticulate*	-	-	400
	b. *T. favus*	-	-	200
	c. Others	-	-	-
26	*Diatoma*			
	a. Diatoma vulgare	-	-	-
27	Other diatoms	2000	600	400
II	**Dinoflagellates**			
1	*Ceratium*			
	a. *C. macroceros*	110000	45000	4500
	b. *C. fusus*	60000	25000	2500
	c. *C. longipes*	25000	13000	1500
	d. others	5000	500	500
2	*Dinophysis*			
	a. *D. acuta*	-	-	-
	b. Others	-	-	-
3	*Gymnodinium*			
	a. *G. splendens*	-	-	-
	b. *G. rhombodes*	-	-	-
	c. Others	-	-	-
4	*Ornithoceros magnificus*	-	-	-
5	*Peridinium*			
	a. *P. depressum*	8000	3000	400
	b. *P. divergens*	4000	1500	200
	c. *P. granii*	3000	1000	200
	d. *P. excentricum*	3000	600	100
	e. Others	1000	-	-
6	*Preperidinium*	19000	3600	2800
7	*Noctiluca*			
	a. *N. Scintillans*	18000	5000	-
	b. Others	500	300	-
III	**Blue green algae**	-	-	-
1	Blue Green Algae	-	-	-
Biomass [wet weight - mg/m^3]		**340.00**	**244.67**	**144.40**

-: Absent

Table 3. Zooplankton diversity (no/m^3) and Biomass (mg/m^3) in the coastal waters off Padubidri during March 2021.

Sl. No.	Fauna	Depth (m)		
		4	8	12
1	**Tintinids**			
	a. *Tintinopsis* sp.	3000	3000	1500
	b. *Rabdonella* sp.	2000	1000	500
	c. *Favella* sp.	1500	509	300
2	**Radiolarians**	-	2800	-
3	**Medusae**			
	a. *Obelia* sp.	-	-	1000
	b. *Octocostatum* sp.	-	-	400
	c. *Quadrata* sp.	-	-	200
4	**Siphonophores**			
	a. *Lensia* sp.	-	-	-
	b. *Diphysis* sp.	-	-	-
5	**Ctenophores**			
	a. *Plurobranchia* sp.	-	-	-
6	**Chaetognaths**			
	a.*Sagitta enflata*	-	-	-
	b. *Pterosagitta draco*	-	-	-
	c. *Krohnitta subtilis*	-	-	-
7	**Polychaetes**	-	-	-
8	**Cladocerans**			
	a. *Penilia avirostris*	30000	5000	1000
	b. *Evadnae nordmanni*	10000	300	700
9	**Copepods**			
	a. *Calanus finmarchicus*	18000	2000	4000
	b. *Tamora longicornis*	12000	1000	2000
	c. *Parapontella brevicornis*	4000	100	2000
	d. *Oithona helgolandica*	1000	500	1000
10	**Copepod nauplius**	34000	5000	5000
11	**Lucifer**	-	-	-
12	**Planktonic Urochordates**			
	a. *Frilillaria* sp.	-	-	-
	b. *Oikopleura* sp.	10003	5300	2200
	c. *Doliolom* sp.	-	-	-
13	**Fish Eggs**	1500	5340	-
14	**Copepod egg**	4000	501	2300
15	**Echinoderm Larvae**	-	-	1800
16	**Decapod Larvae**	6000	1169	200
17	**Bivalve Larvae**	-	-	1700
18	**Fish Larvae**	-	6	-
19	**Polychaete Larvae**	-	-	-

20	**Chaetognath Larvae**	6506	30	50
21	Others	-	-	300
Biomass [wet weight - mg/m^3]		**406.00**	**216.00**	**187.40**

-: Absent

Table 4. Macrobenthos diversity (no/m^2) in the coastal waters off Padubidri during March 2021.

Sl. No.	Fauna	Depth (m)		
		4	**8**	**12**
I	**Molluscs**			
A	**Bivalves**			
1	*Arca* sp.	60	-	80
2	*Anadora* sp.	-	-	-
3	Bivalve Spats	200	350	100
4	*Cardium* sp.	-	-	40
5	*Donax* sp.	-	20	60
6	*Katalysia* sp.	-	-	-
7	*Meritrix* sp.	180	80	100
8	*Perna sp*	-	-	60
9	*Modiolus* sp.	-	-	-
10	*Pecten sp.*	-	-	-
B	**Gastropods**			
1	*Babylonia* sp.	-	-	90
2	*Cavolinia* sp.	-	-	-
3	*Cerithedia* sp.	50	40	300
4	*Conus* sp.	-	-	-
5	*Oliva* sp.	-	-	-
6	*Patella* sp.	-	-	-
7	*Surcula* sp.	20	-	-

8	*Telescopium* sp.	-	-	-
9	*Trochus* sp.	-	-	-
10	*Turitella* sp.	40	-	-
11	*Umbonium* sp.	-	-	80
C	**Scaphopods**			
1	*Dentalium* sp.	-	-	80
D	**Other Molluscs**	-	-	-
II	**Echinodermata**			
1	*Astropecten* sp.	-	-	-
2	*Ophiocoma* sp.	-	-	40
3	*Holothuria* sp.	-	-	-
III	**Echiuroids**	-	60	30
IV	**Sipunculids**	-	-	-
V	**Polychaetes**	70	40	50
VI	**Coelenterates**	-	130	0
VII	**Miscellaneous**			
1	Crabs	-	20	20
2	Shrimps	-	-	-
3	Fishes	-	-	-
4	Mud tubes	-	20	30
5	Sand tubes	20	40	40
6	Egg Cases	40	20	-
Density (Individuals/m^2)		**700.00**	**820.00**	**750.00**

- : Absent

Table 5. Results of Bioassay experiment for the coastal waters off Padubidri during March 2021

1.	Organism Used for the Test	: *Perna viridis* (Green mussel)
2.	Length of the Test Organism	: 4.20 cms (Average)
3.	Weight of the Test Organism	: 1.06 gms (Average)
4.	Test Medium	: Sea water collected from the vicinity of effluent fallout from UPCL, Padubidri
5.	Control	: Filtered sea water
6.	Container	: Glass aquarium of 20 ltr. capacity
7.	Number of Organisms	: 10 in each container
8.	Number of Experiments	: Two
9.	Duration of the Test	: 96 hrs.
10.	Methodology	: Static bioassay

EXPERIMENT

MEDIUM	**HOUR / MORTALITY (%)**			
	24	**48**	**72**	**96**
CONTROL	Nil	Nil	Nil	Nil
TEST MEDIUM	Nil	Nil	Nil	Nil

Result: No mortality

Inference:

The inferences drawn on the various physical, chemical and biological parameters for the month of March 2021 are given below.

The water temperature varied from 30.7^0C to 32.0^0C. The pH values ranged between 8.11 and 8.65. The salinity varied from 29.69 psu to 31.25 psu. The dissolved oxygen (DO) varied between 6.52 mg/l and 6.93 mg/l. The biochemical oxygen demand (BOD_3) is an empirical biological test in which the water conditions such as temperature; dissolved oxygen and microbial flora play a decisive role. The BOD_3 values ranged from 0.82 mg/l to 2.65 mg/l in the study region indicate that these values are within the primary water quality criteria and do not pose any threat to the environment under the present condition. The COD values ranged between 16.00 mg/l and 22.00 mg/l. The total suspended solids (TSS) ranged between 116.0 mg/l and 136.0 mg/l and the total dissolved solids (TDS) ranged between 20150 mg/l and 23290 mg/l. The transparency values varied from 0.28 m to 1.81 m.

Nutrients play a vital role in the biogeochemical cycles in the marine environment. The concentrations of nitrite (NO_2-N) varied from 0.04 µg-at/l to 0.81 µg-at/l, while nitrate (NO_3-N) varied between 0.24 µg-at/l and 1.86 µg-at/l, which are within the acceptable limits of coastal environment. Ammonia content (NH_3-N) varied between 7.26 µg-at/l and 9.94 µg-at/l. Inorganic phosphate (PO_4-P) was in the range of 0.30 µg-at/l and 0.75 µg-at/l. Silicate – Silicon (SiO_2-Si), one of the major nutrients for phytoplankton growth ranged between 7.47 and 11.50 µg-at/l in the coastal waters off Padubidri. The oil and grease content was below detectable limits.

Phytoplankton:

The relative abundance of various forms of phytoplankton is depicted in repective Table. Phytoplanktons were dominant in the study area with 19 different genera with the abundance of *Ceratium, Laudaria* and *Biddulphia.* The phytoplankton species recorded in this area are common types occurring along the west coast of India. The biomass varied from 144.40 mg/m^3 to 340.00 mg/m^3.

Zooplankton:

The qualitative analyses revealed the presence of 15 different groups of zooplankton. Among zooplankton, Copepods, Cladocerans and Copepod nauplius were dominant. The biomass ranged from 187.40 mg/m^3 to 406.00 mg/m^3.

Macrobenthos:

The qualitative analyses revealed the presence of 20 different groups of macrobenthos. Bivalve spats dominated the macrobenthos, followed by Coelenterates and *Meritrix*. The density ranged from 700 no/m^2 to 820 no/m^2.

Bioassay:

The bioassay studies indicated no mortality of mussels in the seawater samples collected from effluent discharge location in the Padubidri region.

Annexure-XVIII

TEST WELL MONITORING: *Annexure-XVIII*

Test Wells are installed in the Sea Water Pipe line fenced area and the monitoring is carried for the period from Oct 2020 to Mar 2021 is presented in the Table-1 to Table-6 as below:

The locations of test wells are:

S.NO	Name of the Location	Code	Source
1	Pipe line Corridor test well	PC-1	Test Well
2	Pipe line Corridor test well	PC-2	Test Well
3	Pipe line Corridor test well	PC-3	Test Well
4	Pipe line Corridor test well	PC-4	Test Well
5	Pipe line Corridor test well	PC-5	Test Well
6	Pipe line Corridor test well	PC-6	Test Well

Water Sample Analysis Parameters:

S.No	Parameters	S.No	Parameters
1	Color	16	Fluoride
2	pH	17	Phenolic Compounds
3	Odor	18	manganese
4	Taste	19	zinc
5	Turbidity	20	Arsenic
6	TDs	21	cyanide
7	Alkalinity	22	cadmium
8	Total Hardness as $CaCO_3$	23	chromium
9	Calcium as Ca	24	Aluminium
10	Magnesium	25	Selenium
11	Iron	26	Lead
12	Sulphate as SO_4	27	Mercury
13	Chloride	28	Nitrate nitrogen
14	Boron	29	E.coli
15	Residual Free Chlorine		

Table-1: Pipe line corridor test well (PC-1) for the period of Oct 2020 to Mar 2021

S.No	PARAMETERS	UNIT	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.95	6.98	6.84	6.7	6.87	6.96	6.7	6.98	6.88
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	0.4	BDL	1.2	0.1	0.5	0.1	1.2	0.55
6	TDS	mg/l	500	2000	24.4	30	27.2	220	180	25.6	24.4	220	84.53
7	Alkalinity as $CaCO_3$	mg/l	200	600	4.3	4.1	7.6	28.2	51.9	8.8	4.1	51.9	17.48
8	Total Hardness	mg/l	200	600	3.7	11.1	3.7	42.1	38.3	8.4	3.7	42.1	17.88
9	Calcium as Ca	mg/l	75	200	BDL	2.98	BDL	12.2	6.8	BDL	2.98	12.2	7.33
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	BDL	2.7	5.1	BDL	2.7	5.1	3.90
11	Iron as Fe	mg/l	0.3	No relaxation	0.06	0.2	0.18	0.13	0.17	0.2	0.06	0.2	0.16
12	Sulphate as SO_4	mg/l	200	400	BDL	7.18	7.9	8.5	11.53	6.69	6.69	11.53	8.36
13	Chloride as Cl	mg/l	250	1000	16.4	18.4	12.7	95.1	79.1	12.3	12.3	95.1	39.00
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	0.23	BDL	BDL	0.23	0.23	0.23
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29	E.Coli	MPN/ 100 ml	Should Not be Detectable			Absent	Nil	Absent	Absent	Absent	Absent	Absent	Absent

A- **Agreeable; BDL– Below Detectable Limit; Nil– Zero**

Table-2: Pipe line corridor test well (PC-2) for the period of Oct 2020 to Mar 2021

S.No	PARAMETERS	UNIT	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.86	6.87	6.96	6.79	6.95	6.82	6.79	6.96	6.88
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	0.4	0.8	1	0.1	0.2	0.1	1	0.50
6	TDS	mg/l	500	2000	25.2	25.2	160	220	180	26.4	25.2	220	106.13
7	Alkalinity as $CaCO_3$	mg/l	200	600	8.7	8.21	3.84	28.2	31.1	8.8	3.84	31.1	14.81
8	Total Hardness	mg/l	200	600	7.5	11.19	33.9	45.9	38.3	8.4	7.5	45.9	24.20
9	Calcium as Ca	mg/l	75	200	3	2.98	7.55	9.2	6.8	BDL	2.98	9.2	5.91
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	3.66	5.5	5.17	BDL	3.66	5.5	4.78
11	Iron as Fe	mg/l	0.3	No relaxation	0.05	0.19	0.23	0.2	0.21	0.23	0.05	0.23	0.19
12	Sulphate as SO_4	mg/l	200	400	BDL	8.1	26.7	21.7	10.88	6.6	6.6	26.7	14.80
13	Chloride as Cl	mg/l	250	1000	15.5	12.9	65.9	83.5	74	14.1	12.9	83.5	44.32
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	0.25	BDL	BDL	0.25	0.25	0.25
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	1.09	BDL	BDL	BDL	1.09	1.09	1.09
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

A- Agreeable; BDL– Below Detectable Limit; Nil– Zero

Table-3: Pipe line corridor test well (PC-3) for the period of Oct 2020 to Mar 2021

S.No	PARAMETERS	UNIT	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.97	6.96	6.9	6.7	6.85	6.79	6.7	6.97	6.86
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	0.7	0.8	1.4	BDL	0.8	0.7	1.4	0.93
6	TDS	mg/l	500	2000	24.8	29.2	160	220	116	39.2	24.8	220	98.20
7	Alkalinity as $CaCO_3$	mg/l	200	600	4.3	4.1	7.69	17.6	41.5	22.2	4.1	41.5	16.23
8	Total Hardness	mg/l	200	600	3.7	7.4	37.7	49.7	76.6	16.8	3.7	76.6	31.98
9	Calcium as Ca	mg/l	75	200	BDL	BDL	9	10.7	23.9	5.06	5.06	23.9	12.17
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	3.6	5.5	4.1	BDL	3.6	5.5	4.40
11	Iron as Fe	mg/l	0.3	No relaxation	0.06	0.22	0.2	0.18	BDL	0.22	0.06	0.22	0.18
12	Sulphate as SO_4	mg/l	200	400	BDL	7.72	34.8	28.4	6.19	BDL	6.19	34.8	19.28
13	Chloride as Cl	mg/l	250	1000	14.8	11	65.9	81.5	45.5	14.1	11	81.5	38.80
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	0.27	BDL	BDL	0.27	0.27	0.27
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	BDL	0.20	BDL	0.2	0.2	0.20
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	1.03	BDL	1.02	BDL	1.02	1.03	1.03
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Nil	Absent	Absent	Absent	Absent	Absent	Absent

A- Agreeable; BDL– Below Detectable Limit; Nil– Zero

Table-4: Pipe line corridor test well (PC-4) for the period of Oct 2020 to Mar 2021

S.No	PARAMETERS	UNIT	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.93	6.84	7.02	7.09	6.84	6.85	6.84	7.09	6.93
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	0.5	1.1	0.7	BDL	0.9	0.5	1.1	0.80
6	TDS	mg/l	500	2000	24	28	370	440	43.2	38	24	440	157.20
7	Alkalinity as $CaCO_3$	mg/l	200	600	4.3	8.2	115.3	91.8	10.38	13.32	4.3	115.3	40.55
8	Total Hardness	mg/l	200	600	7.5	7.4	169.7	172.3	29.8	12.6	7.4	172.3	66.55
9	Calcium as Ca	mg/l	75	200	BDL	BDL	48.3	47.5	5.1	3.37	3.37	48.3	26.07
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	0.9	13	4.1	BDL	0.9	13	6.00
11	Iron as Fe	mg/l	0.3	No relaxation	0.05	0.18	0.2	0.23	BDL	0.24	0.05	0.24	0.18
12	Sulphate as SO_4	mg/l	200	400	BDL	7.5	39	41.2	BDL	BDL	7.5	41.2	29.23
13	Chloride as Cl	mg/l	250	1000	12.7	12.9	138.2	145.6	25.8	15.88	12.7	145.6	58.51
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	0.25	0.38	BDL	BDL	0.25	0.38	0.32
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	2.59	0.2	BDL	BDL	0.2	2.59	1.40
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	BDL	BDL	1.2	BDL	1.2	1.2	1.20
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

A- Agreeable; BDL– Below Detectable Limit; Nil– Zero

Table-5: Pipe line corridor test well (PC-5) for the period of Oct 2020 to Mar 2021

S.No	PARAMETERS	UNIT	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	2	2	2	2.00
2	pH	-	6.5 - 8.5	No Relaxation	6.89	7.05	6.86	6.78	6.85	6.8	6.78	7.05	6.87
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	BDL	BDL	BDL	1.4	BDL	0.8	0.8	1.4	1.10
6	TDS	mg/l	500	2000	24.4	52.5	97.2	300	34	330	24.4	330	139.68
7	Alkalinity as $CaCO_3$	mg/l	200	600	4.3	8.4	61.5	10.5	17.3	22.2	4.3	61.5	20.70
8	Total Hardness	mg/l	200	600	3.7	7.5	41.4	187.6	17	202.1	3.7	202.1	76.55
9	Calcium as Ca	mg/l	75	200	BDL	BDL	12	49.1	5.1	33.7	5.1	49.1	24.98
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	2.75	15.8	BDL	28.6	2.75	28.6	15.72
11	Iron as Fe	mg/l	0.3	No relaxation	0.07	0.12	0.19	0.21	BDL	0.22	0.07	0.22	0.16
12	Sulphate as SO_4	mg/l	200	400	BDL	BDL	11.4	15.7	BDL	BDL	11.4	15.7	13.55
13	Chloride as Cl	mg/l	250	1000	13.8	15.4	23.3	149.5	21.2	151.8	13.8	151.8	62.50
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	BDL	BDL	BDL	0.29	0.29	0.29	0.29
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	3.68	0.68	BDL	1.04	0.68	3.68	1.80
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	0.02	BDL	BDL	BDL	0.02	0.02	0.02
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	1.38	BDL	BDL	BDL	1.38	1.38	1.38
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Nil	Absent	Absent	Absent	Absent	Absent	Absent

A- Agreeable; BDL– Below Detectable Limit; Nil– Zero

Table-6: Pipe line corridor test well (PC-6) for the period of Oct 2020 to Mar 2021

S.No	PARAMETERS	UNIT	Acceptable Limits as per IS:10500:2012	Permissible Limits as per IS:10500:2012	Oct-2020	Nov-2020	Dec-2020	Jan-2021	Feb-2021	Mar-2021	Min	Max	Average
1	Color	Hazen	5	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2	pH	-	6.5 - 8.5	No Relaxation	6.82	6.86	6.91	6.71	6.92	6.85	6.71	6.92	6.85
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1	5	0.5	0.7	0.8	2.1	BDL	1	0.5	2.1	1.02
6	TDS	mg/l	500	2000	80.4	72.4	230	300	102	410	72.4	410	199.13
7	Alkalinity as $CaCO_3$	mg/l	200	600	42.6	36.4	38.46	24.7	13.8	31	13.8	42.6	31.16
8	Total Hardness	mg/l	200	600	41.7	44.5	105.6	137.88	34	188.5	34	188.5	92.03
9	Calcium as Ca	mg/l	75	200	12.4	15.8	18.1	33.7	10.2	38.82	10.2	38.82	21.50
10	Magnesium as Mg	mg/l	30	100	BDL	BDL	14.6	13	2	26.8	2	26.8	14.10
11	Iron as Fe	mg/l	0.3	No relaxation	0.18	0.11	0.21	0.17	BDL	0.23	0.11	0.23	0.18
12	Sulphate as SO_4	mg/l	200	400	14.8	8.4	BDL	BDL	BDL	BDL	8.4	14.8	11.60
13	Chloride as Cl	mg/l	250	1000	18.6	14.2	110.6	157.3	41.3	190.6	14.2	190.6	88.77
14	Boron as B	mg/l	0.5	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Residual Free Chlorine	mg/l	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Fluoride as F	mg/l	1	1.5	BDL	BDL	0.32	0.31	BDL	1.468	0.31	1.468	0.70
17	Phenolic Compounds	mg/l	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18	Manganese as Mn	mg/l	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc as Zn	mg/l	5	15	BDL	BDL	BDL	2.02	BDL	BDL	2.02	2.02	2.02
20	Arsenic as As	mg/l	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	Cyanide as CN	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	Cadmium as Cd	mg/l	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chromium as Cr	mg/l	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24	Aluminium	mg/l	0.03	0.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Selenium as Se	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Lead as Pb	mg/l	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury as Hg	mg/l	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Nitrate as NO_3-N	mg/l	45	No relaxation	BDL	BDL	1.89	BDL	3.69	BDL	1.89	3.69	2.79
29	E.Coli	MPN/ 100 ml	Should Not be Detectable		Absent	Absent	Nil	Absent	Absent	Absent	Absent	Absent	Absent

A- Agreeable; BDL– Below Detectable Limit; Nil– Zero