



## Power

Ref: REL/TPP/EMD/MoEFCC/EC/211/05/22  
Date: 26.05.2022

To,  
**Dr. Bhardwaj Adiraju,**  
**Ministry of Environment, Forests & Climate Change,**  
**Integrated Regional Office, Aranya Bhawan, North Block**  
**Sector 19, Naya Raipur, Atal Nagar,**  
**Chhattisgarh 492 002**

**Sub: Submission of Half Yearly Environment Clearance (EC) Compliance Status Report for 2x685 MW Raipur Thermal Power Plant at village Raikheda, Gaitara and Chicholi in Tilda Block of Raipur District, Chhattisgarh.**

**Ref: Environment clearance vide letter no. J-13012/62/2008-IA.II (T) dated 09.05.2011 and its subsequent amendment vide letter dated 10.06.2015, 13.06.2013, 18.11.2014, 04.02.2015**

Dear Sir,

With reference to the above, please find enclosed herewith Six-Monthly Environment Clearance (EC) compliance status report along with environmental monitoring reports as Ambient Air, Water Quality, Noise level, Soil quality, CAAQM data, Met. data, Greenbelt development, Fly ash data & CSR progress report etc. for the period of **October'2021 to March'2022** in soft copy (e-mail).

This is for your kind information and record please.

Thanking You,  
Yours faithfully,  
**for Raipur Energen Limited**

**(Santosh Kumar Singh)**  
**Head – AESG**

**Encl.:** As above

**CC: Member Secretary,**  
**Central Pollution Control Board,**  
Parivesh Bhavan, East Arjun Nagar,  
New Delhi – 110 032  
**Regional Officer**  
**Chhattisgarh Environment Conservation Board,**  
Commercial Complex,  
Chhattisgarh Housing Board Colony,  
Kabir Nagar, Raipur – 492 099, Chhattisgarh

**Member Secretary,**  
**Chhattisgarh Environment Conservation Board,**  
Prayavas Bhavan, North Block, Sector-19,  
Naya Raipur – 490 009, Chhattisgarh

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# SIX MONTHLY COMPLIANCE REPORT OF ENVIRONMENT CLEARANCE (EC)

FOR

**1370 MW (2x685MW) Thermal Power Plant**

At

**Village Raikheda, Gaitara and Chicholi,  
Tilda Block, Raipur District, Chhattisgarh**

*Submitted to:*

**Integrated Regional Office, Raipur  
Ministry of Environment, Forests & Climate Change,  
Central Pollution Control Board, New Delhi &  
Chhattisgarh Environment Conservation Board, Raipur**



*Submitted by:*

**Environment Management Department**

**Raipur Energen Limited**

**Village Raikheda, Block Tilda,  
District Raipur, Chhattisgarh**

**October'2021 – March '2022**

**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

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**INTRODUCTION**

Raipur Energen Limited (formerly known as GMR Chhattisgarh Energy Generation Limited) has set up a Coal based Thermal Power Plant with capacity 2x685 MW at village Raikheda, Gaitara and Chicholi in Tilda block of Raipur District, Chhattisgarh.

Environmental Clearance has been granted by Hon'ble MoEF&CC to M/s GMR Energy Ltd. vide letter No. J-13012/62/2008-IA. II (T), dated 09/05/2011. It was subsequently amended vide letters dated 13.06.2013, 18.11.2014, 04.02.2015 and 09.12.2015.

The company has been taken over by Adani Power Ltd & name of the company has been changed from M/s GMR Chhattisgarh Energy Limited to M/s **Raipur Energen Limited** with effect from 20<sup>th</sup> August 2019 and it is to note that M/s Raipur Energen Limited is 100% subsidiary of Adani Power Limited.

Transfer of EC vide letter No. J-13012/62/2008-IA. II (T), dated 05.11.2019.

REL has a well-established Environmental Laboratory with equipped monitoring equipment, which used to monitor and test environmental parameters.

The company has adopted three peripheral villages and executing most of the CSR works which is supported by the Adani Foundation, in those villages in the field of their livelihood, infrastructure development, cleanliness, community health and education.

REL has engaged NABL Accredited consultant for sampling, monitoring and analysis of Environmental parameters as per statutory guidelines.

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### Compliance Status of Environmental Clearance

vide letter No. J-13012/62/2008-IA. II (T), dated: 09<sup>th</sup> May 2011 and amendment dated:  
13.06.2013, 18.11.2014, 04.02.2015 & 09.12.2015.

Sl. No.	Conditions of EC	Compliance Status
<b>A.</b>	<b>Specific Conditions</b>	
(i)	Vision document specifying prospective plan for the site shall be formulated and submitted to the Ministry within six months.	<p>Complied.</p> <p>The Vision document of Adani Power Limited was already submitted to MoEFCC, Regional Office (WCZ), Nagpur vide our office letter Ref: REL / MoEF&amp;CC/EC/2020/ May/29, dated: 29<sup>th</sup> May 2020.</p> <p>Copy of Vision Document of Raipur Energen Limited (Adani Power) is enclosed as <b>Annexure 1</b>.</p>
(ii)	In case source of fuel supply now proposed to be run on imported coal from South Africa for running the power plant is proposed to be changed to domestic coal at a later stage, the project proponent shall apply for such a change in environmental clearance along with necessary documents as required under EIA notification, 2006 (and its amendments). In such a case the necessity for holding public hearing again or otherwise will be determined by the Ministry in consultation with the Expert Appraisal Committee (Thermal Power).	<p>Being complied.</p> <p>Use of 100% domestic coal sourced from tolling linkage and open market. Talabira-1 Mine is not under mining operation as Mining Plan was expired and the revised mining plan is due for approval.</p> <p>Sulphur and Ash content of coal being used are within prescribed limits</p>
(iii)	Provision for installation of FGD shall be provided for future use.	<p>Being Complied.</p> <p>Space provision available for implementation of FGD.</p> <p>However as per MoEFCC Notification dated 31<sup>st</sup> March 2021, Raipur TPP is falling under Category "C" Non- retiring TPPs and the timelines for compliance of SO<sub>2</sub> emission is up to December 2024. Accordingly, the work is under progress for compliance as per CPCB/CEA direction.</p>
(iv)	Stack of 275 m height shall be installed and provided with continuous online monitoring equipment's for SO <sub>x</sub> , NO <sub>x</sub> , PM <sub>2.5</sub> & PM <sub>10</sub> . Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack may also monitored on periodic basis.	<p>Complied.</p> <p>Stack Height is 275 meters. On-line continuous emission monitoring system (CEMS) has been installed for PM, SO<sub>2</sub> &amp; NO<sub>x</sub>. Monitoring of Hg in stack emission is also carried out through MoEFCC approved laboratory. The exit gas velocity is &gt; 22m/sec.</p> <p>The Environment Monitoring report is enclosed herewith in <b>Annexure 2</b>.</p>
(v)	High Efficiency Electrostatic Precipitators (ESPs) shall be installed followed by installation of Bag Filter and it shall be ensured that particulate emission does not exceed 50 mg/Nm <sup>3</sup> .	<p>Complied.</p> <p>High efficiency Electrostatic Precipitators (ESP) has been considered to meet revised emission standard of &lt;50 mg/ Nm<sup>3</sup> for PM. The monitoring report for stack emission is enclosed in <b>Annexure 2</b>.</p>

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Sl. No.	Conditions of EC	Compliance Status
(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. Dust extraction system has been installed in coal crusher, AHP & coal bunkers. Dust suppression system through dry fog method has been installed at coal conveyor transfer points. Water spray system has also been installed in coal yards for dust suppression.
(vii)	Sulphur and ash contents in the coal to be used in the project shall not exceed 0.5 % and 34 % respectively at any given time. In case of variation of coal quality at any point of time fresh reference shall be made to MOEF for suitable amendments to environmental clearance condition wherever necessary.	Being Complied. Sulphur and Ash content in Coal is well within the stipulated norms i.e., below 0.7% & 34% for Sulphur and Ash respectively.
(viii)	Transport of coal to the plant site shall be strictly by rail. The project proponent shall therefore immediately take up the matter with the Railways. Status of implementation shall be submitted to the Regional Office of the Ministry from time to time.	Complied. The transportation of Coal through Rail is already started. Avenue plantation all along the road & plant has already been done. Compliance status of conditions mentioned in Environmental Clearance and it's amendments has also kept in public domain at the website of APL <a href="https://www.adanipower.com/Downloads">https://www.adanipower.com/Downloads</a>
(ix)	Existing de-generated water bodies (if any) within 5.0 Km of the site shall be regenerated at the project proponent's expenses in consultation with the state govt.	Complied. REL has regenerated around 6 numbers of Water bodies in nearby villages including 2 numbers of ponds are deepened and beautification has been done in consultation with state government.
(x)	The proponent shall sponsor a detailed study regarding water availability in Mahanadi River for all competing sources such as drinking, agriculture, industrial, minimum flow of water in the river during the lean season etc. through institutions like IIT, Delhi/IIT Roorkee. The draft terms of reference shall be submitted within three months which shall be finalized by the Expert Appraisal Committee. The preliminary report on the above study shall be submitted within one year.	Water allocation is from Mahanadi River and maintained by WRD, Chhattisgarh. REL has no role in regulating the water flow downstream & distribution.
(xi)	The project proponent shall undertake proactive water harvesting measures and water storage for a larger period not less than 30 days storage shall be developed. The rainwater harvesting system shall be put in place before commissioning of the plant. Central Groundwater Authority. Board shall be consulted for finalization of	Rainwater harvesting pond established within Plant premises Raikheda and photographs of the same is attached as <b>Annexure 3</b> .

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	appropriate rainwater harvesting technology design within a period of three months from the date of this clearance and details shall be furnished. The design of rainwater harvesting shall comprise of rainwater collection from the built up and open area in the plant premises. Action plan and road map for implementation shall be submitted to the Ministry within six months.	
(xii)	Hydrogeology in and around the project area shall be reviewed annually from an institute, organization of repute to assess impact of surface water and ground regime (especially around ash dyke). In case and deterioration is observed specific mitigation measures shall be undertaken and reports, data of water quality monitored regularly and maintained shall be submitted to the Regional Office of the Ministry.	The Hydrogeological Investigation Report has been carried out and report submitted along with compliance report for the period of April'2020 to September'2020. Periodic review of Hydrogeology is being carried out and Hydrogeology study for the year 2022 (pre & post monsoon) is proposed to conduct and the report will be submitted along with coming compliance report.
(xiii)	No ground water shall be extracted for use in operation of the power plant even in lean season.	Being Complied. Ground water is not proposed
(xiv)	No water bodies (including natural drainage system) in the area shall be disturbed due to activities associated with the setting up, operation of the power plant.	Complied. No water bodies have been disturbed during construction activity.
(xv)	Water requirement shall be optimized to around 32 MCM and shall accordingly adopt higher COC of at least not less than 5.0.	Complied. Water requirement is being restricted to 25 MCM. Cycles Of Concentration (COC) is maintained more than 5 at Cooling water system, Cooling water analysis report for the month of March 2022 is a enclosed as <b>Annexure 4</b> .
(xvi)	Minimum required environmental flow suggested by the Competent Authority of the State Govt. shall be maintained in the Channel. Rivers (as applicable) even in lean season.	Complied. REL has revisited and optimized water requirements by reusing and recycling system, the water allotment has been reduced from 37 to 25 MCM per annum by Water Resource Department, Government of Chhattisgarh
(xvii)	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	Complied. Six nos. piezometric wells constructed around periphery of the ash pond for ground water monitoring. Seasonal monitoring of ground water level and quality is being done and monitoring data is being submitted to the MOEF, CPCB & CECB regularly.

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	data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project	The ground water analysis data is enclosed as <b>Annexure 2.</b>
(xviii)	Monitoring surface water quality in the region 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. Seasonal monitoring of Surface water is being done. The monitored data is being submitted to MOEF, CPCB & CECB regularly. The surface water analysis data is attached in <b>Annexure 2.</b>
(xix)	Additional soil for levelling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	Complied.
(xx)	The project proponent shall undertake measures and ensure that no fugitive fly ash emissions take place at any point of time.	Complied. All the preventive measures have been ensured to restrict fugitive emission from fly ash.
(xxi)	Utilization of 100% Fly Ash generated shall be made from 4th year of operation. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.	Complied. Fly ash is being supplied to nearest cement industries, brick manufacturer and for road construction activities. Fly Ash generation and utilization details is enclosed <b>Annexure 5</b>
(xxii)	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 form. 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.	Being Complied. <ul style="list-style-type: none"> <li>- Fly ash is being collected in dry form and unutilized fly ash is being disposed in dedicated ash storage ponds.</li> <li>- As per MoEFCC Office Memorandum dated 28<sup>th</sup> August 2019, utilization of fly ash in low lying areas has been permitted and the existing condition in Environmental Clearance may stand replaced, accordingly organization has started utilization of fly ash in low lying areas and land reclamation.</li> <li>- Mercury and heavy metals are being monitored in bottom ash. No effluent is emanated from ash pond.</li> </ul>
(xxiii)	Ash pond shall be lined with HDPE/LDPE lining or any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to	Complied. Ash ponds is constructed with LDPE/HDPE & in the way that no leachate takes place any point of time.

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	protect the ash dyke from getting breached.	
(xxiv)	For disposal of Bottom Ash in abandoned mines (if proposed to be undertaken) shall be done after obtaining due permission from DGMS and after ensuring that the bottom and sides of the mined-out areas are adequately lined with clay before Bottom Ash is filled up. The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity.	Noted & Compliance assured.
(xxv)	Green Belt consisting of 3 tiers of plantations of native species around plant and at least 75 m width shall be raised. Tree density shall not less than 2500 per ha with survival rate not less than 80 %.	Complied. Plantation / Greenbelt development is being developed as per guidelines & in consultation with forest department for local species. Greenbelt Report is enclosed as <b>Annexure 6</b>
(xxvi)	At least three nearest village shall be adopted 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.	Being complied. The Company undertakes various CSR activities as per framework of CSR Rules under the Companies Act. Community services in three nearby villages namely Raikheda, Chicholi & Gaitera is conducted with focus and Sontara, Gaurkheda and Murra village area also covered. The outreach is also expanded to other nearby villages namely Khamariya, Konari, Tulsi, Tarashiv, Bartori, Chatod and Samoda. The thematic area of work in villages is improving quality of education, access of health care and sanitation, empowerment and livelihood thought SHGs, individual income generation & community vocational training centre and community development. Annual CSR Report is enclosed (April 2021 – March 2022) as <b>Annexure 7</b>
(xxvii)	The project proponent shall also adequately contribute in the development of the neighbouring villages. Special package with implementation schedule for providing potable drinking water supply in the nearby villages and schools shall be undertaken in a time bound manner.	Being complied. The Company is undertaking CSR activities within 10 km radius area with focus on nearby villages and Railway siding villages namely Sontara, Gaurkheda, Khamariya, Konari Murra, Tulsi, Tarashiv, Bartori, Chatod located on western and northern boundary of the proposed plant. The development work in progress & CSR implemented in planned and time bound manner.
(xxviii)	A time bound implementation of the CSR shall be formulated within six months and submitted to the Ministry. While identifying CSR activities it shall be ensured that need based assessment for the nearby villages within study area shall	Being complied. CSR Plan for the villages is made as per local need and CSR activities are identified by Social work professionals employed exclusively for CSR through the company in consultation with communities and their representatives. Poorest of the poor families are

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Sl. No.	Conditions of EC	Compliance Status
	be conducted to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people shall be undertaken. Development of fodder farm, fruit bearing orchards, vocational training etc. can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. Vocational training programme for possible self-employment and jobs shall be imparted to identify villagers free of cost.	<p>identified basing village Panchayats statistics and special interventions have been planned for their upliftment.</p> <p>Separate budget has been allocated for community development activities with income generation activities.</p> <p>Vocational training is being provided to youth for self-employment free of cost. We have started <b>Pratibha Centre</b> for local youths. To increase access of youth to educational and employment opportunities through helping them become aware of and to prepare for these. To prepare youth to become self-reliant through education and employment opportunities at Pratibha centers. Annual CSR Report (April 2021 – March 2022) with details is enclosed as <b>Annexure 7</b></p>
(xxix)	An amount of Rs 33.16 Crores shall be earmarked as one-time capital cost for CSR programme as committed by the project proponent. Subsequently a recurring expenditure of Rs 6.63 Crores per annum shall be earmarked as recurring expenditure for CSR activities. Details of the activities to be undertaken shall be submitted within six months along with road map for implementation.	<p>Time bound implementation of CSR activities have been carried out &amp; CSR budget has earmarked for CSR activities being implemented in nearby project villages.</p> <p>Annual CSR Report (April 2021 – March 2022) with details is enclosed as <b>Annexure 7</b></p>
(xxx)	It shall be ensured that in-built monitoring mechanism for the schemes identified is in place and annual social audit shall be got done from the nearest government institute of repute in the region. The project proponent shall also submit the status of implementation of the scheme from time to time	<p>Complied.</p> <p>Social Audit has been carried out by Indian Institute of Social Welfare and Business Management, Kolkata. The same is submitted to ministry along with previous compliance report.</p>
<b>General Conditions:</b>		
(i)	The treated effluents conforming 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.	<p>Complied.</p> <p>The treated effluents conforming to the prescribed standards are being re-circulated and reused within the plant.</p> <p>Plant layout has been designed so that effluents and storm water do not get mixed.</p> <p>The ETP analysis report is enclosed as <b>Annexure 8</b>.</p>
(ii)	A sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt plantation.	<p>Complied.</p> <p>A well-equipped Sewage Treatment Plant is installed and commissioned within premises to ensure quality of sewerage.</p>

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(iii)	Adequate safety measures shall be provided in the plant area to check minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the ministry.	Complied. Drawings & other details are already submitted to the MoEFCC, Delhi as well as Regional Office of MoEFCC.  Details of firefighting equipment and their respective locations (Deluge Valve) installed at BTG & BOP areas at REL plant site are attached as <b>Annexure 9</b> .
(iv)	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.	License for storage facility of LDO/HFO (auxiliary liquid fuel) obtained from Petroleum & Explosive Safety Organization (PESO) is enclosed as <b>Annexure 10</b> .  Sulphur content in the liquid fuel well within 0.5%. Disaster Management Plan also is in place.
(v)	First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	Complied.
(vi)	Noise levels emanating for turbines shall be so controlled such that the noise in the work zone shall be limited to 85 dBA from the source. For people working in the high noise area, requisite personal protective equipment like earplugs/earmuffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc. shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non-noisy, less noisy areas.	Complied. Engineering control for noise such as acoustic enclosure, silencer have been installed in the turbine. Other than engineering controls, PPEs like earplugs, earmuffs etc. are also provided to workers in high noise area.  Noise level monitoring report is enclosed as <b>Annexure 2</b> .
(vii)	Regular monitoring of ambient air ground level concentration of SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>2.5</sub> & PM <sub>10</sub> and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.	Complied.  We installed three nos. of stationary AAQMS station at periphery of the plant for Ambient air quality monitoring. Environment Monitoring Data as part of the six-monthly compliance is being submitted to MoEFCC and is also made available at company's website. <a href="https://www.adanipower.com/Downloads">https://www.adanipower.com/Downloads</a>  The ambient air quality monitoring report is enclosed <b>Annexure 2</b> .



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(viii)	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 completion of the project.	Complied.
(ix)	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 Quality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance an copies of clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the Ministry of environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a>	Complied.  Copies of the advertisement published in local daily Newspapers after obtaining EC and relevant amendments are attached as <b>Annexure 11</b> .
(x)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad, Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions, representations. If any, receive while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Complied.  The environment clearance letter is available at website of Adani Power. <a href="https://www.adanipower.com/Downloads">https://www.adanipower.com/Downloads</a>
(xi)	An Environmental Cell comprising of at least one expert in environmental science. engineering, occupational health and social scientist, shall be created at the project site itself and shall be headed by an officer of appropriate superiority and qualification it shall be ensured that the Head the Cell shall directly report to the head of the organization, and he shall be held responsible for implementation of environmental regulations and social impact improvement, mitigation measures.	Complied.  We have well-established Environment Management Dept. headed by a competent experienced Manager with relevant academic qualification supported by Environmental Engineers, Chemist & Horticulturist. Organization Chart of Environment Dept is enclosed as <b>Annexure 12</b> .
(xii)	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	Complied.  Display board has already been installed at main gate of TPP. Environment compliance report will be uploaded in company website.



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Sl. No.	Conditions of EC	Compliance Status
	to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely SPM, RSPM (PM2.5 & PM10), SO2, NOX (ambient levels as well as stack emissions) shall display at a convenient location near the main gate of the company in the public domain.	<a href="http://www.adanipower.com/Downloads">www.adanipower.com/Downloads</a>
(xiii)	The environment statement for each financial year ending 31 March in Form- V as is mandated to be submitted by the project proponent to the concerned: State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices at the Ministry.	Complied.  The Environmental Statement Report for the period FY: 2020-21 in prescribed format (Form V) has already been submitted to CECB, Raipur vide Letter No, REL/ENV/20-21/139 dated 14 <sup>th</sup> September 2021.
(xiv)	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.	Being Complied.  Six monthly compliance report is being submitted to MoEFCC, CPCB & CECB regularly. Compliance status updated on company's website. <a href="http://www.adanipower.com/Downloads">www.adanipower.com/Downloads</a> Compliance report for the period of April 2021 - September 2021 has been already submitted to your good office vide letter no.: Ref: REL/TPP/EMD/MoEF/EC/302/11/21 Date: 23.11.2021
(xv)	Regional Office of the Ministry of Environment, forest and climate change will monitor the implementation of the stipulated conditions. A complete set of documents including environmental impact Assessment Report and Environment Management Plan along with the additional, information submitted from time to time shall be forwarded to the regional office for their use during monitoring. Project proponent will upload the compliance status in their website and update the same from time to time at least six-monthly basis Criteria pollutants levels including NOX (from stack & ambient air)	Being Complied.  EIA & EMP report with all necessary document with information is already submitted to RO, MoEFCC and CECB.

**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

Sl. No.	Conditions of EC	Compliance Status
	shall be displayed at the main gate of the power plant.	
(xvi)	Separate funds shall be allocated for implementation of environmental, protection measures along with item-wise break-up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Complied. Separate fund has been already allocated for environmental protection
(xvii)	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 date of start of land development work a commissioning of plant.	Complied. Financial Closure granted on 10 <sup>th</sup> Dec'10. The Project development started after receiving Consent to establish dated 13 <sup>th</sup> Jun'11.
(xviii)	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.	Noted. Full co-operation will be extended.
<b>Conditions of Amended EC dated 13.06.2013</b>		
(v)	High Efficiency Electrostatic Precipitators (ESPs) shall be installed and it shall be ensured that particulate emission does not exceed 50 mg/Nm <sup>3</sup> "	Complied. High efficiency Electrostatic Precipitators (ESP) has been considered to meet revised emission standard of <50 mg/ Nm <sup>3</sup> for PM.  The monitoring report for stack emission is enclosed in <b>Annexure 2</b> .
(xxxii)	The GCV of the imported coal from South Africa shall not be less than 4911 Kcal/kg and the ash and sulphur contents shall not exceed the limits stated under: Ash contents: 33.7% Sulphur contents: 0.7%	100% domestic Coal sourced from tolling linkage and open market/E-Auction. Talabira-1 Mine is not under mining operation as Mining Plan was expired and the revised mining plan is due for approval. Sulphur and Ash content in Coal being used in project as fired coal is ensured within prescribed standards of 0.7% Sulphur content and within 34%. Ash content are within prescribed limits of MoEFCC and CECB.  As per in-house Proximate analysis results of feed coal. The characteristic of feed coal is in following range: -Total Moisture : 12.36% to 17.32% -Gross Calorific Value : 3600 to 4000 Kcal/kg -Ash (%) : 33.51 to 37.01 % -Volatile Matter : 16.17 to 20.50 % -Fixed Carbon : 21.12 to 32.22% -Sulphur (%) : Less than 0.7%

**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

Sl. No.	Conditions of EC	Compliance Status
(xxxii)	A long-term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute. Thereafter mechanism for an in-built continuous monitoring for radio activity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.	Radioactive (U238 & Th232) analysis report and Heavy metal analysis report of Coal is enclosed as <b>Annexure 13 &amp; Annexure 14.</b>
(xxxiii)	Continuous monitoring for heavy metals in and around the ash pond area shall be carried out through reputed institutes like IIT, Kanpur and records/ data maintained.	Chemical Analysis report comprising Heavy metal analysis in Pond water for the month of March 2022 is attached as <b>Annexure 15</b>
<b>Conditions of Amended EC Extension dated 18.11.2014</b>		
(i)	The coal transportation by road shall be through mechanically covered trucks to the extent feasible, else, shall be through tarpaulin covered trucks.	Complied. The transportation through Rail is already started
(ii)	Avenue plantation of 2/3 rows all along the road shall be carried out by the project proponent at its own expenses in consultation with the State Government Authorities.	Complied. Avenue plantation all along the Road and inside the plant premises developed
(iii)	Periodic maintenance of the road shall be done by the project proponent at its own expenses and shall facilitate the traffic control on the road in consultation with the State Government Authorities.	Complied. The Coal transportation through rail has been started. Avenue plantation all along the road has already been done inside the plant premises.
(iv)	The PP shall advertise in the newspaper and place on the website, the amendment issued by the Ministry for public information.	Complied. Advertisement has been published in local daily News Papers & details submitted with previous compliance report. Original Env. Clearance along with its amendment from time to time has been kept in public domain at the website of holding company <a href="https://www.adanipower.com/Downloads">https://www.adanipower.com/Downloads</a>
(xxxiv)	Harnessing solar power within the premises of the plant particularly at available rooftops shall be undertaken and status of implementation shall be submitted periodically to the Regional Office of the Ministry.	Complied. The feasibility study has been done & the work is awarded to M/s Mundra Solar PV Limited (MSPVL).
(xxxv)	Green belt shall also be developed around the Ash Pond over and above the Green Belt around the plant boundary.	Complied. Greenbelt development report is attached as <b>Annexure 6.</b>
(xxxvi)	The project proponent shall formulate a well-laid Corporate Environment Policy, identify and designate responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance	Complied. REL has implemented ISO 14001:2015 under Integrated Management System consist of Environment, Health & Safety, Quality and Energy Management Systems.

**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

Sl. No.	Conditions of EC	Compliance Status
	with the conditions stipulated in this clearance letter and other applicable environmental laws and regulations.	Copy of Integrated Management System (IMS) Policy of REL comprising policy of Environmental protection by deployment of environmentally sound practices with sustainable technologies attached as <b>Annexure 16.</b>
<b>Conditions of Amended EC Extension dated 04.02.2015</b>		
(i)	Sulphur and ash contents in the coal to be used in the project shall not exceed 0.7 % and 34% respectively for at any given time. In case of variation of coal quality at any point of time, fresh reference shall be made to the Ministry for suitable amendments to environmental clearance condition wherever necessary.	Being Complied.  Sulphur and Ash content in coal being used in project as fired coal is ensured within prescribed standards of 0.7% Sulphur content and within 34%. Ash content are within prescribed limits of MoEFCC and CECB.
(ii)	The PP shall advertise in the local newspapers and place on the website, the proposed amendment for public information.	Complied. Advertisement published in local daily Newspapers after obtaining EC and relevant amendments are attached as <b>Annexure 11.</b>
<b>Conditions of Amended EC Extension dated 09.12.2015</b>		
(i)	The Sulphur and ash contents in the coal shall not exceed 0.7 % and 34% respectively. In case of variation of coal quality at any point of time, fresh reference shall be made to the Ministry for consideration.	Being Complied.  Sulphur and Ash content in coal being used in project as fired coal is ensured within prescribed standards of 0.7% Sulphur content and within 34%. Ash content are within prescribed limits of MoEFCC and CECB.
(ii)	The PP shall advertise in the local leading newspapers and place on the website, the proposed amendment of EC (after receipt from Ministry) for change in source of coal for public information.	Complied. Scan copies of the advertisement published in local daily Newspapers after obtaining EC and relevant amendments are attached as <b>Annexure 11.</b>
<b>EC amendment – MoEF&amp;CC notification vide letter number S.O. 1561 (E) dated 21<sup>st</sup> May, 2020</b>		
Sl. No.	Condition of Notification	Compliance Status
1)	Setting up technology solution for emission norms  i) Compliance of specified emission norms for Particulate Matter, as per extent notifications and instructions of Central Pollution Control Board, issued from time to time.	Noted.  i) Technology solutions are being implemented for mitigating fugitive emissions of Particulate Matter. – The Dust Extraction (DE) type dust control system is provided for controlling fugitive dust emissions from dust generation points of coal handling system. – Bag filter type dust extraction system with reversable pulse jet cleaning arrangement with fan, bag filter and stacks are provided at coal crusher house. – Different types of dust suppression system and water sprinkling arrangements are already

**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

Sl. No.	Conditions of EC	Compliance Status
	<p>ii) In case of washeries, middling and rejects to be utilized in FBC (Fluidised Bed Combustion) technology based thermal power plant. Washery to have linkage for middling and rejects in Fluidised Bed Combustion plants.</p>	<p>installed at various probable fugitive dust generation points.</p> <ul style="list-style-type: none"> <li>o Plain water dust suppression for wagon tippler complex.</li> <li>o Plain water dust suppression for Coal stockpile.</li> <li>o Pre-wetting system for Wagon Tripler.</li> <li>o Dry Fog dust suppression for all Transfer points.</li> </ul> <p>– Detailed specifications of DE System (Bag filters) installed at REL Plant site are attached as <b>Annexure 17</b>.</p> <p>ii) Super Thermal Power Plant.</p>
2)	<p>Management of Ash Ponds</p> <p>i) The thermal power plants shall comply with conditions, as notified in the Fly Ash notifications issued from time to time, without being entitled to additional capacity of fly ash pond (for existing power generation capacity) on ground of switching from washed coal to unwashed coal.</p> <p>ii) Appropriate Technology solutions shall be applied to optimise water consumption for Ash management.</p> <p>iii) The segregation of ash may be done at the Electro- Static Precipitator stage, if required, based on site specific conditions, to ensure maximum utilisation of fly ash</p> <p>iv) Subject to 2(i) above, the thermal power plants to dispose fly ash in abandoned or working mines (to be facilitated by mine owner) with environmental safeguards.</p>	<p>Noted &amp; being complied.</p> <p>i) Fly ash is being supplied to nearest cement industries and brick manufacture. Fly Ash generation and utilization is regularly submitted to MoEFCC, CPCB, CEA &amp; CECB. Details is enclosed as <b>Annexure 5</b>.</p> <p>ii) Water requirement is being restricted to 25 MCM. Cycles Of Concentration (COC) is maintained more than 5 at Cooling water system. Cooling water analysis report for the month of March 2022 is attached as <b>Annexure 4</b>.</p> <p>iii) Noted &amp; being complied</p> <p>iv) Noted &amp; will be complied as &amp; when fly ash is disposed in abandoned or working mines</p>

**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

Sl. No.	Conditions of EC	Compliance Status
3)	<p>Transportation</p> <p>i) Coal transportation may be undertaken by covered Railway wagon (railway wagons covered by tarpaulin or other means) and/or covered conveyer beyond the mine area. However, till such time enabling Rail transport/conveyer beyond infrastructure is not available, road transportation may be undertaken in trucks, covered by tarpaulin or other means.</p> <p>ii) It shall be ensured by the thermal power plant that</p> <p>a) Rail siding facility or conveyer facility is set up at or near the power plant, for transportation by rail or conveyer; and</p> <p>b) If transportation by rail or conveyer facility is not available, ensure that the coal is transported out from the Delivery Point of the respective mine in covered trucks (by tarpaulin or other means), or any mechanized closed trucks by roads.</p>	<p>i) Noted &amp; being complied. Rail siding facility has been made operational &amp; Coal is being transported through covered rail wagons</p> <p>ii)</p> <p>a) Rail siding facility has been made operational &amp; coal is being transported through covered rail wagons</p> <p>b) Not applicable as Rail siding facility has been made operational &amp; coal is being transported through covered rail wagons</p>

## Vision Document

Raipur Energen Limited, a subsidiary of Adani Power vision is to be a world class leader in businesses that enrich lives and contribute to nations in building infrastructure through sustainable value creation.

Our values, 'Courage, Trust and Commitment', enable us to give back to the society by creating sustainable business value.

**Courage:** we shall embrace new ideas and businesses

**Trust:** we shall believe in our employees and other stakeholders

**Commitment:** we shall stand by our promises and adhere to high standard of business

**Grow with Goodness-** Scale denotes growth. To us, scale is not just about the businesses we are in. It is also about the influence and the change we can spur, our lives we can touch, the communities we can enrich, the businesses we can propel, and the future we can inspire. We have been able to disseminate this goodness by leveraging the size of our operations in multiple nation-critical sectors. We have consciously extended our scale to help India meet its infrastructure development requirements and ensure improved quality of life.

Adani Power Limited (APL), a part of the diversified Adani Group, is the largest private thermal power producer in India. We have a power generation capacity of 12,450 MW comprising thermal power plants in Gujarat, Maharashtra, Karnataka, Rajasthan, and Chhattisgarh and a 40 MW solar power project in Gujarat.



## 3rd Quarterly Environmental Monitoring Report



### **Submitted To:**

**M/s Raipur Energen Limited**

***Formerly GMR Chhattisgarh Energy Ltd.***

**Village: Raikheda, Block-Tilda, Dist.-Raipur (Chhattisgarh)**

### **Conducted by:**

**M/s Vardan EnviroLab**

**Plot no. 82A, Sector-5, IMT Manesar, Gurugram (Haryana)**

**(Recognized by MoEF & CC, NABL Government of India)**



## PREFACE

The growing concern for environmental protection and the passing of various environmental legislations have increased the responsibilities of Ministry of Environment, Forests & Climate Change, Pollution Control boards in many folds. Besides enforcing the various environmental legislations MoEF&CC, CPCB & SPCB strive to propagate the necessity awareness regarding the various legal provisions and environmental protection measures in the country.

Electric Power scenario has occupied a significant place in the development program of the country. Development and environment can neither be separated nor ignored. In fact, they are complimentary to each other. These issues have become a concern of the community, particularly the environment impact due to industries in the developing countries.

However, the prerequisite for sustainable development is judicious planning of environmental status, likely impacts of the approach adopted on the environment including inhabitants of the locality, availability of the eco-friendly technology, emerging waste disposal and waste utilization processes, techniques of land reclamation for the restoration of aesthetic beauty and soon.

**M/s Raipur Energen Limited**, Formerly GMR Chhattisgarh Energy Ltd. Village: Raikheda, Block-Tilda, Dist.-Raipur (Chhattisgarh), India, has engaged **M/S Vardan EnviroLab, Gurugram, (HR)** to provide Environmental Services in respect of ambient air quality monitoring, stack emission, noise level monitoring & Sampling and Analysis of ground water quality, surface water quality, treated effluent sewage, effluent water from ETP, and soil for **Raipur Energen Limited, Raipur district of Chhattisgarh**, as per guidelines of MoEF & CC and CPCB Gazette notification.

**M/S Vardan EnviroLab, Gurugram, (HR)** has deployed entirely its own personnel, facilities and expertise for doing this service. Sampling / Monitoring Stations were identified by the Environmental Officer of Raipur Energen Limited, Raipur, The samples were analyzed **partly** at site and partly at our MoEF Recognized laboratory situated at Gurugram (HR).

This report presents the data generated for the period from 14th December 2021 to 16th December 2021, i.e. **for Third quarter which** includes sampling locations, Methodology, testing procedure and compilation for the Environmental parameters i.e. Air, Water, Soil & Noise with a view to evaluate the impact due to the thermal power plant activities.

During the course of our operations for the above task, the staff and management of Raipur Energen Limited, were extremely co-operative. We are grateful to them for their invaluable support and assistance rendered to us during the course of the sampling and monitoring.

Date : 28/12/2021



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## **Chapter - 1.0**

### **INTRODUCTION**

M/s Raipur Energen Limited., a subsidiary of Adani Power, is a power generation company based at Raipur in the State of Chhattisgarh. Raipur Energen Limited., has commissioned its Thermal Power Plant 1370 MW (2x685 MW) Unit at Village Raikheda, Block -Tilda, Dist- Raipur, Chhattisgarh (India).

Raipur Energen Limited., is also committed towards the environment and the community it operates in. It has successfully implemented several community welfare schemes in the field of livelihood, infrastructure, community health and education which has so far benefited over 60,000 people from close to 75 villages.



**Figure No.1. Raipur Energen Limited.**

## Chapter - 2.0

### PROJECT PROFILE

#### 2.1 Topography & Drainage

Topography of this area is generally undulating. The area is drained by Raikheda Talab approximately 2.5 km. away from plant in SW direction and Bangoli dam approximately 2 km. away from plant in SW direction. Mura Talab approximately 5 km. away from plant in South direction. Chhicholi Talab approximately 2 km. away from plant in East direction.

#### 2.2 Location

Plant is bounded by Northern Latitudes of 21° 26' 23" to 21° 27' 48" and Eastern Longitude of 81° 50'34.6" to 81° 52'08.5". This area falls in the survey of India top sheet no. 64 G/14, 64 G/15 in parts(1:50000 Scale) The location of the Plant area is shown in **Fig. No. 2**

#### 2.3 Climate

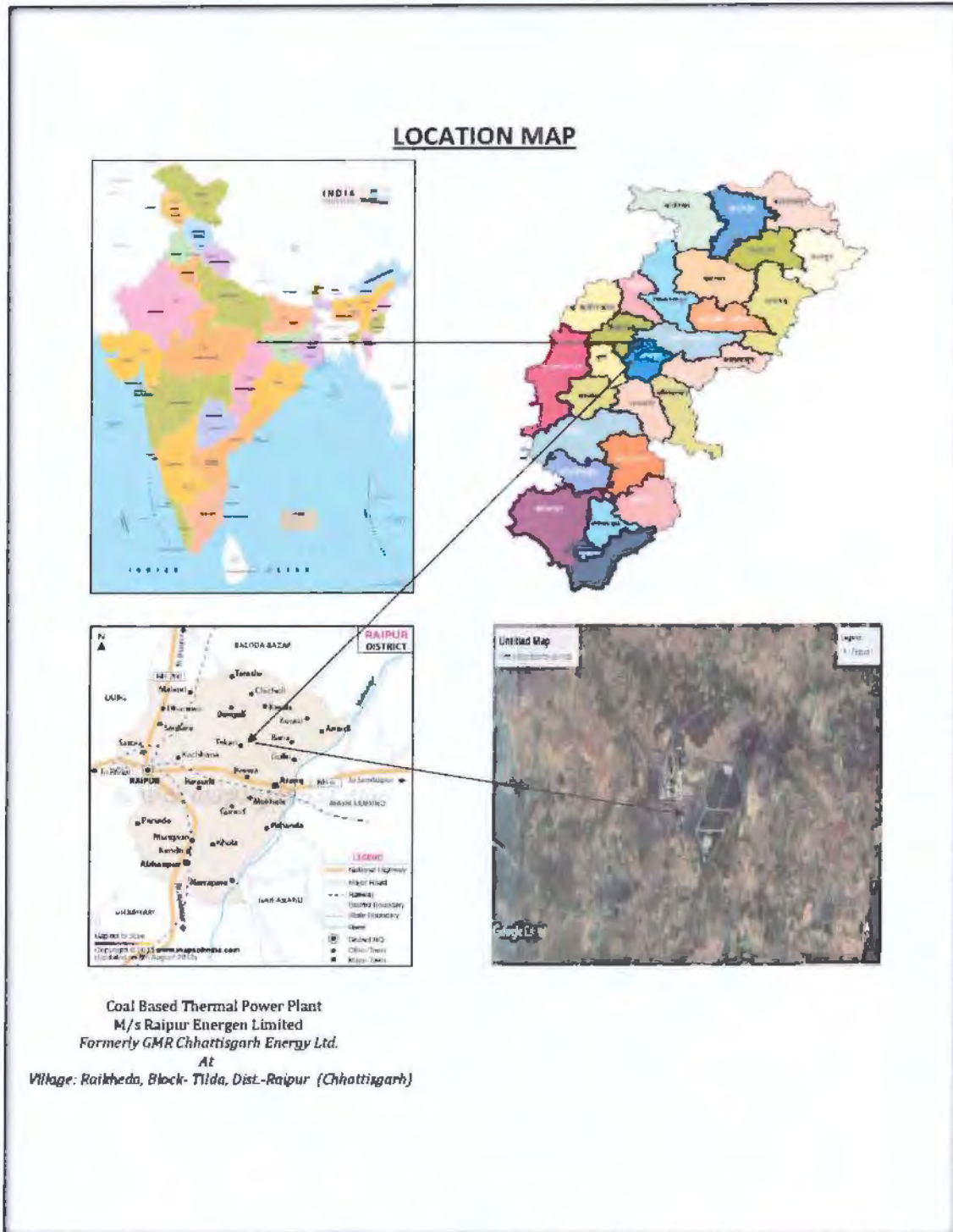
The climate of the area is Sub-tropical type. It is in the zone of humid tropic climate where temperature and humidity of air are very high. The temperature varies from the minimum - maximum temperature range between 29.5°C - 49 °C in summer, and 8°C - 25 °C in winter. The humidity varies from 35% to 82%. The annual average rainfall in the area is about 1300 mm.

#### 2.4 Communication

The nearest railway station is Tilda, which is at a distance of ~14 Km towards West direction. The area is well connected with S.H. No. 9. Nearest Airport is Raipur ~32 km in SW direction. Nearest village is Raikheda ~ 1.5 km. in South direction and nearest town is Raipur ~31 km. in SW direction.



### 2.5 Location Map



**Figure No.2. Location Map**

## **Chapter - 3.0**

### **SCOPE OF STUDY AND METHODOLOGY**

#### **3.1 Scope of Study**

The scope of study includes Environmental Services in respect of ambient air quality monitoring, noise level monitoring & Sampling and Analysis of ground water quality, surface water quality, treated effluent sewage, effluent water from ETP and soil.

#### **3.2 Methodology**

As mentioned in the scope of work covering the various Environmental components monitoring and sampling and its analysis was carried out on the basis of guidelines of Ministry of Environment Forest & Climate Control of Government of India & Chattisgarh State Pollution Control Board. Sampling procedure method reference and Analysis procedure method reference are mentioned in monitoring reports.

##### **3.2.1 Ambient Air Quality Monitoring**

The ambient air quality has been carried out at various sources of air pollution surrounding and in the Plant. The prime objective of the ambient air quality monitoring is to assess the existing air quality of the area.

The ambient air quality monitoring was carried out for 24 hours at each station. At all stations SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO and Mercury were monitored. All the samples collected were analyzed for quantitative analysis of various pollutants.

The ambient air quality sampling locations were identified by the Environmental Officer of Raipur Energen Limited.

##### **3.2.2 Water Environment**

The ground water samples, surface water samples were collected from selected locations in two liter sterilized plastic cans. These samples were analyzed as per IS 10500:2012. The domestic effluent and Industrial effluent samples were collected and analyzed for parameters: pH, Total suspended solids, Biochemical Oxygen Demand, Chemical Oxygen Demand and Oil & Grease.

### **3.2.3 Noise Environment**

Sound level meter was used to know the sound levels generated due to plant activities at different locations. The measurements were taken for Equivalent sound level over a time period for day and night which is expressed in dB(A).

### **3.2.4 Soil**

The Soil samples were collected from selected locations. These samples were analyzed for Physico-Chemical parameters including heavy metals.

## Chapter – 4.0

### SAMPLING LOCATION MAP AND ANALYSIS REPORTS

#### 4.1 Ambient Air Quality Monitoring



**Figure No.3. Plan Showing Ambient Air Quality Location Map**

Location Code: -

- A1- Raikheda Village
- A2- Mura Village
- A3- Near Doosan
- A4- Near STP
- A5- Chicholi Chatamura Chock





# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL/REL/AA/01  
**Name & Address of the Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh

**Report No.:** VEL/A/2112200027  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Report Date:** 25/12/2021  
**Period of Analysis:** 20/12/2021 to 25/12/2021  
**Receipt Date:** 20/12/2021

**Sample Description :** Ambient Air Quality Monitoring

### General Information:-

**Sampling Location :** Village- Raikheda (Near Ramesh House)  
**Sample collected by :** VEL Team  
**Sampling Equipment used :** RDS & FPS  
**Instrument Code :** VEL/RDS/FPS/01  
**Latitude :** 26°48'43"  
**Longitude :** 75°36'41"  
**Meteorological condition during monitoring :** Clear sky  
**Date of Sampling :** 14/12/2021 to 15/12/2021  
**Time of Sampling :** 10:20 to 10:20 Hrs.  
**Ambient Temperature (°C) :** Min. 14°C, Max. 26 °C  
**Surrounding Activity :** Human, Vehicular & Other Activities  
**Scope of Monitoring :** Regulatory Requirement  
**Sampling & Analysis Protocol :** IS-5182 & CPCB Guidelines  
**Sampling Duration :** 24 hrs.  
**Parameter Required :** As Per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	35.65	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006,RA, 2017	78.20	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	25.18	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	11.63	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	9.98	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	189.11	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

(Checked By)

(Authorized Signatory)



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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number: VEL/REL/AA/02 Report No.: VEL/A/2112200028  
Name & Address of the Party: M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh  
Format No.: 7.8 F 01  
Party Reference No.: NIL  
Report Date: 25/12/2021  
Sample Description: Ambient Air Quality Monitoring  
Period of Analysis: 20/12/2021 to 25/12/2021  
Receipt Date: 20/12/2021

### General Information:-

Sampling Location : Near STP  
Sample collected by : VEL Team  
Sampling Equipment used : RDS & FPS  
Instrument Code : VEL/RDS/FPS/02  
Latitude : 26°48'43"  
Longitude : 75°36'41"  
Meteorological condition during monitoring : Clear sky  
Date of Sampling : 14/12/2021 to 15/12/2021  
Time of Sampling : 11:00 to 11:00 Hrs.  
Ambient Temperature (°C) : Min. 14°C, Max. 26 °C  
Surrounding Activity : Human, Vehicular & Other Activities  
Scope of Monitoring : Regulatory Requirement  
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines  
Sampling Duration : 24 hrs.  
Parameter Required : As Per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	32.26	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006,RA,2017	73.45	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	21.65	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	10.35	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	9.29	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	223.40	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

(Checked By)

(Authorized Signatory)



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## Test Report

**Sample Number:** VEL/REL/AA/03  
**Name & Address of the Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh  
**Report No.:** VEL/A/2112200029  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Report Date:** 25/12/2021  
**Period of Analysis:** 20/12/2021 to 25/12/2021  
**Receipt Date:** 20/12/2021

**Sample Description :** Ambient Air Quality Monitoring

### General Information:-

**Sampling Location :** Village- Mura (Near Petrol Pump)  
**Sample collected by :** VEL Team  
**Sampling Equipment used :** RDS & FPS  
**Instrument Code :** VEL/RDS/FPS/03  
**Latitude :** 21°26'23"  
**Longitude :** 81°52'10"  
**Meteorological condition during monitoring :** Clear sky  
**Date of Sampling :** 14/12/2021 to 15/12/2021  
**Time of Sampling :** 11:30 to 11:30 Hrs.  
**Ambient Temperature (°C) :** Min. 14°C, Max. 26 °C  
**Surrounding Activity :** Human, Vehicular & Other Activities  
**Scope of Monitoring :** Regulatory Requirement  
**Sampling & Analysis Protocol :** IS-5182 & CPCB Guidelines  
**Sampling Duration :** 24 hrs.  
**Parameter Required :** As Per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	31.33	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006,RA, 2017	70.21	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	16.26	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	11.20	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	7.92	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	196.32	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

(Checked By)

(Authorized Signatory)





## Test Report

**Sample Number:** VEL/REL/AA/04  
**Name & Address of the Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh

**Report No.:** VEL/A/2112200030  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Report Date:** 25/12/2021  
**Period of Analysis:** 20/12/2021 to 25/12/2021  
**Receipt Date:** 20/12/2021

**Sample Description :** Ambient Air Quality Monitoring

### General Information:-

**Sampling Location :** Village- Chicholi Chatamura Chock  
**Sample collected by :** VEL Team  
**Sampling Equipment used :** RDS & FPS  
**Instrument Code :** VEL/RDS/FPS/01  
**Latitude :** 21°27'14"  
**Longitude :** 81°50'57"  
**Meteorological condition during monitoring :** Clear sky  
**Date of Sampling :** 15/12/2021 to 16/12/2021  
**Time of Sampling :** 11:30 to 11:30 Hrs.  
**Ambient Temperature (°C) :** Min. 12°C, Max. 27 °C  
**Surrounding Activity :** Human, Vehicular & Other Activities  
**Scope of Monitoring :** Regulatory Requirement  
**Sampling & Analysis Protocol :** IS-5182 & CPCB Guidelines  
**Sampling Duration :** 24 hrs.  
**Parameter Required :** As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	36.91	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006,RA ,2017	80.22	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	23.62	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	13.25	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	8.95	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	208.11	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

(Checked By)

(Authorized Signatory)



VEL/E/I/TR/PN28091





## Test Report

**Sample Number:** VEL/REL/AA/05  
**Name & Address of the Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipnr Chhattisgarh

**Report No.:** VEL/A/2112200031  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Report Date:** 25/12/2021  
**Period of Analysis:** 20/12/2021 to 25/12/2021  
**Receipt Date:** 20/12/2021

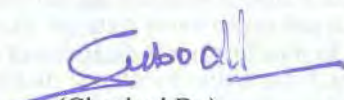
**Sample Description :** Ambient Air Quality Monitoring

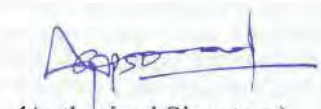
### General Information:-

**Sampling Location :** Near Doosan (Old Project)  
**Sample collected by :** VEL Team  
**Sampling Equipment used :** RDS & FPS  
**Instrument Code :** VEL/RDS/FPS/02  
**Latitude :** 21°27'14"  
**Longitude :** 81°50'57"  
**Meteorological condition dnrng monitoring :** Clear sky  
**Date of Sampling :** 15/12/2021 to 16/12/2021  
**Time of Sampling :** 11:45 to 11:45 Hrs.  
**Ambient Temperature (°C) :** Min. 12°C, Max. 27 °C  
**Surrounding Activity :** Human, Vehicular & Other Activities  
**Scope of Monitoring :** Regnatory Requirement  
**Sampling & Analysis Protocol :** IS-5182 & CPCB Guidelines  
**Sampling Duration :** 24 hrs.  
**Parameter Required :** As Per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	39.06	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006,RA,2017	82.11	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	23.21	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	13.71	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	8.95	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	201.45	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

  
(Checked By)

  
(Authorized Signatory)



### 4.2 Noise Level Monitoring



**Figure No.4. Plan Showing Noise Level Monitoring Location Map**

#### **Ambient Noise Level Monitoring Locations**

- Location Code: -
- N1- Admin Building**
  - N2- Field Hostel**
  - N3- Gate-1 Main gate**
  - N4- Gate-2 Gaitara Gate**
  - N5- Gate-3 Bhatapara**
  - N6- Near Mura Village Gate**
  - N7- Near OHC**
  - N8- Near Weigh Bridge**





## Test Report

Sample Number:	VEL/REL/AN/01	Report No.:	VEL /N/2112200022
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	25/12/2021
Protocol Used:	IS 9989: IS 9876	Receipt Date:	20/12/2021
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Near Gate No. 01
Instrument Code	: VEL/SLM/05
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 14/12/2021 to 15/12/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 14°C, Max. 26 °C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	69.3	54.2
2.	L min	IS:9989,IS9876:1981	42.4	38.1
3.	Leq	IS:9989,IS9876:1981	53.25	44.59

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM.
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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## Test Report

Sample Number:	VEL/REL/AN/02	Report No.:	VEL /N/2112200023
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	25/12/2021
Protocol Used:	IS 9989: IS 9876	Receipt Date:	20/12/2021
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Field Hostel
Instrument Code	: VEL/SLM/06
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 14/12/2021 to 15/12/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 14°C, Max. 26 °C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	65.1	53.1
2.	L min	IS:9989,IS9876:1981	40.2	37.2
3.	Leq	IS:9989,IS9876:1981	53.09	43.88

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
  2. Night Time is reckoned between 10.00 PM to 6.00 AM.
  3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.
- Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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## Test Report

Sample Number:	VEL/REL/AN/03	Report No.:	VEL/N/2112200024
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	25/12/2021
Protocol Used:	IS 9989: IS 9876	Receipt Date:	20/12/2021
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Gate No. 02 (Gaitara Gate)
Instrument Code	: VEL/SLM/07
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 14/12/2021 to 15/12/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 14°C, Max. 26 °C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	68.1	56.3
2.	L min	IS:9989,IS9876:1981	43.4	40.2
3.	Leq	IS:9989,IS9876:1981	57.88	42.15

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM.
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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## Test Report

Sample Number:	VEL/REL/AN/04	Report No.:	VEL /N/2112200025
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	25/12/2021
Protocol Used:	IS 9989: IS 9876	Receipt Date:	20/12/2021
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Near Weigh Bridge
Instrument Code	: VEL/SLM/08
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 14/12/2021 to 15/12/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 14°C, Max. 26 °C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	71.1	57.8
2.	L min	IS:9989,IS9876:1981	46.4	41.6
3.	Leq	IS:9989,IS9876:1981	58.77	47.45

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM.
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/REL/AN/05	Report No.:	VEL /N/2112200026
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	25/12/2021
Protocol Used:	IS 9989: IS 9876	Receipt Date:	20/12/2021
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Near Admin Building
Instrument Code	: VEL/SLM/05
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 15/12/2021 to 16/12/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 12°C, Max. 27°C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	72.1	58.8
2.	L min	IS:9989,IS9876:1981	47.4	42.6
3.	Leq	IS:9989,IS9876:1981	59.77	48.45

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
  2. Night Time is reckoned between 10.00 PM to 6.00 AM.
  3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.
- Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/REL/AN/06	Report No.:	VEL /N/2112200027
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	25/12/2021
Protocol Used:	IS 9989: IS 9876	Receipt Date:	20/12/2021
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Near Mura Village Gate
Instrument Code	: VEL/SLM/06
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 15/12/2021 to 16/12/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 12°C, Max. 27°C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	69.1	55.8
2.	L min	IS:9989,IS9876:1981	42.4	39.6
3.	Leq	IS:9989,IS9876:1981	55.60	45.45

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
  2. Night Time is reckoned between 10.00 PM to 6.00 AM.
  3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.
- Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/REL/AN/07	Report No.:	VEL /N/2112200028
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	25/12/2021
Protocol Used:	IS 9989: IS 9876	Receipt Date:	20/12/2021
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Near OHC
Instrument Code	: VEL/SLM/07
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 15/12/2021 to 16/12/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 12°C, Max. 27°C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	71.1	54.8
2.	L min	IS:9989,IS9876:1981	43.4	38.6
3.	Leq	IS:9989,IS9876:1981	57.22	44.45

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
  2. Night Time is reckoned between 10.00 PM to 6.00 AM.
  3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.
- Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/REL/AN/08	Report No.:	VEL /N/2112200029
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	25/12/2021
Protocol Used:	IS 9989: IS 9876	Receipt Date:	20/12/2021
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Gate No. 3 (Bhatapora)
Instrument Code	: VEL/SLM/08
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 15/12/2021 to 16/12/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 12°C, Max. 27°C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	65.1	55.3
2.	L min	IS:9989,IS9876:1981	40.4	39.2
3.	Leq	IS:9989,IS9876:1981	54.88	42.15

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
  2. Night Time is reckoned between 10.00 PM to 6.00 AM.
  3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.
- Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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### 4.3 Ground water Quality Analysis



**Figure No.5. Plan Showing Ground Water Quality Monitoring Location Map**

Location Code: -

GW1- Village- Craitara Hand Pump Water

GW2- Village - Raikhera Tap Water

GW3- Village- Chicholi Hand Pump Water

GW4- Near Field Hostel

GW5- Village- Mura Hand Pump Water



## Test Report

**Sample Number:** VEL/DW/05  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

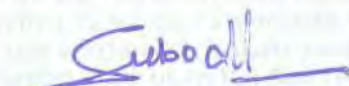
**Report No.:** VEL/W/2112200027  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021

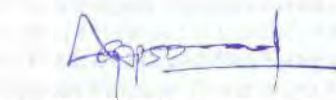
**Sample Description:** Water Sample  
**Sampling Location:** Village- Gaitara Hand Pump Water  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

**Period of Analysis:** 20-25/12/2021  
**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.45	--	6.5to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	365.0	mg/l	500	2000
3	Total Alkalinity (as CaCO3)	IS:3025 (Part 23): 1986, Reaff. 2019	181.44	mg/l	200	600
4	Total Hardness (as CaCO3)	IS:3025 (Part 21): 2009, Reaff. 2019	215.34	mg/l	200	600
5	Nitrate(as NO3)	IS:3025 (Part 34): 1988, Reaff. 2019	4.73	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	70.4	mg/l	250	1000
7	Sulphate (as SO4)	IS:3025(Part24):1986,Reaff.2019 Turbidity Method	37.39	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	81.64	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff.2009 (EDTA method)	2.73	mg/l	30	100
10	Fluorides(as F)	APHA23rd Edition 2017, 4500 FD	0.37	mg/l	1.0	1.5
11	Total Iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.27	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**D L-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA23rdEditionYear2017 MethodNo.3111B	*BDL(**D L-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rdedition-2017),3030D, 3113 B	*BDL(**D L-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114C	*BDL(**D L-0.005)	mg/l	0.01	No Relaxation
16	Total Coli form (By MPN Method)	IS:1622	Absent	MPN/1 0 0 ml	Shall notbeDetec tableinany1 00 mlsample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984,Ref:2017, (Nephelometric Method)	*BDL(**DL 1.0)	NTU	1	5

  
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(Authorized Signatory)







## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTAmethod)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH3)	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001 mg/l)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall notbeDetectablein any100 MI sample	--

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(Authorized Signatory)





## Test Report

**Sample Number:** VEL/DW/06  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

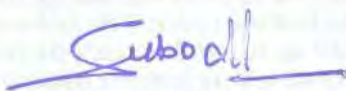
**Report No.:** VEL/W/2112200028  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021

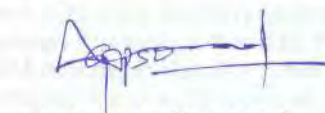
**Sample Description:** Water Sample  
**Sampling Location:** Village- Raikheda Tap Water  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

**Period of Analysis:** 20-25/12/2021  
**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.24	--	6.5 to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	342.0	mg/l	500	2000
3	Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part 23): 1986, Reaff. 2019	203.04	mg/l	200	600
4	Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part 21): 2009, Reaff. 2019	238.62	mg/l	200	600
5	Nitrate(as NO <sub>3</sub> )	IS:3025 (Part 34): 1988, Reaff. 2019	3.34	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	54.0	mg/l	250	1000
7	Sulphate(as SO <sub>4</sub> )	IS:3025(Part24):1986,Reaff.2019 Turbidity Method	18.15	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	80.87	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff.2009 (EDTA method)	8.86	mg/l	30	100
10	Fluorides(as F)	APHA23rd Edition 2017, 4500 FD	0.39	mg/l	1.0	1.5
11	Total Iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.16	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA23rdEditionYear2017 MethodNo.3111B	*BDL(**DL-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rdedition-2017),3030D, 3113 B	*BDL(**DL-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
16	Total Coli form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall not be Detectable in any 100 ml sample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984,Ref:2017, (Nephelometric Method)	*BDL(**DL-1.0)	NTU	1	5

  
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## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTA method)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH <sub>3</sub> )	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall notbeDetectablein any100 MI sample	--

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL/DW/07  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

**Report No.:** VEL/W/2112200029  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021  
**Period of Analysis:** 20-25/12/2021

**Sample Description:** Water Sample  
**Sampling Location:** Village- Chicholi Hand Pump Water  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.52	--	6.5 to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	331.0	mg/l	500	2000
3	Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part 23): 1986, Reaff. 2019	190.1	mg/l	200	600
4	Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part 21): 2009, Reaff. 2019	197.9	mg/l	200	600
5	Nitrate(as NO <sub>3</sub> )	IS:3025 (Part 34): 1988, Reaff. 2019	3.67	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	60.75	mg/l	250	1000
7	Sulphate(as SO <sub>4</sub> )	IS:3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	23.88	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	70.76	mg/l	75	200
9	Magnesium(as Mg)	IS:3025 (Part 46): 1994, Reaff. 2009 (EDTA method)	5.10	mg/l	30	100
10	Fluorides(as F)	APHA 23rd Edition 2017, 4500 FD	0.33	mg/l	1.0	1.5
11	Total Iron (as Fe)	IS3025 (P-53): 2003 Reaffirm 2019	0.15	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA (23rd edition-2017), 3114 C	*BDL (**DL-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA 23rd Edition Year 2017 Method No. 3111 B	*BDL (**DL-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA (23rd edition-2017), 3030 D, 3113 B	*BDL (**DL-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA (23rd edition-2017), 3114 C	*BDL (**DL-0.005)	mg/l	0.01	No Relaxation
16	Total Coli form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall not be detected in any 100 ml sample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025 (Part 10): 1984, Ref: 2017, (Nephelometric Method)	*BDL (**DL 1.0)	NTU	1	5

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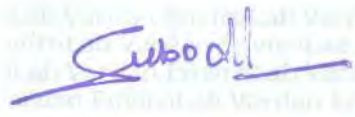
www.vardan.co.in





## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTA method)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH3)	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA.. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall notbeDetectablein any100 mlsample	--

  
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## Test Report

**Sample Number:** VEL/DW/08  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

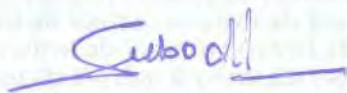
**Report No.:** VEL/W/2112200030  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021

**Sample Description:** Water Sample  
**Sampling Location:** Near Field Hostal  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

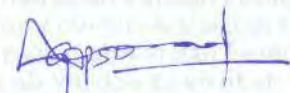
**Period of Analysis:** 20-25/12/2021  
**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.45	--	6.5 to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	301.0	mg/l	500	2000
3	Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part 23): 1986, Reaff. 2019	162.0	mg/l	200	600
4	Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part 21): 2009, Reaff. 2019	178.5	mg/l	200	600
5	Nitrate(as NO <sub>3</sub> )	IS:3025 (Part 34): 1988, Reaff. 2019	3.34	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	74.25	mg/l	250	1000
7	Sulphate(as SO <sub>4</sub> )	IS:3025(Part24):1986,Reaff.2019 Turbidity Method	15.88	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	53.65	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff.2009 (EDTA method)	10.78	mg/l	30	100
10	Fluorides(as F)	APHA23rd Edition 2017, 4500 FD	0.32	mg/l	1.0	1.5
11	Total iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.18	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA23rdEditionYear2017 MethodNo.3111B	*BDL(**DL-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rdedition-2017),3030D, 3113 B	*BDL(**DL-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
16	Total Coli form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall not be Detected in any 100 ml sample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984,Ref:2017, (Nephelometric Method)	*BDL(**DL 1.0)	NTU	1	5



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## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTA method)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH3)	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA.. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall notbeDetectablein any100 Ml sample	--

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL /DW/09  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

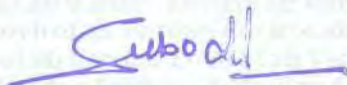
**Report No.:** VEL/W/2112200031  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021

**Sample Description:** Water Sample  
**Sampling Location:** Village- Mura Hand Pump Water  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

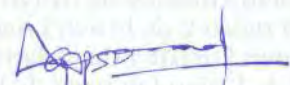
**Period of Analysis:** 20-25/12/2021  
**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.60	--	6.5 to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	340.0	mg/l	500	2000
3	Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part 23): 1986, Reaff. 2019	164.2	mg/l	200	600
4	Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part 21): 2009, Reaff. 2019	178.5	mg/l	200	600
5	Nitrate(as NO <sub>3</sub> )	IS:3025 (Part 34): 1988, Reaff. 2019	2.53	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	77.14	mg/l	250	1000
7	Sulphate(as SO <sub>4</sub> )	IS:3025(Part24):1986,Reaff.2019 Turbidity Method	24.31	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	53.65	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff.2009 (EDTA method)	10.78	mg/l	30	100
10	Fluorides(as F)	APHA 23rd Edition 2017, 4500 FD	0.30	mg/l	1.0	1.5
11	Total Iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.17	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA 23rd Edition Year 2017 Method No. 3111 B	*BDL(**DL-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rd edition-2017), 3030 D, 3113 B	*BDL(**DL-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
16	Total Coli form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall not be detected in any 100 ml sample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984,Ref:2017, (Nephelometric Method)	*BDL(**DL 1.0)	NTU	1	5



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## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTA method)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH <sub>3</sub> )	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall notbeDetectablein any100 ml sample	--

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**Figure. No. 6. Plan Showing Surface Water Quality Monitoring Location Map**

Location Code: - SW1. Raikheda Talab

SW2. Bangoli Dam

SW3. Mura Talab

SW4. Chhicholi Talab





## Test Report

**Sample Number:** VEL /W/01  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

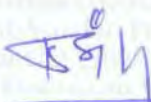
**Report No.:** VEL/W/2112200023  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021


**Sample Description:** Water Sample  
**Sampling Location:** Village- Raikheda (Pond Water)  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

**Period of Analysis:** 20-25/12/2021  
**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.30	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff: 2017, (Nephelometric Method)	3.5	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff 2017	186.0	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	59.8	mg/l
7	Total Alkalinity (as CaCO <sub>3</sub> )	IS: 3025 (Part 23): 1986, Reaff. 2019	90.72	mg/l
8	Total Hardness (CaCO <sub>3</sub> )	IS: 3025 (Part 21): 2009, Reaff. 2019	104.76	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	34.99	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	4.20	mg/l
11	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.32	mg/l
12	Nitrate (as NO <sub>3</sub> )	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	2.61	mg/l
13	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
14	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
15	Dissolved oxygen	IS : 3025 (Part-38) : 1989, Ref: 2019	5.8	mg/l
16	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	4.5	mg/l
17	Chemical Oxygen Demand (COD)	IS : 3025 (Part 58) : 2006ref: 2017	16.3	mg/l
18	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

  
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## Test Report

Sample Number: VEL /W/01		Report No.: VEL/W/2112200023		
19	Zinc as (Zn)	APHA (23rd edition), 3030D,3113B	*BDL(**DL-0.20)	mg/l
20	Copper (Cu)	APHA (23rd edition), 3111B	*BDL(**DL-0.02)	mg/l
21	Lead as Pb	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.005)	mg/l
22	Arsenic as As	APHA (23rd edition), 3030D,3114C, 2017	*BDL(**DL-0.005)	mg/l
23	Cyanide as CN	APHA 4500 CN -D	*BDL(**DL-0.05)	mg/l
24	Aluminium as Al	IS 3025 (P-55) 2003, RA 2019	*BDL(**DL-0.03)	mg/l
25	Boron	APHA (23rd edition) 4500B, 2017	*BDL(**DL-0.2)	mg/l
26	Chromium as Cr	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.02)	mg/l
27	Cadmium as Cd	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.002)	mg/l
28	Selenium as Se	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.005)	mg/l
29	Mercury as Hg	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.0005)	mg/l
30	O & G	IS 3025 (P-39) 1991, RA 2019	*BDL(**DL-0.5)	mg/l
31	Sulphate as (SO4)	IS: 3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	10.91	mg/l
32	Iron	IS:3025(P-53):2003,RA.2019:2003	0.10	mg/l
33	Manganese as Mn	APHA3111B	*BDL(**DL-0.05)	mg/l

  
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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL/DW/02  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

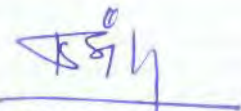
**Report No.:** VEL/W/2112200024  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021

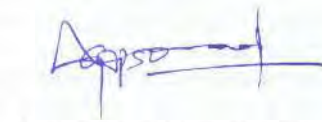
**Sample Description:** Water Sample  
**Sampling Location:** Village- Chicholi (Pond Water)  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

**Period of Analysis:** 20-25/12/2021  
**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.45	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff. 2017, (Nephelometric Method)	3.0	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff 2017	275.0	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	73.3	mg/l
7	Total Alkalinity (as CaCO <sub>3</sub> )	IS: 3025 (Part 23): 1986, Reaff. 2019	131.76	mg/l
8	Total Hardness (CaCO <sub>3</sub> )	IS: 3025 (Part 21): 2009, Reaff. 2019	147.44	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	39.66	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	11.74	mg/l
11	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.33	mg/l
12	Nitrate (as NO <sub>3</sub> )	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	4.24	mg/l
13	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
14	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
15	Dissolved oxygen	IS : 3025 (Part-38) : 1989, Ref: 2019	5.1	mg/l
16	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	10.0	mg/l
17	Chemical Oxygen Demand (COD)	IS : 3025 (Part 58) : 2006fef: 2017	28.6	mg/l
18	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

  
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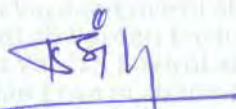


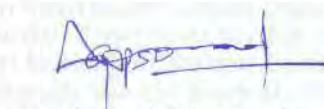
# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number: VEL /DW/02		Report No.: VEL/W/2112200024		
19	Zinc as (Zn)	APHA (23rd edition), 3030D,3113B	*BDL(**DL-0.20)	mg/l
20	Copper (Cu)	APHA (23rd edition), 3111B	*BDL(**DL-0.02)	mg/l
21	Lead as Pb	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.005)	mg/l
22	Arsenic as As	APHA (23rd edition), 3030D,3114C, 2017	*BDL(**DL-0.005)	mg/l
23	Cyanide as CN	APHA 4500 CN -D	*BDL(**DL-0.05)	mg/l
24	Aluminium as Al	IS 3025 (P-55) 2003, RA 2019	*BDL(**DL-0.03)	mg/l
25	Boron	APHA (23rd edition) 4500B, 2017	*BDL(**DL-0.2)	mg/l
26	Chromium as Cr	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.02)	mg/l
27	Cadmium as Cd	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.002)	mg/l
28	Selenium as Se	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.005)	mg/l
29	Mercury as Hg	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.0005)	mg/l
30	O & G	IS 3025 (P-39) 1991, RA 2019	*BDL(**DL-0.5)	mg/l
31	Sulphate as (SO4)	IS: 3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	12.43	mg/l
32	Iron	IS:3025(P-53):2003,RA.2019:2003	0.17	mg/l
33	Manganese as Mn	APHA3111B	*BDL(**DL-0.05)	mg/l

  
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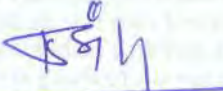



## Test Report

Sample Number:	VEL/DW/03	Report No.:	VEL/W/2112200025
Name & Address of Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
		Party Reference No.:	NIL
		Reporting Date:	25/12/2021
Sample Description:	Water Sample	Period of Analysis:	20-25/12/2021
Sampling Location:	Village- Bangoli Dam (Pond Water)	Receipt Date:	20/12/2021
Sample Collected by	Vardan EnviroLab Representative	Sampling Date:	15/12/2021
Preservation:	Refrigerated	Sampling Type:	Grab
Sampling & Analysis Protocol:	IS-10500-2012	Sample Quantity:	2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.20	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff: 2017, (Nephelometric Method)	2.5	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff 2017	194.0	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	66.5	mg/l
7	Total Alkalinity (as CaCO <sub>3</sub> )	IS: 3025 (Part 23): 1986, Reaff. 2019	123.12	mg/l
8	Total Hardness (CaCO <sub>3</sub> )	IS: 3025 (Part 21): 2009, Reaff. 2019	161.02	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	45.10	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	11.73	mg/l
11	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.34	mg/l
12	Nitrate (as NO <sub>3</sub> )	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	4.24	mg/l
13	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
14	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
15	Dissolved oxygen	IS: 3025 (Part-38) : 1989, Ref: 2019	4.8	mg/l
16	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	9.0	mg/l
17	Chemical Oxygen Demand (COD)	IS: 3025 (Part 58) : 2006, Ref: 2017	24.9	mg/l
18	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

  
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## Test Report

Sample Number: VEL /DW/03		Report No.: VEL/W/2112200025		
19	Zinc as (Zn)	APHA (23rd edition), 3030D,3113B	*BDL(**DL-0.20)	mg/l
20	Copper (Cu)	APHA (23rd edition), 3111B	*BDL(**DL-0.02)	mg/l
21	Lead as Pb	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.005)	mg/l
22	Arsenic as As	APHA (23rd edition), 3030D,3114C, 2017	*BDL(**DL-0.005)	mg/l
23	Cyanide as CN	APHA 4500 CN -D	*BDL(**DL-0.05)	mg/l
24	Aluminium as Al	IS 3025 (P-55) 2003, RA 2019	*BDL(**DL-0.03)	mg/l
25	Boron	APHA (23rd edition) 4500B, 2017	*BDL(**DL-0.2)	mg/l
26	Chromium as Cr	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.02)	mg/l
27	Cadmium as Cd	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.002)	mg/l
28	Selenium as Se	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.005)	mg/l
29	Mercury as Hg	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.0005)	mg/l
30	O & G	IS 3025 (P-39) 1991, RA 2019	*BDL(**DL-0.5)	mg/l
31	Sulphate as (SO4)	IS: 3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	14.59	mg/l
32	Iron	IS:3025(P-53):2003,RA.2019:2003	0.19	mg/l
33	Manganese as Mn	APHA3111B	*BDL(**DL-0.05)	mg/l

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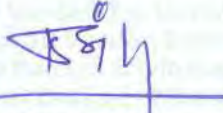



## Test Report

Sample Number:	VEL/DW/04	Report No.:	VEL/W/2112200026
Name & Address of Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
		Party Reference No.:	NIL
		Reporting Date:	25/12/2021
Sample Description:	Water Sample	Period of Analysis:	20-25/12/2021
Sampling Location:	Village- Mura (Pond Water)	Receipt Date:	20/12/2021
Sample Collected by	Vardan EnviroLab Representative	Sampling Date:	15/12/2021
Preservation:	Refrigerated	Sampling Type:	Grab
Sampling & Analysis Protocol:	IS-10500-2012	Sample Quantity:	2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.68	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff: 2017, (Nephelometric Method)	4.0	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff 2017	204.0	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	57.9	mg/l
7	Total Alkalinity (as CaCO <sub>3</sub> )	IS: 3025 (Part 23): 1986, Reaff. 2019	108.0	mg/l
8	Total Hardness (CaCO <sub>3</sub> )	IS: 3025 (Part 21): 2009, Reaff. 2019	106.70	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	36.54	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	3.73	mg/l
11	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.34	mg/l
12	Nitrate (as ND3)	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	3.91	mg/l
13	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
14	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
15	Dissolved oxygen	IS : 3025 (Part-38) : 1989, Ref: 2019	5.8	mg/l
16	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	5.5	mg/l
17	Chemical Oxygen Demand (COD)	IS : 3025 (Part 58) : 2006fef: 2017	36.7	mg/l
18	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

  
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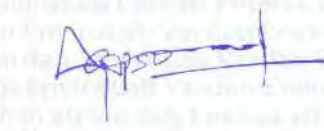




## Test Report

Sample Number: VEL /DW/04		Report No.: VEL/W/2112200026		
19	Zinc as (Zn)	APHA (23rd edition), 3030D,3113B	*BDL(**DL-0.20)	mg/l
20	Copper (Cu)	APHA (23rd edition), 3111B	*BDL(**DL-0.02)	mg/l
21	Lead as Pb	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.005)	mg/l
22	Arsenic as As	APHA (23rd edition), 3030D,3114C, 2017	*BDL(**DL-0.005)	mg/l
23	Cyanide as CN	APHA 4500 CN ·D	*BDL(**DL-0.05)	mg/l
24	Aluminium as Al	IS 3025 (P-55) 2003, RA 2019	*BDL(**DL-0.03)	mg/l
25	Boron	APHA (23rd edition) 4500B, 2017	*BDL(**DL-0.2)	mg/l
26	Chromium as Cr	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.02)	mg/l
27	Cadmium as Cd	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.002)	mg/l
28	Selenium as Se	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.005)	mg/l
29	Mercury as Hg	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.0005)	mg/l
30	O & G	IS 3025 (P-39) 1991, RA 2019	*BDL(**DL-0.5)	mg/l
31	Sulphate as (SO4)	IS: 3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	15.88	mg/l
32	Iron	IS:3025(P-53):2003,RA.2019:2003	0.21	mg/l
33	Manganese as Mn	APHA3111B	*BDL(**DL-0.05)	mg/l

  
(Checked By)

  
(Authorized Signatory)





### 4.5 Soil Quality Analysis



**Figure No. 8. Plan Showing Soil Sample Monitoring Location Map**

Location Code: -

- S1- Near Field Hostel
- S2- Raikheda Village
- S3- Mura Village
- S4- Gaitara Village
- S5- Chicholi Village





# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

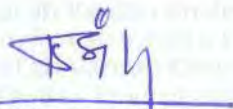
**Sample Number:** VEL/S0/01  
**Name & Address of the Party :** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh


**Report No.:** VEL/S0/2112200001  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021  
**Period of Analysis :** 20/12/2021 to 25/12/2021

**Sample Description :** SOIL  
**Sample Location :** Near Field Hostel  
**Sample Collected By:** VEL Team  
**Parameter Required :** As per work order  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA

**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sample Quantity:** 2 kg.  
**Sampling Type:** Composite  
**Packing Status:** Temp. Sealed

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26): 1987,RA: 2016	7.30	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.168	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Water holding capacity	USDA:1954-Reaffirmed,2010	25.84	%
5	Bulk density	USDA:1954(Page-121) RA: 2014	1.17	gm/cc
6	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	245.25	mg/kg
7	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	256.09	mg/kg
8	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	140.1	mg/kg
9	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	86.77	Kg/hect.
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.65	%
11	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	148.55	mg/kg
12	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	244.29	kg/hect.
13	Total Zinc (as Zn)	USEPA3050 B: 1996	51.20	mg/kg
14	Total Manganese (as Mn)	USEPA3050	173.08	mg/kg
15	Total Chromium (as Cr)	USEPA3050 B:1996	5.22	mg/kg
16	Total Lead (as Pb)	USEPA3050 B: 1996	14.18	mg/kg
17	Total Cadmium (as Cd)	USEPA3050	8.63	mg/kg
18	Total Copper (as Cu)	USEPA3050 B: 1996	11.36	mg/kg
19	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
20	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	39.73	kg/hect.

  
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[www.vardan.co.in](http://www.vardan.co.in)





## Test Report

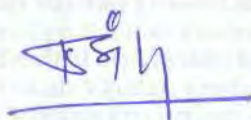
**Sample Number:** VEL/SO/02  
**Name & Address of the Party :** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh


**Report No.:** VEL/SO/2112200002  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021  
**Period of Analysis :** 20/12/2021 to 25/12/2021

**Sample Description :** SOIL  
**Sample Location :** Village- Raikheda  
**Sample Collected By:** VEL Team  
**Parameter Required :** As per work order  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA

**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sample Quantity:** 2 kg.  
**Sampling Type:** Composite  
**Packing Status:** Temp. Sealed

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26): 1987,RA: 2016	7.20	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.135	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
5	Water holding capacity	USDA:1954-Reaffirmed,2010	35.61	%
6	Bulk density	USDA:1954(Page-121) RA: 2014	1.23	gm/cc
7	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	70.45	mg/kg
8	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	255.25	Kg/hec.
9	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	171.9	mg/kg
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.58	%
11	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	51.60	kg./hec.
12	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	389.63	mg/kg
13	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	130.64	mg/kg
14	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	211.94	kg./hec.
15	Total Zinc (as Zn)	USEPA3050 B: 1996	65.20	mg/kg
16	Total Manganese (as Mn)	USEPA3050	195.08	mg/kg
17	Total Chromium (as Cr)	USEPA3050 B:1996	5.21	mg/kg
18	Total Lead (as Pb)	USEPA3050 B: 1996	19.62	mg/kg
19	Total Cadmium (as Cd)	USEPA3050	8.41	mg/kg
20	Total Copper (as Cu)	USEPA3050 B: 1996	15.42	mg/kg

  
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(Authorized Signatory)







## Test Report


**Sample Number:** VEL/SO/03  
**Name & Address of the Party :** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh

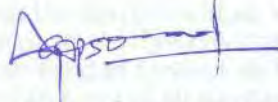
**Report No.:** VEL/SO/2112200003  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021  
**Period of Analysis :** 20/12/2021 to 25/12/2021

**Sample Description :** SOIL  
**Sample Location :** Village-Mura  
**Sample Collected By:** VEL Team  
**Parameter Required :** As per work order  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA

**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sample Quantity:** 2 kg.  
**Sampling Type:** Composite  
**Packing Status:** Temp. Sealed

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26); 1987,RA: 2016	7.15	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.168	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
5	Water holding capacity	USDA:1954-Reaffirmed,2010	40.19	%
6	Bulk density	USDA:1954(Page-121) RA: 2014	1.39	gm/cc
7	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	65.41	mg/kg
8	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	262.30	Kg/hect.
9	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	156.5	mg/kg
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.70	%
11	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	49.81	kg./hect.
12	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	394.24	mg/kg
13	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	144.07	mg/kg
14	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	229.27	kg./hect.
15	Total Zinc (as Zn)	USEPA3050 B: 1996	69.10	mg/kg
16	Total Manganese (as Mn)	USEPA3050	201.05	mg/kg
17	Total Chromium (as Cr)	USEPA3050 B:1996	7.11	mg/kg
18	Total Lead (as Pb)	USEPA3050 B: 1996	22.38	mg/kg
19	Total Cadmium (as Cd)	USEPA3050	5.41	mg/kg
20	Total Copper (as Cu)	USEPA3050 B: 1996	16.36	mg/kg

  
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(Authorized Signatory)



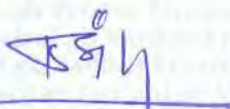





## Test Report

**Sample Number:** VEL/SO/04 **Report No.:** VEL/SO/2112200004  
**Name & Address of the Party :** M/s Raipur Energen Limited **Format No.:** 7.8 F 01  
Formerly GMR Chhattisgarh Energy Ltd  
**Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh** **Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021  
**Period of Analysis :** 20/12/2021 to 25/12/2021  
**Sample Description :** SOIL **Receipt Date:** 20/12/2021  
**Sample Location :** Village- Gaitara **Sampling Date:** 15/12/2021  
**Sample Collected By:** VEL Team **Sample Quantity:** 2 kg.  
**Parameter Required :** As per work order **Sampling Type:** Composite  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA **Packing Status:** Temp. Sealed

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26); 1987,RA: 2016	7.45	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.178	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
5	Water holding capacity	USDA:1954-Reaffirmed,2010	37.52	%
6	Bulk density	USDA:1954(Page-121) RA: 2014	1.32	gm/cc
7	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	60.21	mg/kg
8	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	209.77	Kg/hec.
9	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	148.3	mg/kg
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.67	%
11	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	50.81	kg./hec.
12	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	406.30	mg/kg
13	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	201.45	mg/kg
14	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	198.70	kg./hec.
15	Total Zinc (as Zn)	USEPA3050 B: 1996	57.21	mg/kg
16	Total Manganese (as Mn)	USEPA3050	190.05	mg/kg
17	Total Chromium (as Cr)	USEPA3050 B:1996	6.05	mg/kg
18	Total Lead (as Pb)	USEPA3050 B: 1996	23.20	mg/kg
19	Total Cadmium (as Cd)	USEPA3050	4.81	mg/kg
20	Total Copper (as Cu)	USEPA3050 B: 1996	14.18	mg/kg

  
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(Authorized Signatory)







## Test Report

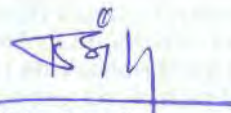
**Sample Number:** VEL/S0/05  
**Name & Address of the Party :** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh


**Report No.:** VEL/S0/2112200005  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021  
**Period of Analysis :** 20/12/2021 to 25/12/2021

**Sample Description :** SOIL  
**Sample Location :** Village- Chicholi  
**Sample Collected By:** VEL Team  
**Parameter Required :** As per work order  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA

**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sample Quantity:** 2 kg.  
**Sampling Type:** Composite  
**Packing Status:** Temp. Sealed

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26); 1987,RA: 2016	6.98	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.140	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
5	Water holding capacity	USDA:1954-Reaffirmed,2010	38.65	%
6	Bulk density	USDA:1954(Page-121) RA: 2014	1.30	gm/cc
7	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	78.21	mg/kg
8	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	283.63	Kg/hect.
9	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	171.1	mg/kg
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.55	%
11	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	52.62	kg./hect.
12	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	379.40	mg/kg
13	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	163.33	mg/kg
14	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	225.01	kg./hect.
15	Total Zinc (as Zn)	USEPA3050 B: 1996	62.45	mg/kg
16	Total Manganese (as Mn)	USEPA3050	236.05	mg/kg
17	Total Chromium (as Cr)	USEPA3050 B:1996	6.12	mg/kg
18	Total Lead (as Pb)	USEPA3050 B: 1996	23.84	mg/kg
19	Total Cadmium (as Cd)	USEPA3050	5.60	mg/kg
20	Total Copper (as Cu)	USEPA3050 B: 1996	15.21	mg/kg

  
(Checked By)

  
(Authorized Signatory)



#### 4.6 Waste Water Sample Analysis Report



#### Locations

1. STP Outlet





# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001


## Test Report

**Sample Number:** VEL /WW/01  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur  
Chhattisgarh  
**Sample Description:** Waste Water  
**Sampling Location :** STP Outlet  
**Sample Collected by:** Vardan EnviroLab Representative

**Report No.:** VEL/WW/2112200023  
**Format No.:** 7.8 F-01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021  
**Period Analysis:** 20/12/2021 to 25/12/2021  
**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Quantity:** 2 Ltr.  
**Parameter Required:** As per Work Order

### TEST RESULT

Sl.No.	Parameter	Reference	Result	Unit	Range
1.	pH	IS 3025(P-11):1983.RA.2017	7.35	-	5.5-9.0
2.	Total Suspended Solids	IS 3025(P-17):1984.RA.2017	19.60	mg/l	100.0
3.	Oil& Grease	IS 3025(P-39):1991.RA.2019	1.2	mg/l	10.0
4.	BOD(3 days @ 27°C )	IS 3025(P-44):1993.RA.2019	13.0	mg/l	30.0
5.	COD	IS 3025(P-58):2006.RA.2017	73.4	mg/l	250.0

  
(Checked By)

  
(Authorized Signatory)



#### **4.7 Stack Emission Analysis Report**

##### Locations

1. TPP (Unit-1)
2. TPP (Unit-2)



## Test Report

**Sample Number:** VEL/REL/S/01 **Report No.:** VEL/S/2112200020  
**Name & Address of Party:** M/s Raipur Energen Limited **Format No.:** 5.10 F-01  
Formerly GMR Chhattisgarh Energy Ltd **Party Reference No.:** NIL  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh **Reporting Date:** 25/12/2021  
**Period of Analysis:** 20/12/2021 to 25/12/2021  
**Receipt Date:** 20/12/2021

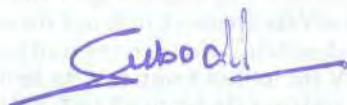
**Sample Description :** STACK EMISSION MONITORING

Sample Collected : VEL Team  
Date & Time of Sampling : 15/12/2021  
Location : TPP (Unit-I)  
Sampling duration (Minutes) : 30.0 & (12:00 to 12:30 Hrs.)  
Meteorological Condition : Clear Sky  
Stack Attached : ESP  
Stack Diameter : 7.5 m  
Stack Height : 275 m  
Instrument calibration status : Calibrated  
Ambient Temperature - Ta (°C) : 22.0  
Temperature of Stack Gases - Ts (°C) : 125  
Velocity of Stack Gases (m/sec.) : 23.20  
Flow rate of PM (LPM) : 33.0  
Total Gas Quantity : 3687930.0 Nm<sup>3</sup>/hr  
Sampling condition : Isokinetic  
Protocol used : IS-11255 & EPA

### RESULTS

S. No.	Parameter	Protocol	Results	Units	Limits
1.	Particulate Matter (as PM)	IS 11255 (P-1) :1985,RA,2014	44.83	mg/Nm <sup>3</sup>	50.0
2.	Sulphur Dioxide (as SO <sub>2</sub> )	IS: 11255 (p-2)1985, RA. 2014	1121.31	mg/Nm <sup>3</sup>	--
3.	Ammonia (as NH <sub>3</sub> )	IS:11255 (P-6):1999,RA.2014	6.85	mg/Nm <sup>3</sup>	--
4.	Hydrogen Sulphide	IS:11255 (P-4):2006,RA.2014	2.25	mg/Nm <sup>3</sup>	--
5.	Oxide of Nitrogen (as NO <sub>2</sub> )	IS 11255 (P-7)RA,2017	338.45	mg/Nm <sup>3</sup>	--
6.	Water Vapor	Gas Analyzer	3.20	%	--
7.	Carbon Monoxide (as CO)	CO By Analyzer	5.89	mg/Nm <sup>3</sup>	--
8.	Carbon Dioxide	IS:13270, Orsat Analysis ,RA 2005	6.39	%	--
9.	Oxygen	SOP, SP-188,Issue No. 01.2018	7.09	%	--
10.	Mercury (as Hg)	APHA 3rd ed,2017, 303A (Page No. 365)	BDL(DL0.005)	mg/Nm <sup>3</sup>	0.03

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)



(Checked By)



(Authorized Signatory)







## Test Report

Sample Number: VEL/REL/S/02 Report No.: VEL/S/2112200021  
Name & Address of Party: M/s Raipur Energen Limited Format No.: 5.10 F-01  
Formerly GMR Chhattisgarh Energy Ltd Party Reference No.: NIL  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh Reporting Date: 25/12/2021  
Period of Analysis: 20/12/2021 to 25/12/2021  
Receipt Date: 20/12/2021

### Sample Description : STACK EMISSION MONITORING

Sample Collected : VEL Team  
Date & Time of Sampling : 15/12/2021  
Location : TPP (Unit-II)  
Sampling duration (Minutes) : 34.0 & (12:45 to 13:19 Hrs.)  
Meteorological Condition : Clear Sky  
Stack Attached : ESP  
Stack Diameter : 7.5 m  
Stack Height : 275 m  
Instrument calibration status : Calibrated  
Ambient Temperature - Ta (°C) : 22.0  
Temperature of Stack Gases - Ts (°C) : 128  
Velocity of Stack Gases (m/sec.) : 20.79  
Flow rate of PM (LPM) : 29  
Total Gas Quantity : 3304830.0 Nm<sup>3</sup>/hr  
Sampling condition : Isokinetic  
Protocol used : IS-11255 &EPA

### RESULTS

S. No.	Parameter	Protocol	Results	Units	Limits
1.	Particulate Matter (as PM)	IS 11255 (P-1):1985,RA,2014	46.21	mg/Nm <sup>3</sup>	50.0
2.	Sulphur Dioxide (as SO <sub>2</sub> )	IS: 11255 (p-2)1985, RA. 2014	1089.44	mg/Nm <sup>3</sup>	--
3.	Ammonia (as NH <sub>3</sub> )	IS:11255 (P-6):1999,RA.2014	8.52	mg/Nm <sup>3</sup>	--
4.	Hydrogen Sulphide	IS:11255 (P-4):2006,RA.2014	1.90	mg/Nm <sup>3</sup>	--
5.	Oxide of Nitrogen (as NO <sub>2</sub> )	IS 11255 (P-7)RA,2017	419.68	mg/Nm <sup>3</sup>	--
6.	Water Vapor	Gas Analyzer	3.59	%	--
7.	Carbon Monoxide (as CO)	CO By Analyzer	6.90	mg/Nm <sup>3</sup>	--
8.	Carbon Dioxide	IS:13270, Orsat Analysis ,RA 2005	7.84	%	--
9.	Oxygen	SOP, SP-188, Issue No. 01.2018	5.85	%	--
10.	Mercury (as Hg)	APHA 3rd ed,2017, 303A (Page No. 365)	BDL(DL0.005)	mg/Nm <sup>3</sup>	0.03

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

(Checked By)

(Authorized Signatory)



VEL/E/1/TR/PN28032

## Chapter - 5.0 CONCLUSION

RAIPUR ENERGEN LIMITED., authorities have been taken successful steps in controlling environmental pollution in and around the project. This fact is clear from analytical results of different environmental parameters. A brief conclusion is as follows.

Sr. No.	Environmental Parameters	Conclusion
5.1	Air Environment	After analysis of the samples from five different locations it is observed that both the individuals and average concentration of air pollutants in respect of SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , CO and Mercury are well within the prescribed limits of NAAQM standards. People of township and of surrounding villages do not have any problems regarding the air quality and have no grievances because of Thermal Power Plant activities.
5.2	Water Environment	The analytical result of the samples from the ground water of villages, surface water from river, and domestic & industrial effluent after treatment shows that the concentrations of different water parameters are well within prescribed limits and will not cause any adverse impact on human health and on surrounding area. People of surrounding areas express satisfaction about the water quality of That area.
5.3	Noise Environment	The observations taken at four village location during day and night time shows that the noise level are well within prescribed limits of CPCB. Hence there is no possibility of any adverse effect of noise generated due to Thermal Power Plant activities on peoples of Surrounding areas.

All the above details show that Thermal Power Plant of RAIPUR ENERGEN LIMITED. is not causing any adverse impact on the human health and ecological balance.



# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/BMD/C/01	Report No.:	VEL/C/2112200001
Name & Address of Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	25/12/2021
		Period of Analysis:	20/12/2021 to 25/12/2021
		Receipt Date:	20/12/2021
Sample Description:	COAL	Sampling Date:	15/12/2021
Sample Collected by	Vardan EnviroLab Representative	Sampling Quantity:	500 gm
Sampling & Analysis Protocol	IS 1350	Packing Status:	Temp Sealed

### TEST RESULTS

Sl. No.	Parameter	Protocol	Result	Unit
ANALYSIS OF COAL				
1.	Mercury (as Hg)	By AAS Method	BDL	mg/kg
2.	Lead (as Pb)	By AAS Method	3.85	mg/kg
3.	Cadmium (as Cd)	By AAS Method	0.09	mg/kg
4.	Arsenic (as As)	By AAS Method	0.07	mg/kg

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

<b>Sample Number:</b>	VEL/FA/01	<b>Report No.:</b>	VEL/FA/2112200002
<b>Name &amp; Address of the Party:</b>	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	<b>Format No.:</b>	5.10 F-01
<b>Sampling Description:</b>	FLY ASH	<b>Party Reference No.:</b>	NIL
<b>Sample Collected by:</b>	Vardan EnviroLab Team	<b>Reporting Date:</b>	25/12/2021
<b>Parameter Required:</b>	As per Work Order	<b>Period of Analysis:</b>	20/12/2021 to 25/12/2021
		<b>Receipt Date:</b>	20/12/2021
		<b>Sampling Date:</b>	15/12/2021
		<b>Sampling Quantity:</b>	250 gm.

### TEST RESULTS

S. No.	Parameter	Result	Unit
1.	Arsenic as As (mg/kg)	0.32	mg/kg
2.	Lead as Pb (mg/kg)	0.98	mg/kg
3.	Mercury as Hg (mg/kg)	0.54	mg/kg
4.	Chromium as Cr (mg/kg)	0.70	mg/kg

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VEL/E/1/TR/PN28034

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# Vardan EnviroLab

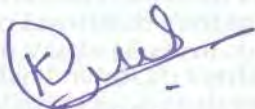
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001


## Test Report

<b>Sample Number:</b>	<b>VEL/BA/01</b>	<b>Report No.:</b>	<b>VEL/BM/2112200002</b>
<b>Name &amp; Address of the Party:</b>	<b>M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh</b>	<b>Format No.:</b>	<b>5.10 F-01</b>
<b>Sampling Description:</b>	<b>BOTTOM ASH</b>	<b>Party Reference No.:</b>	<b>NIL</b>
<b>Sample Collected by:</b>	<b>Vardan EnviroLab Team</b>	<b>Reporting Date:</b>	<b>25/12/2021</b>
<b>Parameter Required:</b>	<b>As per Work Order</b>	<b>Period of Analysis:</b>	<b>20/12/2021 to 25/12/2021</b>
		<b>Receipt Date:</b>	<b>20/12/2021</b>
		<b>Sampling Date:</b>	<b>15/12/2021</b>
		<b>Sampling Quantity:</b>	<b>250 gm.</b>

### TEST RESULTS

S. No.	Parameter	Result	Unit
1.	Arsenic (as As)	0.28	mg/kg
2.	Lead (as Pb)	5.96	mg/kg
3.	Mercury ( as Hg)	0.60	mg/kg
4.	Chromium (as Cr)	3.45	mg/kg

  
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## Test Report

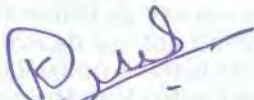
**Sample Number:** VEL /SL/01  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur  
Chhattisgarh  
**Sample Description:** Sludge  
**Sampling Location :** Near ETP  
**Sample Collected by:** Vardan EnviroLab Representative

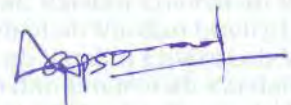
**Report No.:** VEL/SL/2112200001  
**Format No.:** 7.8 F-01  
**Party Reference No.:** NIL  
**Reporting Date:** 25/12/2021  
**Period Analysis** 20/12/2021 to 25/12/2021  
**Receipt Date:** 20/12/2021  
**Sampling Date:** 15/12/2021  
**Sampling Quantity:** 2 Kg.  
**Parameter Required:** As per Work Order

### TEST RESULT

S. No.	Parameter	Test-Method	Result	Unit
1.	Chromium (Cr)	Lab SOP No.VEL/STP/01:2018	5.58	mg/kg
2.	Copper(Cu)	Lab SOP No.VEL/STP/01:2018	15.25	mg/kg
3.	Lead (Pb)	Lab SOP No.VEL/STP/02:2018	2.74	mg/kg
4.	Zinc(Zn)	APHA 23rd Edition 2017	20.14	mg/kg
5.	pH (at 25°C)	Is:2720 (P-26),RA 2016	7.74	--
6.	Moisture	Lab SOP No.VEL/STP/01:2018	20.0	%
7.	Arsenic (As)	APHA 23rd Edition 2017	0.18	mg/kg
8.	Cadmium (cd)	APHA 23rd Edition 2017	0.30	mg/kg
9.	Iron (Fe)	APHA 23rd Edition 2017	9.45	mg/kg
10.	Mercury (Hg)	APHA 23rd Edition 2017	*BDL(DL 0.25)	mg/kg
11.	Nickel (Ni)	APHA 23rd Edition 2017	3.45	mg/kg
12.	Selenium (as Se)	USEPA 1311 & 6020	0.28	mg/kg

BDL\*(Below Detection Limit) \*\* DL (Detection Limit)

  
(Checked By)

  
(Authorized Signatory)





# 4th Quarterly Environmental Monitoring Report



## **Submitted To:**

**M/s Raipur Energen Limited**

***Formerly GMR Chhattisgarh Energy Ltd.***

**Village: Raikheda, Block-Tilda, Dist.-Raipur (Chhattisgarh)**

## **Conducted by:**

**M/s Vardan EnviroLab**

**Plot no. 82A, Sector-5, IMT Manesar, Gurugram (Haryana)**

**(Recognized by MoEF &CC, NABL Government of India)**

## PREFACE

The growing concern for environmental protection and the passing of various environmental legislations have increased the responsibilities of Ministry of Environment, Forests & Climate Change, Pollution Control boards in many folds. Besides enforcing the various environmental legislations MoEF&CC, CPCB & SPCB strive to propagote the necessity awareness regarding the various legal provisions and environmental protection measures in the country.

Electric Power scenario has occupied a significant place in the development program of the country. Development and environment can neither be separated nor ignored. In fact, they are complimentary to each other. These issues have become a concern of the community, particularly the environment impact due to industries in the developing countries.

However, the prerequisite for sustainable development is judicious planning of environmental status, likely impacts of the approach adopted on the environment including inhabitants of the locality, availability of the eco-friendly technology, emerging waste disposal and waste utilization processes, techniques of land reclamation for the restoration of aesthetic beauty and soon.

**M/s Raipur Energen Limited, Formerly GMR Chhattisgarh Energy Ltd. Village: Raikheda, Block-Tilda, Dist.-Raipur (Chhattisgarh), India, has engaged M/S Vardan EnviroLab, Gurugram, (HR) to provide Environmental Services in respect of ambient air quality monitoring, stack emission, noise level monitoring & Sampling and Analysis of ground water quality, surface water quality, treated effluent sewage, effluent water from ETP, and soil for Raipur Energen Limited, Raipur district of Chhattisgarh, as per guidelines of MoEF&CC and CPCB Gazettenotification.**

**M/S Vardan EnviroLab, Gurugram, (HR) has deployed entirely its own personnel, facilities and expertise for doing this service. Sampling / Monitoring Stations were identified by the Environmental Officer of Raipur Energen Limited, Raipur. The samples were analyzed partly at site and partly at our MoEF Recognized laboratory situated at Gurugram (HR).**

This report presents the data generated for the period from 14th March 2022 to 16th March 2022, i.e. **for Fourth quarter which** includes sampling locations, Methodology, testing procedure and compilation for the Environmental parameters i.e. Air, Water, Soil & Noise with a view to evaluate the impact due to the thermal power plant activities.

During the course of our operations for the above task, the staff and management of Raipur Energen Limited, were extremely co-operative. We are grateful to them for their invaluable support and assistance rendered to us during the course of the sampling and monitoring.

Date: 30/03/2022

  
Authorized Signatory



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## **Chapter – 1.0**

### **INTRODUCTION**

M/s Raipur Energen Limited, a subsidiary of Adani Power, is a power generation company based at Raipur in the State of Chhattisgarh. Raipur Energen Limited. has commissioned its Thermal Power Plant 1370MW (2x685 MW) Unit at Village Raikheda, Block -Tilda, Dist- Raipur, Chhattisgarh (India).

Raipur Energen Limited., is also committed towards the environment and the community it operates in. It has successfully implemented several community welfare schemes in the field of livelihood, infrastructure, community health and education which has so far benefited over 60,000 people from close to 75 villages.



**Figure No.1.Raipur Energen Limited.**

## Chapter – 2.0

### PROJECT PROFILE

#### 2.1 Topography & Drainage

Topography of this area is generally undulating. The area is drained by Raikheda Talab approximately 2.5 km. away from plant in SW direction and Bangoli dam approximately 2 km. away from plant in SW direction. Mura Talab approximately 5 km. away from plant in South direction. Chhicholi Talab approximately 2 km. away from plant in East direction.

#### 2.2 Location

Plant is bounded by Northern Latitudes of 21° 26' 23" to 21° 27' 48" and Eastern Longitude of 81° 50'34.6" to 81°52'08.5". This area falls in the survey of India top sheet no. 64 G/14, 64 G/15 in parts (1:50000 Scale) The location of the Plant area is shown in **Fig. No.2**

#### 2.3 Climate

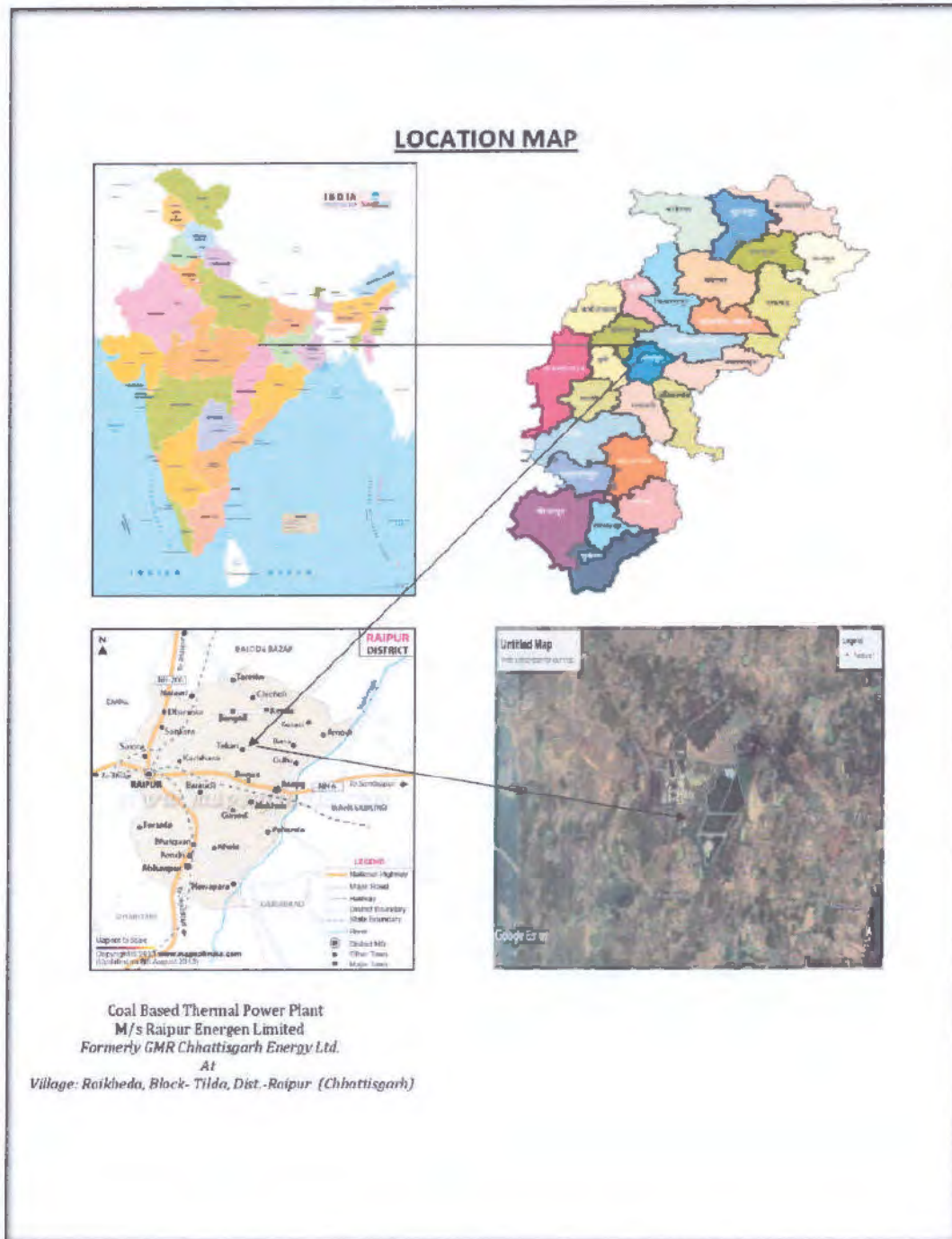
The climate of the area is Sub-tropical type. It is in the zone of humid tropic climate where temperature and humidity of air are very high. The temperature varies from the minimum - maximum temperature range between 29.5°C - 49 °C in summer, and 8°C - 25 °C in winter. The humidity varies from 35% to 82%. The annual average rainfall in the area is about 1300mm.

#### 2.4 Communication

The nearest railway station is Tilda, which is at a distance of ~14 Km towards West direction. The area is well connected with S.H. No. 9. Nearest Airport is Raipur ~32 km in SW direction. Nearest village is Raikheda ~ 1.5 km. in South direction and nearest town is Raipur ~31 km. in SW direction.



### 2.5 Location Map



**Figure No.2. LocationMap**



## **Chapter – 3.0**

### **SCOPE OF STUDY AND METHODOLOGY**

#### **3.1 Scope of Study**

The scope of study includes Environmental Services in respect of ambient air quality monitoring, noise level monitoring & Sampling and Analysis of ground water quality, surface water quality, treated effluent sewage, effluent water from ETP and soil.

#### **3.2 Methodology**

As mentioned in the scope of work covering the various Environmental components monitoring and sampling and its analysis was carried out on the basis of guidelines of Ministry of Environment Forest & Climate Control of Government of India & Chhattisgarh State Pollution Control Board. Sampling procedure method reference and Analysis procedure method reference are mentioned in monitoring reports.

##### **3.2.1 Ambient Air Quality Monitoring**

The ambient air quality has been carried out at various sources of air pollution surrounding and in the Plant. The prime objective of the ambient air quality monitoring is to assess the existing air quality of the area.

The ambient air quality monitoring was carried out for 24 hours at each station. At all stations SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO and Mercury were monitored. All the samples collected were analyzed for quantitative analysis of various pollutants.

The ambient air quality sampling locations were identified by the Environmental Officer of Raipur Energen Limited.

##### **3.2.2 Water Environment**

The ground water samples, surface water samples were collected from selected locations in two liter sterilized plastic cans. These samples were analyzed as per IS 10500:2012. The domestic effluent and Industrial effluent samples were collected and analyzed for parameters: pH, Total suspended solids, Biochemical Oxygen Demand, Chemical Oxygen Demand and Oil & Grease.

### **3.2.3 Noise Environment**

Sound level meter was used to know the sound levels generated due to plant activities at different locations. The measurements were taken for Equivalent sound level over a time period for day and night which is expressed in dB(A).

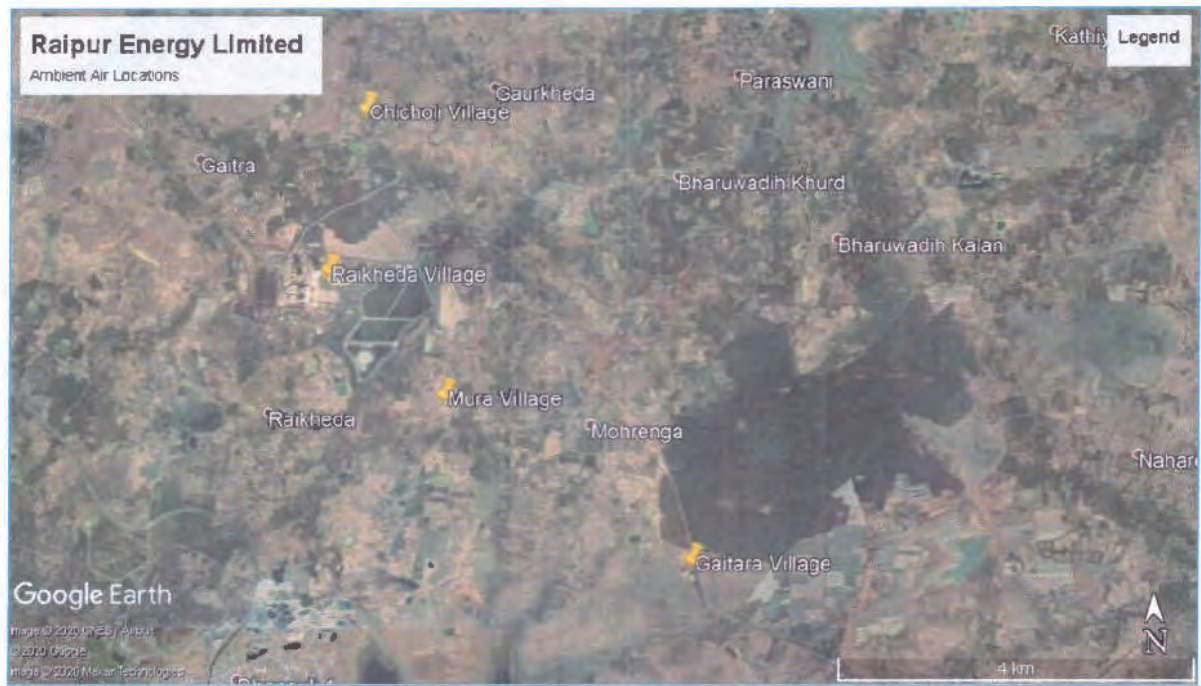
### **3.2.4 Soil**

The Soil samples were collected from selected locations. These samples were analyzed for Physico-Chemical parameters including heavy metals.

## Chapter - 4.0

### SAMPLING LOCATION MAP AND ANALYSIS REPORTS

#### 4.1 Ambient Air Quality Monitoring



**Figure No.3. Plan Showing Ambient Air Quality Location Map**

Location Code: -

- A1- Raikheda Village
- A2- Mura Village
- A3- Near Doosan
- A4- Near STP
- A5- Chhicholi Chatamura Chock





# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number: VEL/REL/AA/01  
Name & Address of the Party: M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh  
Report No.: VEL/A/2203180001  
Format No.: 7.8 F 01  
Party Reference No.: NIL  
Report Date: 22/03/2022  
Period of Analysis: 18/03/2022 to 22/03/2022  
Receipt Date: 18/03/2022  
Sample Description: Ambient Air Quality Monitoring

### General Information:-

Sampling Location : Village- Raikheda (Near Ramesh House)  
Sample collected by : VEL Team  
Sampling Equipment used : RDS & FPS  
Instrument Code : VEL/RDS/FPS/01  
Latitude : 26°48'43"  
Longitude : 75°36'41"  
Meteorological condition during monitoring : Clear sky  
Date of Sampling : 14/03/2022 to 15/03/2022  
Time of Sampling : 11:15 to 11:15 Hrs.  
Ambient Temperature (°C) : Min. 20°C, Max. 36 °C  
Surrounding Activity : Human, Vehicular & Other Activities  
Scope of Monitoring : Regulatory Requirement  
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines  
Sampling Duration : 24 hrs.  
Parameter Required : As Per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	36.75	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006.RA ,2017	79.15	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	23.84	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	10.80	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	10.8	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	186.8	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL/REL/AA/03  
**Name & Address of the Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh  
**Report No.:** VEL/A/2203180003  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Report Date:** 22/03/2022  
**Period of Analysis:** 18/03/2022 to 22/03/2022  
**Receipt Date:** 18/03/2022  
**Sample Description:** Ambient Air Quality Monitoring

### General Information:-

**Sampling Location:** Village- Mura (Near Petrol Pump)  
**Sample collected by:** VEL Team  
**Sampling Equipment used:** RDS & FPS  
**Instrument Code:** VEL/RDS/FPS/03  
**Latitude:** 21°26'23"  
**Longitude:** 81°52'10"  
**Meteorological condition during monitoring:** Clear sky  
**Date of Sampling:** 14/03/2022 to 15/03/2022  
**Time of Sampling:** 11:30 to 11:30 Hrs.  
**Ambient Temperature (°C):** Min. 20°C, Max. 36 °C  
**Surrounding Activity:** Human, Vehicular & Other Activities  
**Scope of Monitoring:** Regulatory Requirement  
**Sampling & Analysis Protocol:** IS-5182 & CPCB Guidelines  
**Sampling Duration:** 24 hrs.  
**Parameter Required:** As Per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	32.59	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006.RA, 2017	71.32	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	15.22	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	10.48	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	6.59	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	194.8	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

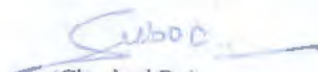
Sample Number: VEL/REL/AA/05 Report No.: VEL/A/2203180005  
Name & Address of the Party: M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh Format No.: 7.8 F 01  
Party Reference No.: NIL  
Report Date: 22/03/2022  
Sample Description: Ambient Air Quality Monitoring Period of Analysis: 18/03/2022 to 22/03/2022  
Receipt Date: 18/03/2022

### General Information:-

Sampling Location : Near Doosan (Old Project)  
Sample collected by : VEL Team  
Sampling Equipment used : RDS & FPS  
Instrument Code : VEL/RDS/FPS/02  
Latitude : 21°27'14"  
Longitude : 81°50'57"  
Meteorological condition during monitoring : Clear sky  
Date of Sampling : 15/03/2022 to 16/03/2022  
Time of Sampling : 12:45 to 12:45 Hrs.  
Ambient Temperature (°C) : Min. 21°C, Max. 36 °C  
Surrounding Activity : Human, Vehicular & Other Activities  
Scope of Monitoring : Regulatory Requirement  
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines  
Sampling Duration : 24 hrs.  
Parameter Required : As Per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	40.55	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006.RA ,2017	83.51	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	24.01	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	14.26	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	10.6	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	203.8	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

  
(Checked By)

  
(Authorized Signatory)



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## Test Report

**Sample Number:** VEL/REL/AA/02  
**Name & Address of the Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh  
**Report No.:** VEL/A/2203180002  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Report Date:** 22/03/2022  
**Period of Analysis:** 18/03/2022 to 22/03/2022  
**Sample Description:** Ambient Air Quality Monitoring  
**Receipt Date:** 18/03/2022

### General Information:-

**Sampling Location:** : Near STP  
**Sample collected by:** : VEL Team  
**Sampling Equipment used:** : RDS & FPS  
**Instrument Code:** : VEL/RDS/FPS/02  
**Latitude:** : 26°48'43"  
**Longitude:** : 75°36'41"  
**Meteorological condition during monitoring:** : Clear sky  
**Date of Sampling:** : 14/03/2022 to 15/03/2022  
**Time of Sampling:** : 10:40 to 10:40 Hrs.  
**Ambient Temperature (°C):** : Min. 20°C, Max. 36 °C  
**Surrounding Activity:** : Human, Vehicular & Other Activities  
**Scope of Monitoring:** : Regulatory Requirement  
**Sampling & Analysis Protocol:** : IS-5182 & CPCB Guidelines  
**Sampling Duration:** : 24 hrs.  
**Parameter Required:** : As Per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	30.54	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006, RA ,2017	72.19	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	22.42	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	9.48	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	9.29	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	225.1	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

  
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(Authorized Signatory)





# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL/REL/AA/04  
**Name & Address of the Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh

**Report No.:** VEL/A/2203180004  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Report Date:** 22/03/2022  
**Period of Analysis:** 18/03/2022 to 22/03/2022  
**Receipt Date:** 18/03/2022

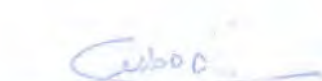
**Sample Description:** Ambient Air Quality Monitoring

### General Information:-

**Sampling Location:** Village- Chicholi Chatamura Chock  
**Sample collected by:** VEL Team  
**Sampling Equipment used:** RDS & FPS  
**Instrument Code:** VEL/RDS/FPS/01  
**Latitude:** 21°27'14"  
**Longitude:** 81°50'57"  
**Meteorological condition during monitoring:** Clear sky  
**Date of Sampling:** 15/03/2022 to 16/03/2022  
**Time of Sampling:** 12:30 to 12:30 Hrs.  
**Ambient Temperature (°C):** Min. 20°C, Max. 36 °C  
**Surrounding Activity:** Human, Vehicular & Other Activities  
**Scope of Monitoring:** Regulatory Requirement  
**Sampling & Analysis Protocol:** IS-5182 & CPCB Guidelines  
**Sampling Duration:** 24 hrs.  
**Parameter Required:** As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS 2009
1.	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (P-24) -2019	37.26	µg/m <sup>3</sup>	60
2.	Particulate Matter (PM <sub>10</sub> )	IS: 5182 (P-23), 2006.RA ,2017	81.10	µg/m <sup>3</sup>	100
3.	Nitrogen Dioxide (NO <sub>2</sub> )	IS: 5182 (P-6), 2006 RA-2017	21.86	µg/m <sup>3</sup>	80
4.	Sulphur Dioxide (SO <sub>2</sub> )	IS: 5182 (P-2), 2001 RA-2017	12.55	µg/m <sup>3</sup>	80
5.	Ozone (as O <sub>3</sub> )	IS: 5182 (P-9), 1947 RA.2017	6.85	µg/m <sup>3</sup>	180.0
6.	Suspended Particulate Matter	IS: 5182 (P-4), 1999 RA.2014	206.8	µg/m <sup>3</sup>	600
7.	Mercury (Hg)	Methods Of air sampling and analysis 3 <sup>rd</sup> ed,1988,method No.317	BDL(*DL0.001)	ng/ m <sup>3</sup>	--

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

  
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Ph: 0124-4343750/752/753, 9810355569, 9953147268 E-mail: lab@vardan.co.in, bd@vardan.co.in



**4.2 Noise Level Monitoring**



**Figure No.4. Plan Showing Noise Level Monitoring Location Map**

<b>Ambient Noise Level Monitoring Locations</b>	
Location Code: -	<b>N1- Admin Building</b>
	<b>N2- Field Hostel</b>
	<b>N3- Gate-1 Main gate</b>
	<b>N4- Gate-2 Gaitara Gate</b>
	<b>N5- Gate-3 Bhatapara</b>
	<b>N6- Near Mura Village Gate</b>
	<b>N7- Near OHC</b>
	<b>N8- Near Weigh Bridge</b>





## Test Report

Sample Number:	VEL/REL/AN/05	Report No.:	VEL /N/2203180005
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring:	Regulatory Requirement	Reporting Date:	22/03/2022
Protocol Used:	IS 9989: IS 9876	Receipt Date:	18/03/2022
Instrument Used:	SLM	Sampling Duration:	24 Hrs.
		Sample Collected by:	VEL Team
		Instrument Calibration Status:	Calibrated

### General Information:-

Sampling Location	: Near Admin Building
Instrument Code	: VEL/SLM/05
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 15/03/2022 to 16/03/2022
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 20°C, Max. 36°C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	72.4	57.5
2.	L min	IS:9989,IS9876:1981	45.8	41.7
3.	Leq	IS:9989,IS9876:1981	57.88	47.84

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.  
2. Night Time is reckoned between 10.00 PM to 6.00 AM.  
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.  
Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply



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## Test Report

Sample Number:	VEL/REL/AN/02	Report No.:	VEL /N/2203180002
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Ralkheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	22/03/2022
Protocol Used:	IS 9989: IS 9876	Receipt Date:	18/03/2022
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Field Hostel
Instrument Code	: VEL/SLM/06
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 14/03/2022 to 15/03/2022
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 20°C, Max. 36 °C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	64.7	52.6
2.	L min	IS:9989,IS9876:1981	41.1	38.5
3.	Leq	IS:9989,IS9876:1981	52.15	45.19

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.  
2. Night Time is reckoned between 10.00 PM to 6.00 AM.  
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.  
Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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## Test Report

Sample Number:	VEL/REL/AN/01	Report No.:	VEL /N/2203180001
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	22/03/2022
Protocol Used:	IS 9989: IS 9876	Receipt Date:	18/03/2022
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

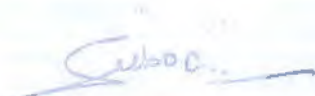
### General Information:-

Sampling Location	: Near Gate No. 01
Instrument Code	: VEL/SLM/05
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 14/03/2022 to 15/03/2022
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 20°C, Max. 36 °C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	68.7	52.9
2.	L min	IS:9989,IS9876:1981	41.5	38.8
3.	Leq	IS:9989,IS9876:1981	52.78	42.85

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.  
2. Night Time is reckoned between 10.00 PM to 6.00 AM.  
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.  
Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

  
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(Authorized Signatory)







# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/REL/AN/03	Report No.:	VEL /N/2203180003
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Ralkheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	22/03/2022
Protocol Used:	IS 9989: IS 9876	Receipt Date:	18/03/2022
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated


### General Information:-

Sampling Location	: Gate No. 02 (Gaitara Gate)
Instrument Code	: VEL/SLM/07
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 14/03/2022 to 15/03/2022
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 20°C, Max. 36 °C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	67.8	55.4
2.	L min	IS:9989,IS9876:1981	44.6	41.3
3.	Leq	IS:9989,IS9876:1981	53.49	44.44

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.  
2. Night Time is reckoned between 10.00 PM to 6.00 AM.  
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.  
Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

  
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## Test Report

Sample Number:	VEL/REL/AN/08	Report No.:	VEL /N/22031B0008
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring:	Regulatory Requirement	Reporting Date:	22/03/2022
Protocol Used:	IS 9989: IS 9876	Receipt Date:	18/03/2022
Instrument Used:	SLM	Sampling Duration:	24 Hrs.
		Sample Collected by:	VEL Team
		Instrument Calibration Status:	Calibrated

### General Information:-

Sampling Location	: Gate No. 3 (Bhatapora)
Instrument Code	: VEL/SLM/08
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 15/03/2022 to 16/03/2022
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 20°C, Max. 36°C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	66.3	54.1
2.	L min	IS:9989,IS9876:1981	41.5	42.8
3.	Leq	IS:9989,IS9876:1981	52.69	39.48

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM.
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

  
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## Test Report

Sample Number:	VEL/REL/AN/06	Report No.:	VEL /N/2203180006
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	22/03/2022
Protocol Used:	IS 9989: IS 9876	Receipt Date:	18/03/2022
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Near Mura Village Gate
Instrument Code	: VEL/SLM/06
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 15/03/2022 to 16/03/2022
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 20°C, Max. 36°C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	68.5	53.8
2.	L min	IS:9989,IS9876:1981	43.4	40.5
3.	Leq	IS:9989,IS9876:1981	53.84	43.48

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.

2. Night Time is reckoned between 10.00 PM to 6.00 AM.

3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

  
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## Test Report

Sample Number:	VEL/REL/AN/07	Report No.:	VEL /N/2203180007
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring:	Regulatory Requirement	Reporting Date:	22/03/2022
Protocol Used:	IS 9989: IS 9876	Receipt Date:	18/03/2022
Instrument Used:	SLM	Sampling Duration:	24 Hrs.
		Sample Collected by:	VEL Team
		Instrument Calibration Status:	Calibrated

### General Information:-

Sampling Location	: Near OHC
Instrument Code	: VEL/SLM/07
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 15/03/2022 to 16/03/2022
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 20°C, Max. 36°C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	70.5	53.4
2.	L min	IS:9989,IS9876:1981	44.1	39.2
3.	Leq	IS:9989,IS9876:1981	55.81	43.16

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM.
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

  
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(Authorized Signatory)







## Test Report

Sample Number:	VEL/REL/AN/04	Report No.:	VEL /N/2203180004
Name & Address of the Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
Sample Description:	Ambient Noise Level Monitoring	Party Reference No.:	NIL
Scope of Monitoring	Regulatory Requirement	Reporting Date:	22/03/2022
Protocol Used:	IS 9989: IS 9876	Receipt Date:	18/03/2022
Instrument Used	SLM	Sampling Duration	24 Hrs.
		Sample Collected by	VEL Team
		Instrument Calibration Status	Calibrated

### General Information:-

Sampling Location	: Near Weigh Bridge
Instrument Code	: VEL/SLM/08
Meteorological condition during monitoring	: Clear sky
Date of Monitoring	: 14/03/2022 to 15/03/2022
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min. 20°C, Max. 36 °C
Surrounding Activity	: Human, Vehicular Activities
Parameter Required	: As per Work Order

Sr.No.	Test Parameter	Protocol	Test Result dB(A)	
			Day Time	Night Time
1.	L max	IS:9989,IS9876:1981	70.4	55.8
2.	L min	IS:9989,IS9876:1981	45.1	40.6
3.	Leq	IS:9989,IS9876:1981	57.42	46.85

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.  
2. Night Time is reckoned between 10.00 PM to 6.00 AM.  
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeaker and bursting of crackers is banned in these zones.  
Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply



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### 4.3 Ground water Quality Analysis



**Figure No.5. Plan Showing Ground Water Quality Monitoring Location Map**

**Location Code: -**

- GW1- Village- Gaitara Hand Pump Water**
- GW2- Village – Raikheda Tap Water**
- GW3- Village- Chhicholi Hand Pump Water**
- GW4- Near Field Hostel**
- GW5- Village- Mura Hand Pump Water**





## Test Report

Sample Number: VEL/DW/05  
Name & Address of Party: M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

Report No.: VEL/W/2203180005  
Format No.: 78 F 01  
Party Reference No.: NIL  
Reporting Date: 22/03/2022

Sample Description: Water Sample  
Sampling Location: Village- Gaitara Hand Pump Water

Period of Analysis: 18-22/03/2022  
Receipt Date: 18/03/2021  
Sampling Date: 15/03/2021  
Sampling Type: Grab

Sample Collected by: Vardan EnviroLab Representative  
Preservation: Refrigerated  
Sampling & Analysis Protocol: IS-10500-2012

Sample Quantity: 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.22	--	6.5 to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	348	mg/l	500	2000
3	Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part 23): 1986, Reaff. 2019	178.6	mg/l	200	600
4	Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part 21): 2009, Reaff. 2019	213.5	mg/l	200	600
5	Nitrate(as NO <sub>3</sub> )	IS:3025 (Part 34): 1988, Reaff. 2019	4.29	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	72.5	mg/l	250	1000
7	Sulphate (as SO <sub>4</sub> )	IS:3025(Part24):1986,Reaff2019 Turbidity Method	39.2	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	79.8	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff2009 (EDTA method)	2.22	mg/l	30	100
10	Fluorides(as F)	APHA23rd Edition 2017, 4500 FD	0.33	mg/l	1.0	1.5
11	Total Iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.24	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**D L-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA23rdEditionYear2017 MethodNo.3111B	*BDL(**D L-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rdedition-2017),3030D, 3113 B	*BDL(**D L-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114C	*BDL(**D L-0.005)	mg/l	0.01	No Relaxation
16	Total Coll form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall not be Detectable in any 100 ml sample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984,Ref:2017, (Nephelometric Method)	*BDL(**DL 1.0)	NTU	1	5

  
(Checked By)

  
(Authorized Signatory)








## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTAMethod)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH3)	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001 mg/l)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariums (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall not be Detectable in any 100 Ml sample	--

  
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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number: VEL/DW/06  
Name & Address of Party: M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

Report No.: VEL/W/2203180006  
Format No.: 7.8 F 01  
Party Reference No.: NIL  
Reporting Date: 22/03/2022

Sample Description: Water Sample  
Sampling Location: Village- Raikheda Tap Water  
Sample Collected by: Vardan EnviroLab Representative

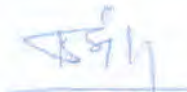
Period of Analysis: 18-22/03/2022  
Receipt Date: 18/03/2021  
Sampling Date: 15/03/2021  
Sampling Type: Grab

Preservation: Refrigerated  
Sampling & Analysis Protocol: IS-10500-2012

Sample Quantity: 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.29	--	6.5 to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	335.2	mg/l	500	2000
3	Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part 23): 1986, Reaff. 2019	201.8	mg/l	200	600
4	Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part 21): 2009, Reaff. 2019	236.1	mg/l	200	600
5	Nitrate(as NO <sub>3</sub> )	IS:3025 (Part 34): 1988, Reaff. 2019	4.15	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	56.2	mg/l	250	1000
7	Sulphate(as SO <sub>4</sub> )	IS:3025(Part24):1986,Reaff.2019 Turbidity Method	19.5	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	81.6	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff.2009 (EDTA method)	9.26	mg/l	30	100
10	Fluorides(as F)	APHA23rd Edition 2017, 4500 FD	0.34	mg/l	1.0	1.5
11	Total iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.18	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA23rdEditionYear2017 MethodNo.3111B	*BDL(**DL-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rdedition-2017),3030D, 3113 B	*BDL(**DL-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
16	Total Coli form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall not be Detectable in any 100 ml sample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984,Ref:2017, (Nephelometric Method)	*BDL(**DL 1.0)	NTU	1	5

  
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## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTA method)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH <sub>3</sub> )	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA.. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Coliform	IS:1622	Absent	MPN/100 ml	Shall notbeDetectablein any100 ml sample	-

  
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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

<b>Sample Number:</b>	VEL/DW/07	<b>Report No.:</b>	VEL/W/2203180007
<b>Name &amp; Address of Party:</b>	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	<b>Format No.:</b>	7.8 F 01
		<b>Party Reference No.:</b>	NIL
		<b>Reporting Date:</b>	22/03/2022
		<b>Period of Analysis:</b>	18-22/03/2022
<b>Sample Description:</b>	Water Sample	<b>Receipt Date:</b>	18/03/2021
<b>Sampling Location:</b>	Village- Chicholi Hand Pump Water	<b>Sampling Date:</b>	15/03/2021
<b>Sample Collected by</b>	Vardan EnviroLab Representative	<b>Sampling Type:</b>	Grab
<b>Preservation:</b>	Refrigerated	<b>Sample Quantity:</b>	2.0 Ltr.
<b>Sampling &amp; Analysis Protocol:</b>	IS-10500-2012		

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.44	--	6.5to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	324.2	mg/l	500	2000
3	Total Alkalinity (as CaCO3)	IS:3025 (Part 23): 1986, Reaff. 2019	188.6	mg/l	200	600
4	Total Hardness (as CaCO3)	IS:3025 (Part 21): 2009, Reaff. 2019	195.6	mg/l	200	600
5	Nitrate(as NO3)	IS:3025 (Part 34): 1988, Reaff. 2019	4.12	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	62.5	mg/l	250	1000
7	Sulphate(as SO4)	IS:3025(Part24):1986,Reaff.2019 Turbidity Method	25.1	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	71.3	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff.2009 (EDTA method)	4.59	mg/l	30	100
10	Fluorides(as F)	APHA23rd Edition 2017, 4500 FD	0.36	mg/l	1.0	1.5
11	Total Iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.12	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA23rd Edition Year 2017 Method No. 3111 B	*BDL(**DL-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rd edition-2017), 3030 D, 3113 B	*BDL(**DL-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
16	Total Coli form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall not be Detectable in any 100 ml sample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984,Ref:2017, (Nephelometric Method)	*BDL(**DL 1.0)	NTU	1	5

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## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 {EDTA method}	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH3)	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2010	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall notbeDetectablein any100 mlsample	--

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(Authorized Signatory)







## Test Report

Sample Number: VEL/DW/08  
Name & Address of Party: M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

Report No.: VEL/W/2203180008  
Format No.: 7.8 F 01  
Party Reference No.: NIL  
Reporting Date: 22/03/2022

Sample Description: Water Sample  
Sampling Location: Near Field Hostal  
Sample Collected by: Vardan EnviroLab Representative

Period of Analysis: 18-22/03/2022  
Receipt Date: 18/03/2021  
Sampling Date: 15/03/2021  
Sampling Type: Grab

Preservation: Refrigerated  
Sampling & Analysis Protocol: IS-10500-2012

Sample Quantity: 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.36	--	6.5to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	298.5	mg/l	500	2000
3	Total Alkalinity (as CaCO3)	IS:3025 (Part 23): 1986, Reaff. 2019	160.2	mg/l	200	600
4	Total Hardness (as CaCO3)	IS:3025 (Part 21): 2009, Reaff. 2019	176.8	mg/l	200	600
5	Nitrate(as NO3)	IS:3025 (Part 34): 1988, Reaff. 2019	3.88	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	72.5	mg/l	250	1000
7	Sulphate(as SO4)	IS:3025(Part24):1986,Reaff.2019 Turbidity Method	16.7	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	54.6	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff.2009 (EDTA method)	11.2	mg/l	30	100
10	Fluorides(as F)	APHA23rd Edition 2017, 4500 FD	0.36	mg/l	1.0	1.5
11	Total Iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.22	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA23rdEditionYear2017 MethodNo.3111B	*BDL(**DL-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rdedition-2017),3030D, 3113 B	*BDL(**DL-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
16	Total Coli form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall notbeDetecta bleinany100 mlsample	NA
17	E-Coli	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984,Ref:2017, (Nephelometric Method)	*BDL(**DL 1.0)	NTU	1	5

  
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## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTA method)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH <sub>3</sub> )	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rd Edition Year 2017 Method No. 4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall not be Detectable in any 100 ml sample	--

  
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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL/DW/09  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

**Report No.:** VEL/W/2203180009  
**Format No.:** 78F01  
**Party Reference No.:** NIL  
**Reporting Date:** 22/03/2022

**Sample Description:** Water Sample  
**Sampling Location:** Village- Mura Hand Pump Water  
**Sample Collected by:** Vardan EnviroLab Representative

**Period of Analysis:** 18-22/03/2022

**Receipt Date:** 18/03/2021

**Sampling Date:** 15/03/2021

**Sampling Type:** Grab

**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Parameters	Protocols	Results	Units	IS:10500-2012	
					Acceptable Limits	Permissible Limits
1	pH	IS3025 (P-11): 1983 Reaff. 2017	7.53	--	6.5to 8.5	No Relaxation
2	Total Dissolved Solids	IS3025 (P-16): 1984 Reaff 2017	338	mg/l	500	2000
3	Total Alkalinity (as CaCO3)	IS:3025 (Part 23): 1986, Reaff. 2019	162.8	mg/l	200	600
4	Total Hardness (as CaCO3)	IS:3025 (Part 21): 2009, Reaff. 2019	176.8	mg/l	200	600
5	Nitrate(as NO3)	IS:3025 (Part 34): 1988, Reaff. 2019	3.49	mg/l	45	No Relaxation
6	Chloride(as Cl)	IS:3025 (Part 32): 1988, Reaff. 2019	78.6	mg/l	250	1000
7	Sulphate(as SO4)	IS:3025(Part24):1986,Reaff.2019 Turbidity Method	25.8	mg/l	200	400
8	Calcium(as Ca)	IS:3025 (Part 40): 1991 Reaff. 2019	54.2	mg/l	75	200
9	Magnesium(as Mg)	IS:3025(Part46):1994,Reaff.2009 (EDTA method)	11.26	mg/l	30	100
10	Fluorides(as F)	APHA23rd Edition 2017, 4500 FD	0.35	mg/l	1.0	1.5
11	Total Iron (as Fe)	IS3025(P-53): 2003 Reaffirm 2019	0.22	mg/l	1.0	No Relaxation
12	Arsenic(as As)	APHA(23rd edition-2017), 3114 C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
13	Copper(as Cu)	APHA23rdEditionYear2017 MethodNo.3111B	*BDL(**DL-0.02)	mg/l	0.05	1.5
14	Zinc(as Zn)	APHA(23rdedition-2017),3030D, 3113 B	*BDL(**DL-0.20)	mg/l	5.0	15
15	Selenium(as Se)	APHA(23rd edition-2017), 3114C	*BDL(**DL-0.005)	mg/l	0.01	No Relaxation
16	Total Coll form (By MPN Method)	IS:1622	Absent	MPN/100 ml	Shall notbeDetectableInany100 ml sample	NA
17	E-Coll	IS:1622	Absent	per 100 ml	Absent/100 ml	Absent/100ml
18	Turbidity	IS3025(Part10):1984.Ref:2017, (Nephelometric Method)	*BDL(**DL-1.0)	NTU	1	5

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## Test Report

19	Aluminium	IS3025 (Part-55): 2003, Reaff. 2019	*BDL(**DL-0.03)	mg/l	0.03	0.2
20	Manganese(as Mn)	IS:3025(Part46):1994,Reaff.2019 (EDTA method)	*BDL(**DL-0.05)	mg/l	0.1	0.3
21	Ammonia(as NH <sub>3</sub> )	IS-3025(Part-34)- 1988, RA. 2019	*BDL(**DL-0.3)	mg/l	0.5	No Relaxation
22	Boron(as B)	APHA23rdEditionYear2017 MethodNo.4500B	*BDL(**DL-0.2)	mg/l	0.5	1.0
23	Cyanide(as CN)	APHA23rd Edition 2017, 4500CN D	*BDL(**DL-0.05)	mg/l	0.05	No Relaxation
24	Colour	IS3025: 1983 (P-4) RA. 2017	*BDL(**DL1.0)	Hazen Unit	5	15
25	Odour	IS3025 (P-5): RA. 2018	Agreeable	Qualitative	Agreeable	Agreeable
26	Taste	IS3025(P-8):1984 RA. 2017	Agreeable	Qualitative	Agreeable	Agreeable
27	Sulphide	IS:3025(Part29):1986,RA.2009 Turbidity Method	*BDL(**DL-0.05)	mg/l	200	400
28	Phenolic Compound	APHA23rd Edition 2017, 5530C	*BDL(**DL-0.001)	mg/l	0.001	0.002
29	Anionic Surface Active Agent	APHA23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l	0.2	1.0
30	Free Residual Chlorine	IS:3025 (Part 26): 1986 RA 2019	*BDL(**DL-0.2)	mg/l	0.2	1
31	Mineral Oil	IS3025(P-39)	*BDL(**DL-0.05)	mg/l	0.5	No Relaxation
32	Bariumas (Ba)	APHA3111B	*BDL(**DL-0.02)	mg/l	0.7	No Relaxation
33	Faecal Caliform	IS:1622	Absent	MPN/100 ml	Shall notbeDetectablein any100 ml sample	--

  
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(Authorized Signatory)



#### 4.4 Surface water Quality Analysis



**Figure.No. 6. Plan Showing Surface Water Quality Monitoring Location Map**

- Location Code: - SW1. Raikheda Talab  
SW2. Bangoli Dam  
SW3. Mura Talab  
SW4. Chhicholi Talah



# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/W/01	Report No.:	VEL/W/2203180001
Name & Address of Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2022
Sample Description:	Water Sample	Period of Analysis:	18-22/03/2022
Sampling Location:	Village- Raikheda (Pond Water)	Receipt Date:	18/03/2021
Sample Collected by	Vardan EnviroLab Representative	Sampling Date:	15/03/2021
Preservation:	Refrigerated	Sampling Type:	Grab
Sampling & Analysis Protocol:	IS-10500-2012	Sample Quantity:	2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.35	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff. 2017, (Nephelometric Method)	5	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff 2017	193.2	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	60.2	mg/l
7	Total Alkalinity (as CaCO <sub>3</sub> )	IS: 3025 (Part 23): 1986, Reaff. 2019	88.5	mg/l
8	Total Hardness (CaCO <sub>3</sub> )	IS: 3025 (Part 21): 2009, Reaff. 2019	102.8	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	32.9	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	3.59	mg/l
11	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.29	mg/l
12	Nitrate (as NO <sub>3</sub> )	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	2.88	mg/l
13	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
14	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
15	Dissolved oxygen	IS: 3025 (Part-38) : 1989, Ref: 2019	5.6	mg/l
16	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	4.2	mg/l
17	Chemical Oxygen Demand (COD)	IS : 3025 (Part 58) : 2006 Ref: 2017	19.5	mg/l
18	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

  
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## Test Report

Sample Number: VEL /W/01		Report No.: VEL/W/2203180001		
19	Zinc as (Zn)	APHA (23rd edition), 3030D,3113B	*BDL(**DL-0.20)	mg/l
20	Copper (Cu)	APHA (23rd edition), 3111B	*BDL(**DL-0.02)	mg/l
21	Lead as Pb	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.005)	mg/l
22	Arsenic as As	APHA (23rd edition), 3030D,3114C, 2017	*BDL(**DL-0.005)	mg/l
23	Cyanide as CN	APHA 4500 CN-D	*BDL(**DL-0.05)	mg/l
24	Aluminium as Al	IS 3025 (P-55) 2003, RA 2019	*BDL(**DL-0.03)	mg/l
25	Boron	APHA (23rd edition) 4500B, 2017	*BDL(**DL-0.2)	mg/l
26	Chromium as Cr	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.02)	mg/l
27	Cadmium as Cd	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.002)	mg/l
28	Selenium as Se	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.005)	mg/l
29	Mercury as Hg	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.0005)	mg/l
30	O & G	IS 3025 (P-39) 1991, RA 2019	*BDL(**DL-0.5)	mg/l
31	Sulphate as (SO4)	IS: 3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	11.26	mg/l
32	Iron	IS:3025(P-53):2003,RA.2019:2003	0.13	mg/l
33	Manganese as Mn	APHA3111B	*BDL(**DL-0.05)	mg/l

  
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## Test Report

Sample Number: VEL /DW/03		VEL/W/220318000		
19	Zinc as (Zn)	APHA (23rd edition), 3030D,3113B	*BDL(**DL-0.20)	mg/l
20	Copper (Cu)	APHA (23rd edition), 3111B	*BDL(**DL-0.02)	mg/l
21	Lead as Pb	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.005)	mg/l
22	Arsenic as As	APHA (23rd edition), 3030D,3114C, 2017	*BDL(**DL-0.005)	mg/l
23	Cyanide as CN	APHA 4500 CN -D	*BDL(**DL-0.05)	mg/l
24	Aluminium as Al	IS 3025 (P-55) 2003, RA 2019	*BDL(**DL-0.03)	mg/l
25	Boron	APHA (23rd edition) 4500B, 2017	*BDL(**DL-0.2)	mg/l
26	Chromium as Cr	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.02)	mg/l
27	Cadmium as Cd	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.002)	mg/l
28	Selenium as Se	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.005)	mg/l
29	Mercury as Hg	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.0005)	mg/l
30	O & G	IS 3025 (P-39) 1991, RA 2019	*BDL(**DL-0.5)	mg/l
31	Sulphate as (SO4)	IS: 3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	15.26	mg/l
32	Iron	IS:3025(P-53):2003,RA.2019:2003	0.23	mg/l
33	Manganese as Mn	APHA3111B	*BDL(**DL-0.05)	mg/l

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# Vardan EnviroLab


Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/DW/03	Report No.:	VEL/W/Z203180003
Name & Address of Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2022
Sample Description:	Water Sample	Period of Analysis:	18-22/03/2022
Sampling Location:	Village- Bangoli Dam (Pond Water)	Receipt Date:	18/03/2021
Sample Collected by:	Vardan EnviroLab Representative	Sampling Date:	15/03/2021
Preservation:	Refrigerated	Sampling Type:	Grab
Sampling & Analysis Protocol:	IS-10500-2012	Sample Quantity:	2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.25	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff: 2017, (Nephelometric Method)	3.0	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff.2017	199	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	68.2	mg/l
7	Total Alkalinity (as CaCO <sub>3</sub> )	IS: 3025 (Part 23): 1986, Reaff. 2019	124.6	mg/l
8	Total Hardness (CaCO <sub>3</sub> )	IS: 3025 (Part 21): 2009, Reaff. 2019	163.8	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	46.8	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	12.48	mg/l
11	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.36	mg/l
12	Nitrate (as NO <sub>3</sub> )	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	5.12	mg/l
13	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
14	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
15	Dissolved oxygen	IS : 3025 (Part-38) : 1989, Ref: 2019	5.1	mg/l
16	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	8.0	mg/l
17	Chemical Oxygen Demand (COD)	IS : 3025 (Part 58) : 2006, Ref: 2017	19.9	mg/l
18	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

  
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## Test Report

**Sample Number:** VEL/DW/04  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

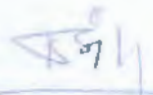
**Report No.:** VEL/W/2203180004  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 22/03/2022

**Sample Description:** Water Sample  
**Sampling Location:** Village- Mura (Pond Water)  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

**Period of Analysis:** 18-22/03/2022  
**Receipt Date:** 18/03/2021  
**Sampling Date:** 15/03/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.56	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff. 2017, (Nephelometric Method)	5.0	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff 2017	203.8	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	56.1	mg/l
7	Total Alkalinity (as CaCO3)	IS: 3025 (Part 23): 1986, Reaff. 2019	106.3	mg/l
8	Total Hardness (CaCO3)	IS: 3025 (Part 21): 2009, Reaff. 2019	105.1	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	34.8	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	3.32	mg/l
11	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.29	mg/l
12	Nitrate (as NO3)	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	4.36	mg/l
13	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
14	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
15	Dissolved oxygen	IS: 3025 (Part-38) : 1989, Ref: 2019	5.4	mg/l
16	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	5.8	mg/l
17	Chemical Oxygen Demand (COD)	IS : 3025 (Part 58) : 2006 Ref: 2017	29.8	mg/l
18	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

  
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## Test Report

Sample Number: VEL/DW/04		Report No.: VEL/W/2203180004		
19	Zinc as (Zn)	APHA (23rd edition), 3030D,3113B	*BDL(**DL-0.20)	mg/l
20	Copper (Cu)	APHA (23rd edition), 3111B	*BDL(**DL-0.02)	mg/l
21	Lead as Pb	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.005)	mg/l
22	Arsenic as As	APHA (23rd edition), 3030D,3114C, 2017	*BDL(**DL-0.005)	mg/l
23	Cyanide as CN	APHA 4500 CN -D	*BDL(**DL-0.05)	mg/l
24	Aluminium as Al	IS 3025 (P-55) 2003, RA 2019	*BDL(**DL-0.03)	mg/l
25	Boron	APHA (23rd edition) 4500B, 2017	*BDL(**DL-0.2)	mg/l
26	Chromium as Cr	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.02)	mg/l
27	Cadmium as Cd	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.002)	mg/l
28	Selenium as Se	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.005)	mg/l
29	Mercury as Hg	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.0005)	mg/l
30	O & G	IS 3025 (P-39) 1991, RA 2019	*BDL(**DL-0.5)	mg/l
31	Sulphate as (SO4)	IS: 3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	13.49	mg/l
32	Iron	IS:3025(P-53):2003.RA.2019:2003	0.25	mg/l
33	Manganese as Mn	APHA3111B	*BDL(**DL-0.05)	mg/l

  
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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL/DW/02  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda,  
Dist- Raipur Chhattisgarh

**Report No.:** VEL/W/2203180002  
**Format No.:** 7.8 F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 22/03/2022

**Sample Description:** Water Sample  
**Sampling Location:** Village- Chicholi (Pond Water)  
**Sample Collected by:** Vardan EnviroLab Representative  
**Preservation:** Refrigerated  
**Sampling & Analysis Protocol:** IS-10500-2012

**Period of Analysis:** 18-22/03/2022  
**Receipt Date:** 18/03/2021  
**Sampling Date:** 15/03/2021  
**Sampling Type:** Grab  
**Sample Quantity:** 2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.33	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff. 2017, (Nephelometric Method)	2.0	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff 2017	273.4	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	72.8	mg/l
7	Total Alkalinity (as CaCO3)	IS: 3025 (Part 23): 1986, Reaff. 2019	128.6	mg/l
8	Total Hardness (CaCO3)	IS: 3025 (Part 21): 2009, Reaff. 2019	149.2	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	38.6	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	12.14	mg/l
11	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.29	mg/l
12	Nitrate (as NO3)	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	5.21	mg/l
13	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
14	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
15	Dissolved oxygen	IS: 3025 (Part-38) : 1989, Ref: 2019	5.3	mg/l
16	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	10.8	mg/l
17	Chemical Oxygen Demand (COD)	IS : 3025 (Part 58) : 2006, Ref: 2017	29.1	mg/l
18	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

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#### 4.5 Soil Quality Analysis



**Figure No. 8. Plan Showing Soil Sample Monitoring Location Map**

LocationCode:-

- S1- Near Field Hostel
- S2- Raikheda Village
- S3- Mura Village
- S4- Gaitara Village
- S5- Chhicholi Village





## Test Report

**Sample Number:** VEL/S0/01 **Report No.:** VEL/S0/2203180001  
**Name & Address of the Party :** M/s Raipur Energen Limited **Format No.:** 7.8 F 01  
Formerly GMR Chhattisgarh Energy Ltd  
**Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh** **Party Reference No.:** NIL  
**Reporting Date:** 22/03/2022  
**Period of Analysis :** 18/03/2022 to 22/03/2022  
**Receipt Date:** 18/03/2022  
**Sample Description :** SOIL **Sampling Date:** 15/03/2022  
**Sample Location :** Near Field Hostel **Sample Quantity:** 2 kg.  
**Sample Collected By:** VEL Team **Sampling Type:** Composite  
**Parameter Required :** As per work order **Packing Status:** Temp. Sealed  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26): 1987,RA: 2016	7.24	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.154	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Water holding capacity	USDA:1954-Reaffirmed,2010	25.77	%
5	Bulk density	USDA:1954(Page-121) RA: 2014	1.22	gm/cc
6	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	243.85	mg/kg
7	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	254.95	mg/kg
8	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	141.6	mg/kg
9	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	85.9	Kg/hec.
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.63	%
11	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	146.8	mg/kg
12	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	243.1	kg./hec.
13	Total Zinc (as Zn)	USEPA3050 B: 1996	49.8	mg/kg
14	Total Manganese (as Mn)	USEPA3050	171.3	mg/kg
15	Total Chromium (as Cr)	USEPA3050 B:1996	5.11	mg/kg
16	Total Lead (as Pb)	USEPA3050 B: 1996	13.24	mg/kg
17	Total Cadmium (as Cd)	USEPA3050	8.52	mg/kg
18	Total Copper (as Cu)	USEPA3050 B: 1996	11.21	mg/kg
19	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
20	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	40.26	kg./hec.

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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

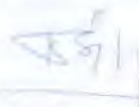
**Sample Number:** VEL/SO/02  
**Name & Address of the Party :** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh

**Report No.:** VEL/SO/2203180002  
**Format No.:** 7.B F 01  
**Party Reference No.:** NIL  
**Reporting Date:** 22/03/2022  
**Period of Analysis :** 18/03/2022 to 22/03/2022

**Sample Description :** SOIL  
**Sample Location :** Village- Raikheda  
**Sample Collected By:** VEL Team  
**Parameter Required :** As per work order  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA

**Receipt Date:** 18/03/2022  
**Sampling Date:** 15/03/2022  
**Sample Quantity:** 2 kg.  
**Sampling Type:** Composite  
**Packing Status:** Temp. Sealed

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26): 1987,RA: 2016	7.28	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.141	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
5	Water holding capacity	USDA:1954-Reaffirmed,2010	35.52	%
6	Bulk density	USDA:1954(Page-121) RA: 2014	1.17	gm/cc
7	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	69.85	mg/kg
8	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	254.1	Kg/hect.
9	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	173.1	mg/kg
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.55	%
11	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	52.45	kg./hect.
12	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	391.2	mg/kg
13	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	128.5	mg/kg
14	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	210.4	kg./hect.
15	Total Zinc (as Zn)	USEPA3050 B: 1996	66.5	mg/kg
16	Total Manganese (as Mn)	USEPA3050	196.7	mg/kg
17	Total Chromium (as Cr)	USEPA3050 B:1996	5.26	mg/kg
18	Total Lead (as Pb)	USEPA3050 B: 1996	20.08	mg/kg
19	Total Cadmium (as Cd)	USEPA3050	8.88	mg/kg
20	Total Copper (as Cu)	USEPA3050 B: 1996	15.96	mg/kg

  
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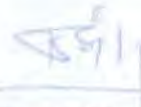




## Test Report

**Sample Number:** VEL/SO/04 **Report No.:** VEL/SO/2203180004  
**Name & Address of the Party :** M/s Raipur Energen Limited **Format No.:** 7.8 F 01  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh **Party Reference No.:** NIL  
**Reporting Date:** 22/03/2022  
**Period of Analysis :** 18/03/2022 to 22/03/2022  
**Receipt Date:** 18/03/2022  
**Sample Description :** SOIL **Sampling Date:** 15/03/2022  
**Sample Location :** Village- Gaitara **Sample Quantity:** 2 kg.  
**Sample Collected By:** VEL Team **Sampling Type:** Composite  
**Parameter Required :** As per work order **Packing Status:** Temp. Sealed  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26): 1987,RA: 2016	7.37	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.176	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
5	Water holding capacity	USDA:1954-Reaffirmed,2010	35.62	%
6	Bulk density	USDA:1954(Page-121) RA: 2014	1.28	gm/cc
7	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	60.12	mg/kg
8	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	206.9	Kg/hec.
9	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	149.1	mg/kg
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.65	%
11	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	48.62	kg/hec.
12	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	402.6	mg/kg
13	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	202.1	mg/kg
14	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	197.6	kg/hec.
15	Total Zinc (as Zn)	USEPA3050 B: 1996	55.8	mg/kg
16	Total Manganese (as Mn)	USEPA3050	188.2	mg/kg
17	Total Chromium (as Cr)	USEPA3050 B:1996	6.21	mg/kg
18	Total Lead (as Pb)	USEPA3050 B: 1996	22.58	mg/kg
19	Total Cadmium (as Cd)	USEPA3050	5.06	mg/kg
20	Total Copper (as Cu)	USEPA3050 B: 1996	12.84	mg/kg

  
(Checked By)

  
(Authorized Signatory)








## Test Report

**Sample Number:** VEL/SO/05 **Report No.:** VEL/SO/2203180005  
**Name & Address of the Party :** M/s Raipur Energen Limited **Format No.:** 7.8 F 01  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh **Party Reference No.:** NIL  
**Reporting Date:** 22/03/2022  
**Period of Analysis :** 18/03/2022 to 22/03/2022  
**Sample Description :** SOIL **Receipt Date:** 18/03/2022  
**Sample Location :** Village- Chicholi **Sampling Date:** 15/03/2022  
**Sample Collected By:** VEL Team **Sample Quantity:** 2 kg.  
**Parameter Required :** As per work order **Sampling Type:** Composite  
**Sampling and Analysis Protocol:** IS 2720, APHA & USDA **Packing Status:** Temp. Sealed

S. No.	Parameters	Test Method	Results	Units
1	pH(at 25°C)	IS: 2720 (P- 26): 1987,RA: 2016	6.88	-
2	Electrical Conductivity	IS14767: 2000 RA:2016	0.145	mS/cm
3	Colour	USDA:1954-Reaffirmed,2010	Grey	-
4	Soil Texture	IS:2720(P-4) RA:2006	Silty Clay	--
5	Water holding capacity	USDA:1954-Reaffirmed,2010	36.84	%
6	Bulk density	USDA:1954(Page-121) RA: 2014	1.22	gm/cc
7	Chloride	USDA:1954Method 13 (Page-98) RA: 2010	77.2	mg/kg
8	Potassium(as K)	Lab SOP no. VEL/STP/01: 2018	281.6	Kg/hect.
9	Sodium(as Na)	USDA:1954Method 10A (Page-96) RA: 2010	169.8	mg/kg
10	Organic Matter	IS2720 (P-22) 1972 RA:2015	0.52	%
11	Available Phosphorus	Lab SOP No.VEL/STP/01:2018	50.36	kg./hect.
12	Calcium(as Ca)	Lab SOP no. VEL/STP/01: 2018	376.8	mg/kg
13	Magnesium(as Mg)	Lab SOP no. VEL/STP/01: 2018	160.5	mg/kg
14	Available Nitrogen (as N)	IS: 14684,1999 RA: 2015	223.5	kg./hect.
15	Total Zinc (as Zn)	USEPA3050 B: 1996	60.56	mg/kg
16	Total Manganese (as Mn)	USEPA3050	234.9	mg/kg
17	Total Chromium (as Cr)	USEPA3050 B:1996	6.29	mg/kg
18	Total Lead (as Pb)	USEPA3050 B: 1996	21.95	mg/kg
19	Total Cadmium (as Cd)	USEPA3050	5.52	mg/kg
20	Total Copper (as Cu)	USEPA3050 B: 1996	14.26	mg/kg

  
(Checked By)

  
(Authorized Signatory)



#### 4.6 Waste Water Sample Analysis Report



#### Locations

1. STP Outlet





# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

**Sample Number:** VEL /WW/01  
**Name & Address of Party:** M/s Raipur Energen Limited  
Formerly GMR Chhattisgarh Energy Ltd  
Village- Raikheda, Block- Tilda, Dist- Raipur  
Chhattisgarh  
**Sample Description:** Waste Water  
**Sampling Location :** STP Outlet  
**Sample Collected by:** Vardan EnviroLab Representative

**Report No.:** VEL/WW/2203180001  
**Format No.:** 7.8 F-01  
**Party Reference No.:** NIL  
**Reporting Date:** 22/03/2022  
**Period Analysis:** 18/03/2022 to 22/03/2022  
**Receipt Date:** 18/03/2022  
**Sampling Date:** 15/03/2022  
**Sampling Quantity:** 2 Ltr.  
**Parameter Required:** As per Work Order

### TEST RESULT

S. No.	Parameter	Test Method	Result	Unit	Prescribed Limits
1.	pH	IS 3025(P-11):1983.RA.2017	7.29	-	5.5-9.0
2.	Total Suspended Solids	IS 3025(P-17):1984.RA.2017	20.3	mg/l	100.0
3.	Oil & Grease	IS 3025(P-39):1991.RA.2019	1.9	mg/l	10.0
4.	BOD(3 days @ 27°C )	IS 3025(P-44):1993.RA.2019	12.5	mg/l	30.0
5.	COD	IS 3025(P-58):2006.RA.2017	69.2	mg/l	250.0

  
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#### **4.7 Stack Emission Analysis Report**

##### Locations

1. TPP (Unit-1)
2. TPP (Unit-2)









# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number: VEL/REL/S/02 Report No.: VEL/S/2203180002  
Name & Address of Party: M/s Raipur Energen Limited Format No.: 5.10 F-01  
Formerly GMR Chhattisgarh Energy Ltd Party Reference No.: NIL  
Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh Reporting Date: 22/03/2022  
Period of Analysis: 18/03/2022 to 12/03/2022  
Receipt Date: 16/03/2022

### Sample Description : STACK EMISSION MONITORING

Sample Collected : VEL Team  
Date & Time of Sampling : 16/03/2022  
Location : TPP (Unit-II)  
Sampling duration (Minutes) : 35.0 & (12:00 to 12:35 Hrs.)  
Meteorological Condition : Clear Sky  
Stack Attached : ESP  
Stack Diameter : 7.5 m  
Stack Height : 275 m  
Instrument calibration status : Calibrated  
Ambient Temperature - Ta (°C) : 25  
Temperature of Stack Gases - Ts (°C) : 130  
Velocity of Stack Gases (m/sec.) : 20.52  
Flow rate of PM (LPM) : 29  
Total Gas Quantity : 3123660.0 Nm<sup>3</sup>/hr  
Sampling condition : Isokinetic  
Protocol used : IS-11255 & EPA

### RESULTS

S. No.	Parameter	Protocol	Results	Units	Limits
1.	Particulate Matter (as PM)	IS 11255 (P-1):1985,RA,2014	44.85	mg/Nm <sup>3</sup>	50.0
2.	Sulphur Dioxide (as SO <sub>2</sub> )	IS: 11255 (p-2)1985, RA, 2014	1086.9	mg/Nm <sup>3</sup>	--
3.	Ammonia (as NH <sub>3</sub> )	IS:11255 (P-6):1999,RA,2014	8.84	mg/Nm <sup>3</sup>	--
4.	Hydrogen Sulphide	IS:11255 (P-4):2006,RA,2014	1.68	mg/Nm <sup>3</sup>	--
5.	Oxide of Nitrogen (as NO <sub>2</sub> )	IS 11255 (P-7)RA,2017	422.8	mg/Nm <sup>3</sup>	--
6.	Water Vapor	Gas Analyzer	3.26	%	--
7.	Carbon Monoxide (as CO)	CO By Analyzer	6.32	mg/Nm <sup>3</sup>	--
8.	Carbon Dioxide	IS:13270, Orsat Analysis ,RA 2005	7.76	%	--
9.	Oxygen	SOP, SP-188, Issue No. 01.2018	5.64	%	--
10.	Mercury (as Hg)	APHA 3rd ed,2017, 303A (Page No. 365)	BDL(DL0.005)	mg/Nm <sup>3</sup>	0.03

BDL\*(Below Detection Limit) \*\* (DL Detection Limit)

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## Chapter - 5.0 CONCLUSION

RAIPUR ENERGEN LIMITED., authorities have been taken successful steps in controlling environmental pollution in and around the project. This fact is clear from analytical results of different environmental parameters. A brief conclusion is as follows.

Sr. No.	Environmental Parameters	Conclusion
5.1	Air Environment	After analysis of the samples from five different locations it is observed that both the individuals and average concentration of air pollutants in respect of SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , CO and Mercury are well within the prescribed limits of NAAQM standards. People of township and of surrounding villages do not have any problems regarding the air quality and have no grievances because of Thermal Power Plant activities.
5.2	Water Environment	The analytical result of the samples from the ground water of villages, surface water from river, and domestic & industrial effluent after treatment shows that the concentrations of different water parameters are well within prescribed limits and will not cause any adverse impact on human health and on surrounding area. People of surrounding areas express satisfaction about the water quality of That area.
5.3	Noise Environment	The observations taken at four village location during day and night time shows that the noise level are well within prescribed limits of CPCB. Hence there is no possibility of any adverse effect of noise generated due to Thermal Power Plant activities on people of Surrounding areas.

All the above details show that Thermal Power Plant of RAIPUR ENERGEN LIMITED. is not causing any adverse impact on the human health and ecological balance.

Rainwater Harvesting Ponds at our Site







# RAIPUR ENERGEN LIMITED

## COOLING TOWER WATER ANALYSIS REPORT MARCH 2022

DATE	COC
1-Mar-22	7.1
2-Mar-22	7.2
3-Mar-22	7.1
4-Mar-22	7.1
5-Mar-22	7.6
6-Mar-22	7.1
7-Mar-22	7.3
8-Mar-22	7.4
9-Mar-22	7.5
10-Mar-22	7.0
11-Mar-22	7.1
12-Mar-22	7.0
13-Mar-22	7.3
14-Mar-22	7.5
15-Mar-22	7.5
16-Mar-22	7.4
17-Mar-22	7.6
18-Mar-22	7.5
19-Mar-22	7.5
20-Mar-22	7.5
21-Mar-22	7.4
22-Mar-22	7.0
23-Mar-22	7.4
24-Mar-22	7.4
25-Mar-22	7.3
26-Mar-22	7.5
27-Mar-22	7.5
28-Mar-22	7.6
29-Mar-22	7.4
30-Mar-22	7.2
31-Mar-22	7.2

Digitally signed by  
Biswajit Jena  
Date: 2022.04.12  
10:41:35 +05'30'

Analyzed By

Chemistry Department (REL)

Sanjeev  
Kumar Jha

Digitally signed by  
Sanjeev Kumar Jha  
Date: 2022.04.12  
10:48:17 +05'30'

Verified by

Head-Chemistry (REL)

**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

**Fly Ash Generation & Utilization Details**

Sl. No.	Ash Generation & Utilization (LMT)				Mode of Ash Utilization and Utilization in Each Mode (LMT)				
	Month	Ash Generation	Ash Utilization	% age Utilization	In making of Fly Ash based Bricks / Blocks / Tiles etc.	In construction of Portland Pozzolana Cement	In construction of Highways & Roads including Flyovers	In Reclamation of Low-Lying Area	In Mine Filing (Pond Ash reutilization)
1	October -21	1.664	1.751	105.19	0.023	0.768	0.023	0.156	0.782
2	November -21	0.883	1.233	139.72	0.000	0.706	0.000	0.000	0.527
3	December-21	1.231	1.573	127.74	0.100	0.626	0.026	0.134	0.686
4	January -22	1.834	1.834	100.00	0.031	1.210	0.022	0.204	0.367
5	February - 22	1.708	1.708	100.00	0.040	1.028	0.026	0.272	0.342
6	March -22	2.092	2.092	100.00	0.033	1.241	0.020	0.380	0.418
<b>TOTAL</b>		<b>9.412</b>	<b>10.190</b>	<b>108.27</b>	<b>0.227</b>	<b>5.578</b>	<b>0.117</b>	<b>1.146</b>	<b>3.122</b>



**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

**Green Belt Development Details at Raipur Energen Limited, Raikheda  
2021-22 (till 31.03.2022)**

Sl. No.	Description	Quantity / Unit
1	Plantation on 33% land of 850 acres	280 acres
2	Density of plantation	2500 plants / Hectare
3	Area required per plant	4.0 SQM
4	Total no. of plantation since commissioning	217762 Nos.
5	Total no. of plantation in FY 2020-21	9718 Nos.
6	Total no. of plantation in FY 2021-22 (till 31.03.2022)	6714 Nos.
7	Survival Rate	>90%

**Plant species Planted at Raipur Energen Limited, Raikheda  
2021-22 (till 31.03.2022)**

Sr. No.	Location	Area in (Hect.)	Tree (No.)	Tree Spp.	Shrubs (Sq. Mt.)	Green Carpet (Sq. Mt.)	Palm (No.)	Remarks
1	Hostel Premises	0.150	60	Ficus religiosa	0	0	0	Planted in Sept'2021
		0.150	60	Ficus bengalensis	0	0	0	
		4.500	1800	Azadiracta indica	0	0	0	
		4.500	1800	Cassia fistula	0	0	0	
		1.920	1200	Delonix regia	0	0	0	
		1.280	800	Mimosaops illengii	0	0	0	
		0.064	40	Ashoka pendula	0	0	0	
		0.030	0	Pots	300	0	0	
		<b>12.594</b>	<b>5760</b>		<b>300</b>	<b>0</b>	<b>0</b>	
2	Fire building to Technical building.	0.544	0	Lawn	0	5441	0	01.02.2022 to 28.03.2022
		0.002	0	Cycus Palm	0	0	16	
		0.001	0	Fox Tail Palm	0	0	12	
		0.001	0	Royal Palm	0	0	8	
		0.001	0	Phoenix Palm	0	0	12	
		0.001	0	Coconut Palm	0	0	12	
		0.002	0	Plueria Red	0	0	20	
		0.128	0	Shrubs	1280	0	0	
		0.007	0	Hedges	70	0	0	
		<b>0.687</b>	<b>0</b>		<b>1350</b>	<b>5441</b>	<b>80</b>	
3	Nursery Development (Capacity: 144000 Number Saplings incl. all species)	0.250	100	Mangifera indica	0	0	0	23.12.2021 to 28.03.2022
		0.150	60	Sapota	0	0	0	
		0.150	60	Psidium guavajava	0	0	0	
		0.150	60	Lemon	0	0	0	
		0.170	68	Azadiracta indica	0	0	0	
		0.075	30	Pongamia gabra	0	0	0	
		0.075	30	Delonix regia	0	0	0	
0.075	30	Cassia fistula	0	0	0			

**Raipur Energen Limited**  
1370 MW (2x685 MW) Coal Based Thermal Power Plant

	0.189	210	Cono carpus	0	0	0	
	0.150	60	Mimusoaps illengii	0	0	0	
	0.063	210	Ashoka pendula	0	0	0	
	0.030	12	Eagal marmelose	0	0	0	
	0.030	12	Ficus religiosa	0	0	0	
	0.030	12	Ficus bengalensis	0	0	0	
	0.006	0	Seasonal Flower Beds	60	0	0	
	0.030	0	Seasonal Pots	300	0	0	
	0.030	0	Ornamental Pots	300	0	0	
	0.120	0	Ornamental Shrubs	1200	0	0	
<b>Total</b>	<b>1.773</b>	<b>954</b>		<b>1860</b>	<b>0</b>	<b>0</b>	
<b>Grand Total</b>	<b>15.050</b>	<b>6714</b>		<b>3510</b>	<b>5441</b>	<b>80</b>	



**Station Name : REL, Raipur**

**Department : CSR**

**Financial Year: 2021-22**

**adani**

Growth  
with  
Goodness



# CSR Highlights For the F.Y- 2021-22

## Education

### Education:- (Beneficials- 500 Students).

- **Navodaya Coaching Centre:-** 105 students are studying at Navodaya Coaching Centre at Raikheda, Bhatapara, Gaitra, Khapri, Chicholi, Gourkheda & Murra. (Nos. Students Selected at Javahar Navodaya School, Mana Camp, Raipur)
- **Prayas 30 Coaching:-** Competitive Exam Coaching to 30 nos. students with support from Retired Army Officers Association, Tilda. 03 students cleared CG Police Force Recruitment Entrance Exam.
- **Noni Laari –** Bus service facility started for girl's students to support in commuting from village to Govt. PG College, Tilda. Daily approx.. 60-70 college going girls are taking benefit from this service
- **Awareness programs &** sessions organized on road safety, 5S, Teachers Day Celebration at vicinity villages.

## Community Health

### Health:- (Beneficiaries :- 23246 Nos.)

- **Mobile Medical Health Van:-** Medical Van with free medical consultancy & medicines is operational in 16 REL plant projects villages. Total 21,748 patients benefitted.
- **Specialized Health Camp:-** Organized Specialized Health check up camp (Pediatric & Orthopedic) at village Tulsi, Raikheda, Murra & Chicholi. Total population benefitted from camp approx. 770 nos.
- **Gyneac Camp :-** Regular Monthly Gyneac Health Camps organized with 728 Beneficiaries.



# CSR Highlights For the F.Y- 2021-22

## Sustainable Livelihood Development

### SLD:- (Beneficiaries- 1249 Nos.)

- **SRI cultivation** – 23 farmers have cultivated paddy through SRI method, received average production of 20 quintal per acre.
- **Farmers Training Program** – 30 farmers from village Raikheda, Chicholi, Gaitra, Bartori attended exposure cum training program at Krishi Vigyan Kendra, Raipur on dated 15/12/21.
- **Back Yard Badi Development:-** Vegetable Seeds kits distributed to 30 household family at Chicholi, Raikheda, Gourkheda villages.
- **Survey & Data Collection of Particulars-** 1. Soil Testing- 46 farmers, 2. Local village Shops – 128 women, local Kirana Shop- 48 nos.
- **IGA Program:-** Women's garment sewing project started at Production Centre (Adani Foundation). 15030 garments sewed & supplied to buy back vendor.
- **Gou Jattan:-** Ongoing & continuous Vaccination, Deworming of Cattles. Dairy Development Training Cum Exposure visit of 80 cattle owners at Sharda Dairy Kharora.
- **Vermi- Bed Distribution-** Farmers Household, Beneficials-250 nos.

## Community Infrastructure Development

### CID:- (Beneficiaries- 10000 Nos. approx.)

- 220 MTR C.C. Road for infrastructure development work at Bartori, Chicholi & Bartori.
- 250 sets LED Street light distribution in Raikheda, Gaitra, Chicholi Gram Panchayat completed.
- Temple renovation at Bahesar Village.
- Borewell digging & submersible pump fitting work at CHC, Tilda.
- Drinking Water Infrastructure of water Pipeline Installation work at Raikheda & Gaitra village.
- Gaushala Shed Construction at Banjari Temple is under progress.
- Construction of "Science Laboratory Platform Construction" at Govt. PG College, Tilda
- Repair & Maintenance of Bhatpara- Murra road under progress.
- 40 LED lights donation at Banjari Temple Community place.
- Dustbins 25 units donated at Banjari Temple Community place.

# Education

2021-22

Navodaya Coaching Center (6 Villages Covering 105 students) :-

Year	Raikheda	Gaitra	Chicholi	Tarashiv	Total
2011		3			3
2012		2			2
2013			1		1
2014	1	2			3
2015	1				1
2016		2			2
2017	4	1	1		6
2018		2		3	5
2019	3		2	3	8
2020	1	3		2	6
2021	2		1	5	8
<b>Total Selected:-</b>	<b>12</b>	<b>15</b>	<b>5</b>	<b>13</b>	<b>45</b>



Lakshya Sahu,  
Chicholi



Vaishnavi Nayak,  
Raikheda



Sandeep Verma,  
Raikheda



Nidhi Sharma,  
Tarashiv



Saurabh Sur,  
Tarashiv



Meenaxi Verma,  
Tarashiv



Tripti Sen,  
Tarashiv



Vashu Verma,  
Tarashiv



## PRAYAS Coaching & 5S Training :-

- **Prayas:-** 35 students from local villages are preparing for Defense/ Police Force entrance exam from our Prayas Coaching center located in CSR office, REL Raikheda. Physical Training to students is being imparted & supported by retired Army Federation, Tilda.
- **Awareness Programs:- 5S, Safety & Handwash day** 5S training to community enables to learn discipline & effectively execution of work in timebound manner. 50 community members participated in training organized in REL office conference hall.

Prayas Students (Police Written Exam Cleared)



Dhaleshwar  
Kumar



Kailash  
Verma



Prakash  
Kumar



5S Training at REL for Community Members

PRAYAS  
Coaching



Hand Wash  
Day  
Celebration  
at  
Schools

- **Nooni Laari**
- **Joyful Learning Space**

1. Facilitating higher education for girls, Adani Foundation (REL) initiated free transportation facility for college going girls from villages to Government PG College, Tilda. Approximately 60-70 girl's students are getting benefitted from the program.
2. Renovation of Government Middle School, Raikheda to enhance educational Infrastructure Facility in schools creating favorable conditions for learning space.





## Nooni Laari

**Nooni Laari:-** REL (Adani Foundation, Raipur) has initiated the Bus service for transportation & commuting of College going girl's students. Approximately 60-70 girls from REL plant area villages to Government PG College, Tilda. The approximate distance from Raikheda to College is 20 Kms, hence due to far distance village girls faces issues in commuting to college & their higher studies gets disturbed. Due to this reason, many girls leaves their studies post 12<sup>th</sup> class.



## बालिकाओं को शिक्षा से जोड़ने नोनी लॉरी बस की सेवा की शुरुआत



रायपुर (विश्व परिवार)। बालिकाओं के लिए ग्राम पंचायत रायखेड़ा से महाविद्यालय कोहका तिल्दा तक नोनी लॉरी निशुल्क बसकी शुरुआत की है। अदाणी फाउंडेशन रायपुर अपनी सामाजिक दायित्व का निर्वहन करते हुए रायपुर एनर्जेंस लिमिटेड, रायखेड़ा के नजदीक स्थित 7 गांवों जैसे रायखेड़ा, गैतारा, चिचोली, सोनतरा, ताराशिव, बरतोरी और खमरिया की लगभग 65 बालिकाएं शासकीय महाविद्यालय कोहका, तिल्दा एवं परिवहन के लिए इस बस सेवा की शुरुआत की। इस बस सेवा का मुख्य उद्देश्य बालिकाओं के शिक्षा स्तर को बढ़ाते हुए सही समय और कम खर्च पर उच्च शिक्षा हेतु प्रोत्साहित करना है।

## अदाणी फाउंडेशन ने शुरू किया 'नोनी लॉरी' बस सेवा

रायपुर। अदाणी फाउंडेशन रायपुर ने अत्याधुनिक बालिकाओं को शिक्षा से जोड़ने हेतु ग्राम पंचायत रायखेड़ा से महाविद्यालय कोहका तिल्दा तक 'नोनी लॉरी' निशुल्क बस सेवा की शुरुआत की है। रायपुर एनर्जेंस लिमिटेड, रायखेड़ा के नजदीक स्थित 7 गांवों जैसे रायखेड़ा, गैतारा, चिचोली, सोनतरा, ताराशिव, बरतोरी और खमरिया की लगभग 65 बालिकाएं शासकीय महाविद्यालय कोहका, तिल्दा तक परिवहन के लिए इस बस सेवा का उपयोग करेंगी। इस बस सेवा का मुख्य उद्देश्य बालिकाओं के शिक्षा स्तर को बढ़ाते हुए सही समय और कम खर्च पर उच्च शिक्षा हेतु प्रोत्साहित करना है। गौरवस्तव है कि ग्राम रायखेड़ा से महाविद्यालय के बीच की दूरी लगभग 20 किलोमीटर है।

## Mobile Medical Health Care Unit :-

- **MMHCU:-** Primary Health Care Services facility is provided in 16 villages through MMHCU with free of cost medical facility to villagers by team of experienced Doctor, Nurse & Pharmacist.
- We also provide door to door service through MMHCU in case of emergency as per extension of health services.



Month (2021-22)	Gen.	Skin	ENT/ Dental	Cardiovascular	Ophthalmic.	Gastro Intestine	RTI	Renal & Genitourinary	Neuro/ Muscular	Gyneac/ Obs.	Cancer & Others	Total
April	571			813								1384
May	379			862								1241
June	367			924								1291
July	325			816								1141
August	401	46	22	691	15	39	285	3				1502
Sep.	470	33	96	509	60	164	427	5	18	21	0	1803
Oct.	564	63	28	606	15	78	598	10	6	34	0	2002
Nov.	635	35	17	576	14	84	569	9	111	47	0	2097
Dec.	611	61	4	562	21	65	707	37	214	9	73	2364
Jan.	449	67	0	643	19	147	935	18	172	32	0	2482
Feb.	528	85	17	602	39	98	694	23	166	52	0	2304
Mar.	517	70	9	656	28	116	534	21	149	37		2137
<b>Total:-</b>	<b>5817</b>	<b>460</b>	<b>193</b>	<b>8260</b>	<b>211</b>	<b>791</b>	<b>4749</b>	<b>126</b>	<b>836</b>	<b>232</b>	<b>73</b>	<b>21748</b>



- Specialized Health Camps  
(Pediatric & Orthopedic)
- GYNEAC Health Camp

## Organized Health Camps at villages:-

- Specialized Health Camps (Pediatric & Orthopedic)- Beneficiaries 770 Nos.
- Gynec Health Camps:- Beneficiaries 728 Nos.





## Oxygen Plant

**Adani Foundation (REL- Raikheda)** installed Oxygen Plant each at Community Health Center Tilda & Kharora. (2 Nos.)





# COMMUNITY HEALTH OXYGEN PLANT 2021-22



## तिल्दा, खरोरा सीएचसी में लगा ऑक्सीजन प्लांट



हरिद्वीज ब्यूज | रायपुर

■ जरूरत पड़ने पर कोरोना मरीजों के लिए होगा उपयोग

तिल्दा व खरोरा के सामुदायिक स्वास्थ्य केंद्र में कोरोना के मरीजों को अगर ऑक्सीजन की आवश्यकता होती है, तो वहां के प्लांट में इसका उत्पादन होगा। अहांनी पाँवर के सहयोग से डेढ़ करोड़ की लागत से यहाँ ऑक्सीजन प्लांट तैयार किया गया है। दोनों प्लांट का निरीक्षण कर उनमें स्वास्थ्य विभाग को सौंपा गया है।

दोनों स्वास्थ्य केंद्रों में संयंत्र के लिए अनुकूल जगह और जरूरी तकनीकी व्यवस्था के मुताबिक नई दिल्ली की एक कंपनी से वरार कर संयंत्र लगाने का काम पूरा किया गया है। संयंत्र की ऑक्सीजन उत्पादन क्षमता 30 क्यूबिक मीटर

प्रति घंटा यानी प्रतिदिन करीब 100 नग सिलिंडर के बराबर है। संयंत्र से ऑक्सीजन गैस पाइपलाइन के जरिए अस्पताल के वाडों के मरीजों के विस्तर तक पहुंचेगा। ऑक्सीजन प्लांट के हस्तांतरण का औपचारिक पत्र जिले की मुख्य चिकित्सा अधिकारी डॉ. मीरा बघेल को रायपुर में सौंपा गया। हस्तांतरण की प्रक्रिया के दौरान मुख्य चिकित्सा अधिकारी के कार्यालय से मनीष मेजरवार, अधिपंक सिंह तथा गजेंद्र डोगरे मौजूद थे। अदाणी पाँवर के रायपुर एनर्जि से स्टेशन प्रमुख रामभव गट्ट, पृथ्वीराज खाहिड़ी, दीपक सिंह उपस्थित थे।

## Adani Power provides oxygen plants to combat COVID-19 pandemic

■ Staff Reporter  
BAMNIP, Jan 12

OXYGEN plants have been setup at CHC, Tilda and CHC Khairia under Corporate Social Responsibility (CSR) activity of Adani Power Energy Limited. The oxygen plants will help administration battle against Covid-19. The station head Gattu Ram/Manoj Anil Roy Chaudhary, Prithvi Raj/Kahin, Deepak Singh,

Kanak Agrawal presented the plants to the Chief Medical and Health Officer Dr Meera Baghel on Wednesday.

The capacity of oxygen plant is about 100 cylinders per day. CHMO Dr Baghel thanked Adani Power for the support in this crisis. DPM Manish Majorwar, Adhishok Singh (DM IDSP) and Executive Media in-charge Gajendra Dange were present on this occasion.



The oxygen plant donated by Adani group

## SuPoshan

SuPoshan Program initiated at Raikheda, Bhatapara, Gaitara, Chicholi & Gaurkheda village in the view of proper Care & nutrition to pregnant & lactating mothers.

Total Anthropometry	Total SAM identified	Total MAM identified	Total Healthy identified
930	95	213	622

Particulars	Total No.	No. of villages	No. of participants
Child Anthropometry	930	6	930
Family Counselling	272	6	921
Focus Group Discussion	248	6	1240
Cooking Demonstration	62	6	474
Mass awareness	Poster, Wall writing, Slogan, Rally, Hand Wash & Food Day	6	456
Webinar	2		2
Tele-Counselling	8	6	485
Kitchen Garden	107	6	107
Other (Trainings - )	1	6	15





## SuPoshan Program Health Interventions



## Income Generation Activity

- To encourage women self help groups to Income Generation Activity.
- Arranging support assistance for training, exposure visits as per requirement.
- Encourage bank linkage & Marketing Platforms.
- Farmers field Demonstration, training exposure for enhance productivity.
- Dairy Development activity for Cattle owners for income generation activity.

S. L	Activity	Details	Number of Participant	Villages:-
1.	Income Generation Activity (SAKSHAM- Production Centre)	Woman Garments sewed – 14083 Nos. Nose Mask- 633 Nos. Gents Garment- 314 Nos.	15	Gaurkheda, Tarashiv, Chicholi, Murra
2.	Back Yard Badi Development	Vegetable Seeds kits distributed to 30 Farmer family at Chicholi, Raikheda, Gourkheda villages	120	Chicholi, Gourkheda, Raikheda
3.	Exhibition & Sale of SHG Products	1. Rajyotsav 2. Family connect program, 3. International women Day- 200 women felicitated.	210	Raikheda
4.	Farmer's training Program at KVK, Raipur & Gothan Saddu- Tarpongi (15/12/21)	Chirag Mahila Swa-sahayata Samuh actively participated in Exhibition cum sale at Chhattisgarh Rajyaotsav.	70	Chicholi Raikheda Gaitra
5.	Systematic Rice Intensification (SRI)	23 Farmers HHF from Bartori, Chicholi, Raikheda have cultivated rice through SRI pattern in 23 acres of land.	92	Bartori, Chicholi, Raikheda
6.	Gou Jattan (Dairy Development Program) Kisan Mitra & Cattle Owners Training	1. Cattle owner were given orientation on dairy development & Veterinary training- Sarda Dairy Kharora. 2. Cattle support like deworming, medicines, vaccination of cattle done.	697	Raikheda, Khamahariya, Tarashiv.
7.	National Day Celebration – CSR Rural Youth Cultural Program	Youth Group performed Cultural program at National Day Celebration.	22	Tarashiv



# Backyard Badi Program - Beneficiaries

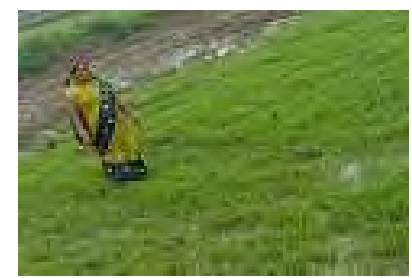




SLD

2021-22

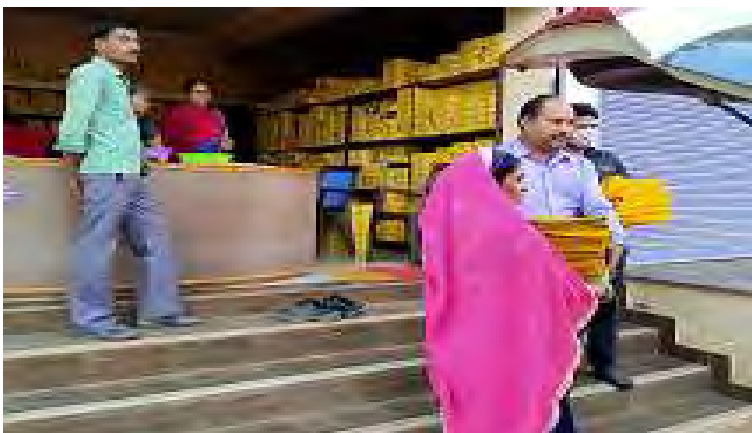
Paddy cultivation with SRI Method – 23 Farmers





SLD

2021-22



**Group Income Generation Support (GOU Jattan)**

- Provide IGA supports to the Farmers of surrounding Villages increase their income.
- Arranging financial assistance, training, exposure visits as per requirement.
- Encourage bank linkage.

S.L	5Activity	Target Group	Jul y	Au g	Sep	OCT	Nov	Dec	Jan	Total Benef. (QTY)
1	Deworming	Cattle			70	20	37		30	137
2	Vaccination	Cattle			124	31	44	79	35	313
3	Vermi Compost & Azola Training	Cattle Owner	20	30	12	12	27			101
4	Urea Treatment	Cattle Owners			08	01				09
5	Vermi Bed Distribution	Cattle Owners	07	11	09	06		09		42
6	Azola Bed Distribution	Cattle Owners	07	15	04	04				32
7	Infertility Treatment	Cattles				01	01			02
8	Exposure Visits of Cattle Owners	Cattle Owners				34		27		61



## SLD- Gou Jattan Program Dairy Development Training for Cattle Owners with Safety Talk

अदाणी फाउंडेशन ने कृषि तथा पशुपालक किसानों के लिए आयोजित किया व्यावसायिक प्रशिक्षण कार्यक्रम

अमन पथ न्यूज़

रायपुर। अदाणी फाउंडेशन रायखेड़ा द्वारा क्षेत्र के 6 पंचायतों के 60 से अधिक कृषि एवं पशुपालक किसानों को व्यावसायिक प्रशिक्षण हेतु शैक्षणिक भ्रमण कराया गया। कृषि विज्ञान केन्द्र रायपुर एवं शारदा डेयरी खरोरा में आयोजित एक दिवसीय प्रशिक्षण कार्यक्रम का मुख्य उद्देश्य क्षेत्र के किसानों को उन्नत एवं व्यावसायिक खेती हेतु प्रेरित करना था। शारदा डेयरी एवं फूड प्रोडक्ट लिमिटेड खरोरा में आयोजित किसान मित्र एवं पशुपालन बैठक का उद्देश्य पशु मालिकों को दुग्ध व्यवसाय से जोड़ कर उनको आत्मनिर्भर बनाना रहा।

कृषि प्रशिक्षण कार्यक्रम में रायपुर एनर्जन लिमिटेड रायखेड़ा के अंतर्गत आने वाले ग्राम पंचायत रायखेड़ा, चिचोली,

गैतरा, बरतोरी, ताराशिव और खमरिया के किसानों ने भाग लिया। इस दौरान उन्हें हॉर्टिकल्चर, मत्स्य पालन, चावल की फूड प्रोसेसिंग व पैकेजिंग तथा विभिन्न अचार, अलसी, जैम आदि कृषि उत्पादों की जानकारी दी गई।

साथ ही अदरक, हल्दी, आलू जैसे भूमिगत बागवानी उत्पाद की खेती को अपनाने पर जोर दिया गया। जिससे पारंपरिक खेती की तुलना में वे खेत के छोटे-छोटे हिस्सों में बागवानी की खेती शुरू करने के लिए पूरी तरह तैयार हो तथा बेहतर कमाई भी हो सके। वहीं पशुपालकों को दुग्ध व्यवसाय से जोड़ने के उद्देश्य से पशुओं से होने वाले विभिन्न लाभों, उपयोगी नस्लों तथा चारा प्रबंधन, गर्भवती गायों की देखभाल, तथा बछड़ों में होने वाले रोगों का निवारण इत्यादि विषयों पर विस्तृत जानकारी प्रदान की गई।





### Chhattisgarh Rajyotsav – Exhibition Cum Sale



**“Saheli Shashakt Silai Samuh” (4S) supported by Adani Foundation (RAIPUR ENERGEN LIMITED, RAIKHEDA)** participated in Exhibition cum sale at Chhattisgarh Rajyotsav from 28.10.21 to of inhouse sewing center made products by sewing trainees. Products like School Bag, Tiffin Bag, water bottle bags, Carry Bags, Vegetable bags, Ladies purse, mobile case, nose masks, rice papads ect. Adani Foundation Sarguja Team also participated with products from MUBS like packed masala, rice (Joiphool), nose masks & khada masala. Stall visitors were informed about Adani Foundation services & activities by leaflets distribution. Total products approx. Rs. 16,000/- sold through stall till end of the last day.









Petticoat Sewing Project under SAKSHAM



National Day Celebration on-Cultural Program by Rural Youths



Vaccination of Cattles under GAU Jattan Program





# SLD (1/3) International Women's Day- 8<sup>th</sup> March 2022, 03/2022



# Community Infrastructure Development 2021-22

## Community Infrastructure Development

Community Infrastructure Works initiated for the community development this year with special focus on community drinking water, village road,

- ❑ 220 MTR C.C. road for infrastructure development work at Bartori, Chicholi & Bartori.
- ❑ 250 sets LED Street light distribution in Raikheda, Gaitra, Chicholi Gram Panchayat completed.
- ❑ Temple renovation at Bahesar Village.
- ❑ Borewell digging & submersible pump fitting work at CHC, Tilda.
- ❑ Drinking Water Infrastructure of water Pipeline Installation work at Raikheda & Gaitra village.
- ❑ Gaushala Shed Construction at Banjari Temple is under progress.
- ❑ Construction of "Science Laboratory Platform Construction" at Govt. PG College, Tilda
- ❑ Repair & Maintenance of Bhatpara- Murra Road under progress.
- ❑ 40 LED lights donation at Banjari Temple Community place.
- ❑ Dustbins 25 units donated at Banjari Temple Community place.



# Community Infrastructure Development

2021-22



CC Road- BARTORI



LED Street Lights. GAITRA



Oxygen Plant Handover to Local Administration



CC Road- CHICHOLI



LED Street Lights, RAIKHEDA



Handover To CMHO Raipur



Handover To District Collector, Raipur





# Community Infrastructure Development 2021-22



Construction of Science Lab. platform at PG College



CC Road Construction at Bartori



Drinking Water Infrastructure, Gaitra<sup>36</sup>





कार्यालय-प्राचार्य

सत्यनारायण अग्रवाल शासकीय कला एवं वाणिज्य महाविद्यालय

कोहका-नेवरा, जिला-रायपुर (छ.ग.) पिन-493114

E-mail : gdc.kohka@gmail.com, col-kohka.cg@gov.in, Website : http://gdckohka.ac.in/

कोहका, दिनांक 19/04/2022

## -:: प्रमाण-पत्र ::-

प्रमाणित किया जाता है कि इस महाविद्यालय में अडानी फाउन्डेशन के द्वारा सी.एस.आर. (CSR- Corporate Social Responsibility) के तहत विज्ञान संकाय भवन के प्रयोगशाला कक्षों में सिविल कार्य किया गया था, जो कि पूर्ण हो गया है।

सी.एस.आर. द्वारा किये गये कार्यों का विवरण :-

1. पी.वी.सी. पाईप लाईन कार्य।
2. एस.एस. वॉश बेसिन फिटींग कार्य।
3. सिविल कार्य (पेंटिंग, ईटा का कार्य, प्लास्टर कार्य, कांक्रीट कार्य आदि)

(डॉ. शैलजा निगम)  
Principal  
स.ना. शासकीय कला एवं वाणिज्य महाविद्यालय  
कोहका-नेवरा, जिला-रायपुर (छ.ग.)  
Kohka-Neora, Dist-Raipur (C.G.)  
19/04/22



कार्यालय ग्राम पंचायत चिचोली

विकास खण्ड-तिल्दा-नेवरा, जिला-रायपुर (छ.ग.)

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श्री पुनीत राम साहू  
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मोबा.- 9165719310

सचिव  
नीरा चक्रधारी  
मोबा.- 98269-98449

दिनांक 11/2022

पत्नी

श्री मान कामकुमर शुक्ल  
अडानी फाउंडेशन रायपुर

अडानी फाउंडेशन द्वारा हमारे ग्राम पंचायत  
चिचोली में रुक रुकी लाईन (स्ट्रीट लाईन)  
50 मीटर \* ग्राम पंचायत को दिया गया जिले  
हम सबका काम जारी अडानी शुक्ल का आभार  
ब्यक्त करते हैं आभार करते हैं कि भविष्य  
में हमेशा जनकल्याण की सेवा करते रहें।

11/2022  
सरपंच  
ग्राम पंचायत चिचोली



## कार्यालय ग्राम पंचायत, रायखेड़ा

वि.सं.-तिल्दा, जिला-रायपुर (छ.ग.)

श्रीमती सुकवती कुँरे (संतोष कुँरे)

सरपंच

ग्राम पंचायत, रायखेड़ा

निवास -

ग्राम व पोस्ट - रायखेड़ा,  
वि.सं.-तिल्दा, जिला-रायपुर (छ.ग.)  
मो. - 9009898147

उपसरपंच

श्री बद्रीप्रसाद वर्मा

:- पंच :-

श्री शरदचंद्र यादव

श्रीमती निर्मला वर्मा

श्रीमती अनुसुईया मानिकपुरी

श्री धनश्याम लाल धीवर

श्री खिलवान प्रसाद शर्मा

श्री कुशल दास मानिकपुरी

श्रीमती रुक्मिणी यदु

श्रीमती शकुन वर्मा

श्रीमती कौशिल्या शर्मा

श्रीमती विमला धुव

श्रीमती मीना नायक

श्रीमती रोहिणी नायक

श्रीमती हुलसी मानिकपुरी

श्रीमती सभ्या (नीतु) तुरकाने

श्रीमती लता बाई वर्मा

श्री मारुति नंदन वर्मा

श्रीमती पार्वती बाई वर्मा

श्री चुन्नु लाल निषाद

पत्रांक.....

दिनांक 05.01.2022

धन्यवाद ज्ञापन

मान्यवर..

आपकी कांउन्सेशन रायखेड़ा, रायपुर की  
ग्राम पंचायत व पूरे गाँव की तरफ से कोल  
की धन्यवाद है जो हमारे गाँव में प्रकाश  
की लाईट है जो एल.ई.डी. लाईट प्रदान किया जिसे  
स्ट्रीट लाईट में लगाया जिसे गली-मोडल प्रकाश  
- मय है।

सुकवती कुँरे  
सरपंच  
ग्राम पंचायत रायखेड़ा  
वि.सं. तिल्दा, जि. रायपुर (छ.ग.)



## कार्यालय ग्राम पंचायत गैतरा

जनपद, पंचायत तिल्दा, जिला-रायपुर (छ.ग.)

// धन्यवाद ज्ञापन //

क्रमांक // ग्रा.पं. / 2021-22

गैतरा, दिनांक .....

प्रति

अडानी फाउण्डेशन  
रायखेड़ा जिला रायपुर छ.ग.

विषय:- CSR फण्ड से स्ट्रिट लाईट हेतु धन्यवाद पत्र।

महोदय,

उक्त विषय में निवेदन है कि ग्राम पंचायत गैतरा में आपके के द्वारा स्ट्रिट लाईट वितरण कार्य हेतु CSR फण्ड से ग्राम पंचायत गैतरा में सहयोग प्रदान किया गया। जिससे हम समस्त ग्रामवासियों की गांव में अंधेरे की समस्या दूर हो गई है। अतः ग्राम पंचायत गैतरा आपके इस सराहनीय कार्य के लिए हृदय से आभारी है।

आपसे भविष्य में हमारे ग्राम पंचायत को इसी प्रकार के सहयोग की अपेक्षा है।

धन्यवाद!

50 MOSE LED Light

श्रीमती सुकवती कुँरे

श्रीमती सुकवती कुँरे  
सरपंच  
ग्राम पंचायत गैतरा (खपटी)  
वि.सं.-तिल्दा, जि.-रायपुर (छ.ग.)



## कृषि तथा पशुपालक किसानों के लिए आयोजित किया गया व्यावसायिक प्रशिक्षण कार्यक्रम

**हॉर्टिकल्चर, मत्स्य पालन, वायट की फूड प्रोसेसिंग व पैकेजिंग आदि की डी जानकारी समर्थन मिश्रर न्यूज**



रायपुर। अदांनी कार्पोरेशन द्वारा आयोजित किए गए 6 पत्रकारों के 60 से अधिक कृषि एवं पशुपालक किसानों को व्यावसायिक प्रशिक्षण हेतु शैक्षणिक धमन कराया गया। कृषि विज्ञान केंद्र रायपुर एवं शाहद डेपॉसी खरीरा में आयोजित एक दिवसीय प्रशिक्षण कार्यक्रम का प्रमुख उद्देश्य क्षेत्र के किसानों को उन्नत एवं व्यावसायिक खेती हेतु प्रेरित करना था। शाहदा डेपॉसी एवं फूड प्रोसेसिंग लिमिटेड-खरीरा में आयोजित किसान मित्र एवं पशुपालन क्षेत्र का उद्देश्य पशु मालिकों को दुग्ध व्यवसाय से जोड़ कर उनके आयोनिभर बनना था।

कृषि प्रशिक्षण कार्यक्रम में रायपुर एरवॉन लिमिटेड रायखंड के अंतर्गत अपने वाले ग्राम मधवत रायखंड, चिचोली, वतरा, सतारी, सागिन और छपरीया के किसानों ने भाग लिया। इस दौरान हॉर्टिकल्चर, मत्स्य पालन, वायट की फूड प्रोसेसिंग व पैकेजिंग तथा विभिन्न अनाज, अलसई, तैम आदि कृषि उत्पादों की जानकारी दी गई। स्वस्थ हो अदरक, शहतूत, अमरू जैसे भूमिगत भागजाने उपभोग को खेती को अपनाने पर जोर दिया गया। जिससे पारंपरिक खेती को तुल्य में वे क्षेत्र के अंतिम-अंतिम किसानों में

## अदांनी पावर ने सीएसआर मद से दिए ऑक्सीजन प्लांट प्रदान



रायपुर। कोरोना महामारी को देखते हुए, कांफॉरेंट सोशल रिस्पॉन्सिबिलिटी एक्टिविटी के तहत अदांनी पावर एनर्जी लिमिटेड सीएससी तिलदा और सीएससी खरीरा में ऑक्सीजन प्लांट बनाया गया है। संस्था के स्टेशन हेड गड्डू रामभद्र एवं संस्था के अतिथि रॉय वैभवी, पृथ्वी राज खरिरी, डॉक्टर सिंह, कनक अग्रवाल के द्वारा मुख्य चिकित्सा एवं स्वास्थ्य अधिकारी डॉ मोरा यशैल को अनाज यहां प्रदान किया गया। ऑक्सीजन प्लांट के एक मरीन की प्रतिदिन क्षमता लगभग 100 मिलीटर प्रतिदिन की है। प्रति मिलीटर 7 मीटर क्यूबिक की क्षमता वाला ऑक्सीजन प्लांट की प्राप्ति पर मुख्य चिकित्सा एवं स्वास्थ्य अधिकारी डॉक्टर मीरा यशैल ने अदांनी पावर की बहुत बहुत धन्यवाद दिया एवं प्रशंसा की। इस अवसर पर, कांफॉरेंट से डीपीएम मनीष मेखरवार, अधिपेक सिंह और जिला पीडिया प्रभारी प्रविट डीगिरे उपस्थित थे।

## तिलदा, खरीरा सीएससी में लगा ऑक्सीजन प्लांट



अतिथि रॉय वैभवी एवं गड्डू रामभद्र, सीएससी तिलदा में ऑक्सीजन प्लांट की शुरुआत करते हैं।

तिलदा में अदानी की सामुदायिक स्वास्थ्य केंद्र में कोरोना के खतरों को दूर करने के लिए ऑक्सीजन प्लांट का स्थापना किया है, जो यहां के निवासियों को सुरक्षा प्रदान करेगा। अदांनी पावर के कर्मियों को हेतु खरीरा की लाला में एक ऑक्सीजन प्लांट की स्थापना की है। यह प्लांट यहां निवासियों को सुरक्षा प्रदान करेगा।

सीएससी खरीरा में ऑक्सीजन प्लांट की शुरुआत करते हैं।

यहां पर एक ऑक्सीजन प्लांट 100 लीटर प्रतिदिन की क्षमता है। यहां के निवासियों को सुरक्षा प्रदान करेगा। अदांनी पावर के कर्मियों को हेतु खरीरा की लाला में एक ऑक्सीजन प्लांट की स्थापना की है। यह प्लांट यहां निवासियों को सुरक्षा प्रदान करेगा।

## बालिकाओं को उच्च शिक्षा से जोड़ने के लिए अदाणी फाउंडेशन ने शुरू की नोनी लॉरी बस सेवा

पयनिवर टंपकता रायपुर  
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अदाणी फाउंडेशन रायपुर ने अपनी सामाजिक सहभागिता को ध्यान में रखते हुए खासकर क्षेत्रीय बालिकाओं हेतु ग्राम पंचायत रायखेड़ा में महाविद्यालय कोहका तिल्दा तक नोनी लॉरी निःशुल्क बस सेवा को शुरुआत की है। रायपुर एनर्जेंट लिमिटेड, रायखेड़ा के नजदीक स्थित 7 गावों जैसे रायखेड़ा, गैतारा, चिचोली, सोनतरा, ताराशीव, बरतारी और खमरिया की लगभग 65 बालिकाएं शासकीय महाविद्यालय कोहका, तिल्दा तक परिवहन के लिए इस बस सेवा का उपयोग करेंगी। इस बस सेवा का मुख्य उद्देश्य बालिकाओं के शिक्षा स्तर को बढ़ाते हुए सही समय और कन खर्च पर उच्च शिक्षा हेतु प्रोत्साहित करना है। गौरतलब है कि ग्राम रायखेड़ा से महाविद्यालय के बीच की दूरी लगभग 20



किलोमीटर है। पहले परिवहन के अभाव में अभिभावक अपनी बच्चियों को 12 वीं कक्षा के बाद महाविद्यालय भेजने में अपने आप को असमर्थ पाते थे 7 इन परिस्थितियों पर गंभीरता से विचार करते हुए अदाणी फाउंडेशन एवं संयंत्र प्रबंधन के अधिकारियों ने रायखेड़ा, चिचोली एवं गैतरा पंचायत के जनप्रतिनिधियों के सहयोग से नोनी लॉरी नाम से बस सेवा का शुभारंभ किया है। अदाणी फाउंडेशन द्वारा 52 सीट क्षमता वाली इस स्कूल बस सेवा का पूर्ण खर्च वहन किया जायेगा वहीं पात्र बालिकाओं को इस सुविधा के उपयोग को अनुमति, फाउंडेशन कार्यालय में अपना नामकन

करकर बस पास प्राप्त करने पर ही दी जाएगी। कार्यक्रम में मुख्य रूप से जनपद अध्यक्ष तिल्दा प्रतिनिधि देवव्रत नायक, जनपद सदस्य प्रतिनिधि ठकुर रान वर्मा, सरपंच चिचोली पुनीत राम साहू, सरपंच प्रतिनिधि रायखेड़ा संतोष कुरै, रायपुर एनर्जेंट लिमिटेड के संगन प्रमुख रामभव गड्डू, अदाणी फाउंडेशन के प्रमुख दीपक कुमार सिंह, फाउंडेशन स्टॉफ एवं स्कूली छात्राएं उपस्थित रहीं। कार्यक्रम की शुरुआत अतिथियों द्वारा बस की पूजा अर्चना एवं श्री फल तोड़कर की गयी, तत्पश्चात उपस्थित अतिथि नायक ने संज्ञा शुरु होने से खुशी जाहिर करते हुए संयंत्र और फाउंडेशन प्रबंधन को धन्यवाद दिया और सुविधा को निर्बाध चलाते रहने का निवेदन किया 7 कार्यक्रम में उपस्थित अन्य जनप्रतिनिधियों ने संगन प्रबंधन एवं अदाणी फाउंडेशन का दिल से आभार व्यक्त किया।

## 200 से अधिक महिलाओं का हुआ सम्मान



छारोरा। महिला दिवस पर अदाणी फाउंडेशन द्वारा आरईएल परिसर में आयोजित कार्यक्रम में 200 से अधिक महिलाओं का सम्मान किया गया। समारोह में मुख्य अतिथि सुमन देवव्रत नायक जनपद अध्यक्ष तिल्दा ने सभी को स्मृति चिन्ह देकर सम्मानित किया। कार्यक्रम की अध्यक्षता देवव्रत नायक पूर्व जनपद अध्यक्ष ने की। विशिष्ट अतिथि के तौर पर मनीष वर्मा सरपंच ताराशिव, पुनीत राम साहू सरपंच चिचोली उपस्थित थे। समारोह में आरईएल के रामभव गड्डू स्टेशन हेड, श्रीकांत वैद्य, ओएंडएम हेड शामिल हुए।



# Their Smile... is Our Satisfaction



## Thank You





# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL/REL/WW/01-25	Report No.:	VEL/WW/2204010008-32
Name & Address of Party:	M/s Raipur Energy Limited Formerly GMR Chhattisgarh Energy Ltd. Village Raikheda, Block - Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
		Party Reference No.:	NIL
		Reporting Date:	06/04/2022
Sample Description:	Waste water	Period of Analysis:	01-06/04/2022
Sampling Location:	ETP Outlet	Receipt Date:	01/04/2022
Sample Collected by	Vardan EnviroLab Representative	Sampling & Analysis	IS :5182
		Protocol:	

### TEST RESULTS

S.No.	Date	ETP Outlet				
		pH	TSS (mg/l)	BOD (mg/l)	COD (mg/l)	O & G (mg/l)
Limits		5.5-9.0	100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	02.03.2022	7.7	39.29	23.1	105.20	1.1
2	03.03.2022	8.0	40.98	18.4	75.60	0.7
3	04.03.2022	7.8	35.80	14.9	64.30	0.7
4	05.03.2022	7.7	36.45	--	97.89	1.3
5	07.03.2022	7.9	39.99	--	97.30	ND
6	08.03.2022	6.9	37.60	22	107.38	2.2
7	09.03.2022	7.8	39.08	--	101.90	2.5
8	10.03.2022	6.7	39.60	--	78.80	0.8
9	11.03.2022	7.3	37.80	21.8	86.01	0.9
10	12.03.2022	8.0	40.78	15.3	66.30	1.4
11	14.03.2022	6.9	37.50	--	100.10	2.1
12	15.03.2022	7.99	35.90	--	90.17	1.8
13	16.03.2022	6.58	36.08	18.5	81.20	1.5
14	17.03.2022	7.00	40.60	--	114.40	1.9
15	19.03.2022	6.64	36.31	--	81.70	ND
16	21.03.2022	6.94	38.40	16.25	98.30	0.8
17	22.03.2022	6.52	35.80	--	74.30	1.5
18	23.03.2022	6.36	37.31	--	92.89	2.1
19	24.03.2022	7.63	37.20	26.3	112.10	0.7
20	25.03.2022	8.00	41.56	--	110.40	2.1
21	26.03.2022	7.00	38.86	--	72.50	0.9
22	28.03.2022	7.20	42.20	21.4	104.12	1.7
23	29.03.2022	7.50	42.17	--	69.60	1.9
24	30.03.2022	6.41	38.40	17.4	87.66	2.3
25	31.03.2022	8.21	43.65	--	112.6	1.3
Minimum		6.36	35.80	14.90	64.30	0.70
Maximum		8.21	43.65	26.30	114.40	2.50
Monthly Average		7.31	38.77	19.58	91.31	1.49



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## RAIPUR ENERGEN LIMITED

## FIRE AND SAFETY DEPARTMENT

## DELUGE VALVE LOCATION BTG &amp; BOP AREA

DV NO	LOCATION	DV NO	LOCATION	DV NO	LOCATION
DV-01	CONV. 7B Zone#8&9	DV-37	CONV. 1AXBX Zone#4	DV-73	Boiler#1 Burner Narth
DV-02	CONV. 7B Zone#6&7	DV-38	CONV. 1AXBX Zone#5	DV-74	Coal Mill Unit#1
DV-03	CONV. 7B Zone#4&5	DV-39	CONV. 1AB Zone#1	DV-75	Boiler#1 Burner east
DV-04	CONV. 7AB Zone#3	DV-40	CONV. 1AB Zone#2	DV-76	ST#2 (Transformer yard)
DV-05	CONV. 7AB Zone#2	DV-41	CONV. 1AB Zone#3	DV-77	GT#2R (Transformer yard)
DV-06	CONV. 7AB Zone#1	DV-42	CONV. 1AB Zone#4	DV-78	UT#2A (Transformer yard)
DV-07	CONV. 7A Zone#4&5	DV-43	MCC#1 cable gallery	DV-79	TG (-3.5 Mtr.) Unit#2
DV-08	CONV. 7A Zone#6&7	DV-44	Conv#4A	DV-80	TG (5.8 Mtr.) Unit#2
DV-09	CONV. 7A Zone#8&9	DV-45	Conv#4B	DV-81	Hyd. seal oil unit#2
DV-10	CONV. 6AB Zone#1	DV-46	Conv#03	DV-82	UT#2B (Transformer yard)
DV-11	CONV. 6AB Zone#2	DV-47	AHP C/R cable gallery	DV-83	GT#2Y (Transformer yard)
DV-12	CONV. 6AB Zone#3	DV-48	HCS D C/R cable gallery	DV-84	GT#2B (Transformer yard)
DV-13	CONV. 6AB Zone#4	DV-49	Bus reactor	DV-85	UAT#2A (Transformer yard)
DV-14	CONV. 6AB Zone#5	DV-50	CHP C/R cable gallery	DV-86	UAT#2B (Transformer yard)
DV-15	CONV. 6AB Zone#6	DV-51	WTP C/R cable gallery	DV-87	COT/DOT Tank
DV-16	CONV. 6AB Zone#7	DV-52	LDO tank	DV-88	Lube oil Cond. Unit#2
DV-17	CONV. 6AB Zone#8	DV-53	LDO tank foam	DV-89	LOT unit#2 (8.5mtr.)
DV-18	CONV. 6AB Zone#9	DV-54	HFO tank#1 foam	DV-90	ESP/MCR (-3.5Mtr) Z-01
DV-19	CONV. 6AB Zone#10	DV-55	HFO tank#2 foam	DV-91	ESP/MCR (-3.5Mtr) Z-02
DV-20	CONV. 6AB Zone#11	DV-56	HFO tank#1	DV-92	ESP/MCR (-3.5Mtr) Z-03
DV-21	CONV. 6AB Zone#12	DV-57	HFO tank#2	DV-93	ESP/MCR (-3.5Mtr) Z-04
DV-22	CONV. 5AB Zone#1	DV-58	GT (Spare)	DV-94	ESP/MCR (-3.5Mtr) Z-05
DV-23	CONV. 5AB Zone#2	DV-59	UAT#1A	DV-95	ESP/MCR (+5.3Mtr) Z-06
DV-24	CONV. 5AB Zone#3	DV-60	UAT#1B	DV-96	ESP/MCR (+5.3Mtr) Z-07
DV-25	CONV. 5AB Zone#4	DV-61	TG (-3.5Mtr.) Unit#1	DV-97	ESP/MCR (+5.3Mtr) Z-08
DV-26	CONV. 5AB Zone#5	DV-62	TG (+5.8Mtr.) Unit#1	DV-98	ESP/MCR (+5.3Mtr) Z-09
DV-27	CONV. 2AB Zone#1	DV-63	Hyd. seal oil unit#1	DV-99	ESP/MCR (+5.3Mtr) Z-10
DV-28	CONV. 2AB Zone#2	DV-64	UT#1A (Transformer yard)	DV-100	APH#2
DV-29	CONV. 2AB Zone#3	DV-65	UT#1B (Transformer yard)	DV-101	Boiler#2 Burner west
DV-30	CONV. 2AB Zone#4	DV-66	GT#1R (Transformer yard)	DV-102	Coal mill Unit#2
DV-31	CONV. 2AB Zone#5	DV-67	GT#1Y (Transformer yard)	DV-103	Boiler#2 Burner east
DV-32	CONV. 2AB Zone#6	DV-68	GT#1B (Transformer yard)	FAS-01	U. dyke area unit#1
DV-33	CONV. 2AB Zone#7	DV-69	ST#1 (Transformer yard)	FAS-02	U. dyke area Unit#2
DV-34	CONV. 1AXBX Zone#1	DV-70	Lube oil Cond. Unit#1	FAS-03	Technical building
DV-35	CONV. 1AXBX Zone#2	DV-71	LOT unit#1 (8.5mtr.)	FAS-04	FW. pump house
DV-36	CONV. 1AXBX Zone#3	DV-72	APH#1	FAS-05	Fuel oil forwarding PH.



भारत सरकार

Government of India

वाणिज्य और उद्योग मंत्रालय

Ministry of Commerce &amp; Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)

Petroleum &amp; Explosives Safety Organisation (PESO)

अवन्ती विहार कालोनी, मेन रोड, पोस्ट शंकर नगर

रायपुर- 492007

Avanti Vihar Colony, Main Road, Post Shankar Nagar,  
Raipur - 492007E-mail : [ceraipur@explosives.gov.in](mailto:ceraipur@explosives.gov.in)

Phone/Fax No : 771-2442204

संख्या /No. : P/HQ/CG/15/681 (P307459)

दिनांक /Dated : 12/05/2021

सेवा में  
/To,

Raipur Energen Limited,  
Village-Raikheda,  
Raipur,  
Raipur,  
Taluka: Tilda,  
District: RAIPUR,  
State: Chhattisgarh  
PIN: 493225

विषय Khata No, 176, Near Tilda, Raikheda, Raipur, Taluka: Tilda, District: RAIPUR, State: Chhattisgarh, PIN: 999999 में स्थित  
/Sub : विद्यमान पेट्रोलियम वर्ग C अधिष्ठापन में अनुज्ञप्ति सं P/HQ/CG/15/681 (P307459) के नवीकरण के संदर्भ में ।  
Existing Petroleum Class C Installation at Khata No, 176, Near Tilda, Raikheda, Raipur, Taluka: Tilda, District: RAIPUR,  
State: Chhattisgarh, PIN: 999999 - Licence No. P/HQ/CG/15/681 (P307459) - Renewal regarding.

महोदय  
/Sir(s),

कृपया आपके पत्र क्रमांक OIN666391 दिनांक 28/12/2020 का अवलोकन करें ।

Please refer to your letter No.: OIN666391, dated 28/12/2020

अनुज्ञप्ति संख्या P/HQ/CG/15/681 (P307459) दिनांक 20/02/2014 को दिनांक 31/12/2022 तक नवीनीकृत कर इस पत्र के साथ अग्रपिठ की जा रही है ।

Licence No. P/HQ/CG/15/681 (P307459) dated 20/02/2014 is forwarded herewith duly renewed upto 31/12/2022.

कृपया पेट्रोलियम नियम 2002 के अधीन बनाए गए नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें । अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को अनुज्ञप्ति की वैधता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व कार्यालय को प्रेषित करें ।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence so as to reach this office on or before the date on which Licence expires.

कृपया पावती दें।

Please acknowledge the receipt.

भवदीय /Yours faithfully,

((आशेन्द्र सिंह)  
(Ashendra Singh))  
विस्फोटक नियंत्रक  
Controller of Explosives  
रायपुर/Raipur

**Note:-This is system generated document does not require signature.**(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : <http://peso.gov.in> देखें)(For more information regarding status, fees and other details please visit our website: <http://peso.gov.in>)



प्ररूप XV  
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)  
FORM XV  
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारकरण के लिए अनुज्ञप्ति  
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : P/HQ/CG/15/681(P307459)

फीस रूप (Fee Rs.) 50000/- per year

**Raipur Energen Limited, Village-Raikheda, Raipur, Raipur, Taluka: Tilda, District: RAIPUR, State: Chhattisgarh, PIN: 493225** को केवल इसमें यथा विनिर्दिष्ट वर्ग और मात्राओं में पेट्रोलियम 4750.00 KL आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या P/HQ/CG/15/681(P307459) तारीख 12/05/2021 जो कि इससे उपाबद्ध है, में दिखाए गए स्थान पर भण्डारकरण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to **Raipur Energen Limited, Village-Raikheda, Raipur, Raipur, Taluka: Tilda, District: RAIPUR, State: Chhattisgarh, PIN: 493225** valid only for the importation and storage of 4750.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No P/HQ/CG/15/681(P307459) dated 12/05/2021 attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December 2022 तक प्रवृत्त रहेगी।  
The Licence shall remain in force till the 31st day of December 2022

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग क प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	NIL
वर्ग क प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	4750.00 KL
वर्ग ग प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	4750.00 KL

February 20, 2014

For Chief Controller of Explosives  
HQ, Nagpur

अनुज्ञप्त परिसरों का विवरण और अवस्थान  
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टियां संलग्न अनुमोदित नक्शों में दिखाई गई हैं Khata No: 176, Near Tilda, Raikheda, Raipur, Taluka: Tilda, District: RAIPUR, State: Chhattisgarh, PIN: 999999 स्थान पर अवस्थित है तथा उसमें निम्नलिखित 3 Above Ground tank(s) for CLASS C, सम्मिलित हैं।

The licensed premises, the layout, boundaries and other particulars of which are shown in the attached approved plan are situated at Khata No: 176, Near Tilda, Raikheda, Raipur, Taluka: Tilda, District: RAIPUR, State: Chhattisgarh, PIN: 999999 and consists of 3 Above Ground tank(s) for CLASS C, together with connected facilities.

**Note:-This is system generated document does not require signature.**

अनुज्ञप्ति संख्या-(Licence No.) P/HQ/CG/15/681 (P307459)

**नवीनीकरण के पृष्ठांकन के लिए स्थान**  
**SPACE FOR ENDORSEMENT OF RENEWALS**

पेट्रोलियम अधिनियम, १९३४ के उपबन्धों या नवीकरण की तारीख समाप्ति की तारीख अनुज्ञापन प्राधिकारी के हस्ताक्षर और उनके अधीन बनाए गए नियमों या इस अनुज्ञप्ति Date of Renewal Date of Expiry of license स्टाम्प Signature and office stamp of the licencing authority. की शर्तों का उल्लंघन न होने की दशा में यह अनुज्ञप्ति फ़िस में बिना किसी छूट के दस वर्ष तक नवीकृत की जा सकेगी।

This licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.

- |     |            |            |  |
|-----|------------|------------|--|
| 1). | 13/12/2016 | 31/12/2019 | Sd/-<br>C.G.Kalambhe<br>Controller of Explosives<br>Raipur   |
| 2). | 16/06/2020 | 31/12/2020 | Sd/-<br>Ashendra Singh<br>Controller of Explosives<br>Raipur |
| 3). | 12/05/2021 | 31/12/2022 | Ashendra Singh<br>Controller of Explosives<br>Raipur         |

यदि अनुज्ञप्ति परिसर इसमें उपाबद्ध विवरण और शर्तों के अनुरूप नहीं पाए जाते हैं और जिन नियमों और शर्तों के अधीन यह अनुज्ञप्ति मंजूर की गई है उनमें से किसी का उल्लंघन होने की दशा में यह अनुज्ञप्ति रद्द की जा सकती है और अनुज्ञप्तिधारी प्रथम अपराध के लिए साधारण कारावास से, जो एक मास तक हो सकता है, या जुर्माने से, जो एक हजार रुपये तक हो सकता है, या दोनों से, और प्रत्येक पश्चात्तवर्ती अपराध के लिए साधारण कारावास से जो तीन मास तक हो सकता है, या जुर्माने से, जो पांच हजार रुपये तक हो सकता है, या दोनों से, दण्डनीय होगा।

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

**Note:-This is system generated document does not require signature.**



# सूचना

जी.एस.आर.एन.सी. लिमिटेड

सर्व साधारण को सूचित किया जाता है उक्त कंपनी द्वारा 2 X 685 मेगावाट सुपर क्रिटिकल कोल ब्रेड थर्मल पावर प्लांट ग्राम रायखेड़ा, चिचौली, गैतरा ब्लॉक, तिलवा जिला रायपुर में स्थापित किया जाना प्रस्तावित है। उक्त प्रोजेक्ट को केंद्रीय पर्यावरण मंत्रालय से पर्यावरण स्वीकृति प्राप्त हो गई है। जिसकी प्रति राज्य प्रदूषण नियंत्रण बोर्ड के कार्यालय में देखी जा सकती है। इसे मंत्रालय की वेबसाइट <http://envfor.nic.in> में भी देखा जा सकता है।

दिनांक 10-5-2011

स्थान-रायपुर

Sd/-  
प्रबंधक

# सूचना

पर्यावरण को सुधारा दिया जाता है कि जी.एस.आर.एन.सी. लिमिटेड रायपुर, जिला रायपुर (छ.प्र.) को पर्यावरण, वन एवं जलसंधि परिकल्पना मंत्रालय, भारत सरकार द्वारा कोल का परिवहन रोड से आने हुए 3 वर्ष की सीसी के नं. J-13012/62/2008-IA II (I) दिनांक 18.11.2014 के माध्यम से प्रत्यक्ष की जा चुकी है। इसे मंत्रालय की वेबसाइट <http://envfor.nic.in> में देखा जा सकता है।

दिनांक

24.11.2014

स्थान - रायपुर

Sd/-  
प्रबंधक



## सूचना

सर्वसाधारण को सूचित किया जाता है कि जी एम आर छत्तीसगढ़ एनर्जी लिमिटेड, रायखेड़ा जिला रायपुर (छ.ग.) को पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार द्वारा साउथ अफ्रीका से आबंटित कोल, इंडोनेशिया से आबंटित कोल, एवं 50% डोमेस्टिक कोल के अलावा तालाबीरा-1 और/अथवा गणेशपुर कोलमाइन से आबंटित 100% डोमेस्टिक कोल उपयोग करने हेतु पर्यावरणीय स्वीकृति में अपने पत्र क्र. J-13012/62/2008/IA.II (T) दिनांक 09.12.2015 द्वारा संशोधन किया गया है। पत्र की प्रतिलिपि मंत्रालय की वेबसाइट [hppt:// envfor.nic.in](http://envfor.nic.in) पर देखी जा सकती है।

रायपुर

दिनांक 28.12.2015

सही/-

प्रबंधक

## NOTICE

The GMR Chhattisgarh Energy Ltd. Village Raikheda, District - Raipur (C.G.) has been accorded amendment in EC by ministry of environment, forest and climate change, government of India for including the usage of 100% domestic coal sourced from Talabira - I &/or Ganeshpur coalmines in addition to imported coal from south Africa, Indonesia and 50% blend of domestic coal vide its letter No. J-13012/62/2008-IA.II (T) dated 09.12.2015, which can be seen in the ministry website: <http://envfor.nic.in>.

Place - Raipur

Dt. - 28.12.2015

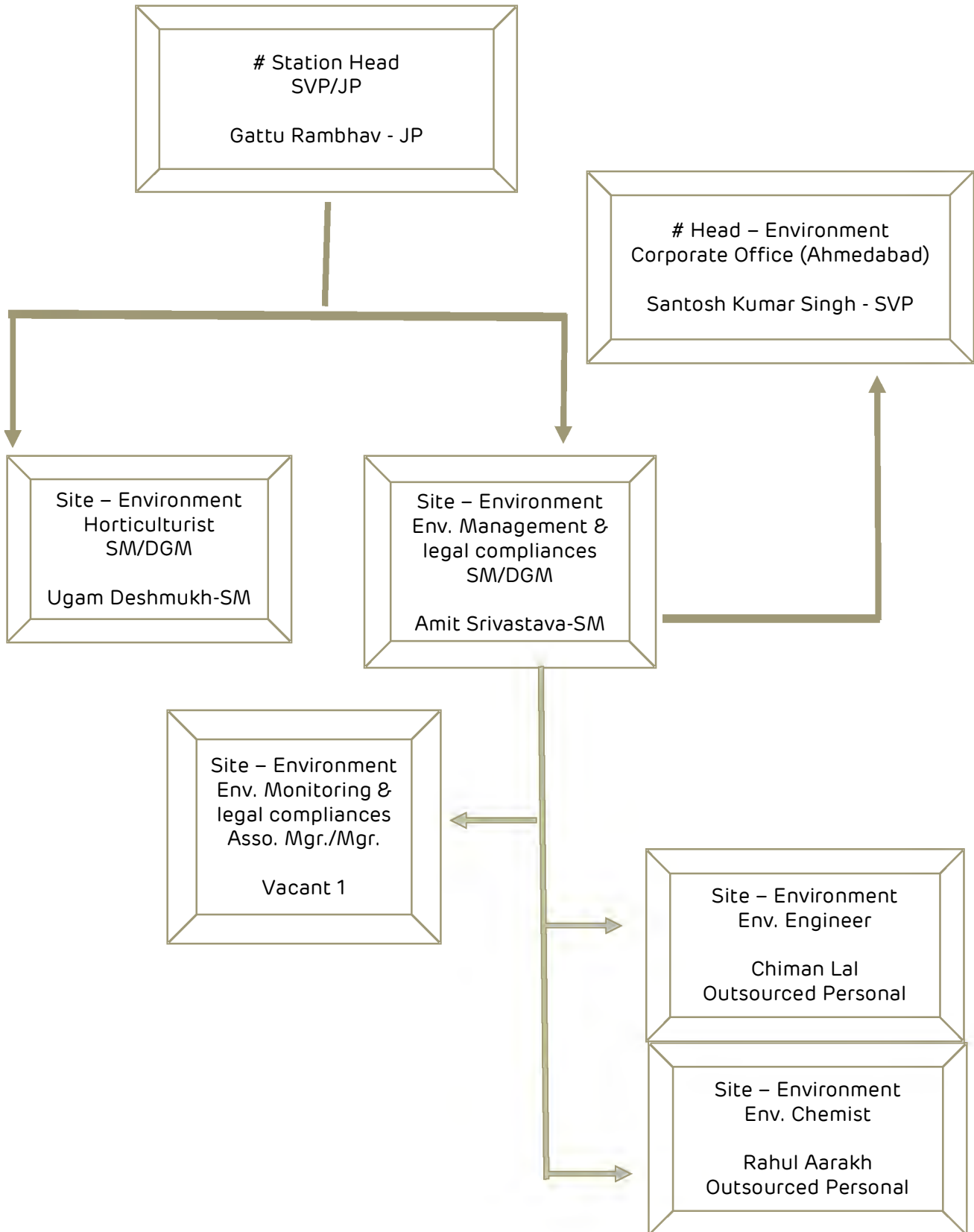
sd/-

Manager

न्यायालय तहसीदार रायपुर जिला रायपुर



### Organization Chart – Environment Dept. (Raipur Energen Limited, Raikheda)



ULR-TC66652800000 330A



क्रम सं./SL. NO.: 532 A 53130

विआरपीओ / वीएआरपीओ वाशी कॉम्प्लेक्स,  
BRIT/ BARC Vashi Complex,  
सेक्टर-20, वाशी / Sec-20, Vashi,  
नवी मुंबई / Navi Mumbai-400 703  
www.britatom.gov.in

भारत सरकार / GOVERNMENT OF INDIA

परमाणु ऊर्जा विभाग / DEPARTMENT OF ATOMIC ENERGY

विकिरण एवं आइसोटोप प्रौद्योगिकी बोर्ड / BOARD OF RADIATION &amp; ISOTOPE TECHNOLOGY

रेडियोसक्रियता परीक्षण प्रमाण-पत्र / RADIOACTIVITY TEST CERTIFICATE

Page 1 of 1

## RADIOANALYTICAL LABORATORY

Ref: BRIT/RAL/D-1292-1299/MISC/1109-16/21-22

MAR 30, 2022

TO  
M/S. RAIPUR ENERGEN LTD.,  
(FORMERLY KNOWN AS GMR CHHATTISGARH ENERGY LIMITED)  
ADANI CORPORATE HOUSE,  
SHANTIGRAM, NEAR VAISHNO DEVI CIRCLE,  
KHODIYAR, AHMEDABAD 382 421, GUJARAT (INDIA).

This is regarding the "COAL , FLY ASH, BOTTOM ASH AND POND ASH" samples submitted vide your letter dated 15.02.2022 for radioactivity analysis, as shown in italics :

SAMPLE NO.	TYPE OF SAMPLE	PLACE	DATE OF SAMPLING	WEIGHT (IN KG)
SAMPLE # 1	COAL	REL	14/02/2022	01
SAMPLE # 2	FLY ASH	REL	14/02/2022	01
SAMPLE # 3	BOTTOM ASH	REL	14/02/2022	01
SAMPLE # 4	POND ASH	REL	14/02/2022	01

The samples were analysed for U-238, Th-232 radioactivity content and the values obtained are as follows:

SAMPLE NO.	TYPE OF SAMPLE	U-238 Bq/Kg	Th-232 Bq/Kg
1.	COAL	39.1 ± 1.8	65.6 ± 7.8
2.	FLY ASH	78.2 ± 2.6	115.9 ± 11.5
3.	BOTTOM ASH	73.7 ± 2.9	121.7 ± 12.1
4.	POND ASH	73.9 ± 2.2	110.6 ± 11.0

Date of receipt of sample : 05.03.2022

Date of completion of test: 30.03.2022

The measurement values are below the clearance level for radionuclides of natural origin in bulk solid materials, as per AERB directive 01/2010 (table-3) dated 26/11/2010

Note: (i) The report pertains to the given sample only. (ii) The sample will be retained in this laboratory for a period of one month from certificate date and thereafter it will be disposed off. (iii) This report shall not be reproduced except in full, without written approval of the laboratory. (iv) The sampling is not done by this laboratory.

Checked by:

Authorized Signatory :

\*\*\*\*end of report\*\*\*\*

अजय एन. ठमके / Ajay N. Tharke

प्रनारी अधिकारी / Officer-In-Charge

रेडियोदैरलैषक प्रयोगशाला / Radioanalytical Laboratory

विकिरण एवं आइसोटोप प्रौद्योगिकी बोर्ड

Board of Radiation &amp; Isotope Technology

विकिरण एवं आइसोटोप प्रौद्योगिकी बोर्ड

नवी मुंबई - 400 703





# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

<b>Sample Number:</b>	<b>VEL/BMD/C/01</b>	<b>Report No.:</b>	<b>VEL/C/2203180001</b>
<b>Name &amp; Address of Party:</b>	<b>M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh</b>	<b>Format No.:</b>	<b>7.8 F-01</b>
		<b>Party Reference No.:</b>	<b>NIL</b>
		<b>Reporting Date:</b>	<b>22/03/2022</b>
		<b>Period of Analysis:</b>	<b>18/03/2022 to 22/03/2022</b>
		<b>Receipt Date:</b>	<b>18/03/2022</b>
<b>Sample Description:</b>	<b>COAL</b>	<b>Sampling Date:</b>	<b>16/03/2022</b>
<b>Sample Collected by</b>	<b>Vardan EnviroLab Representative</b>	<b>Sampling Quantity:</b>	<b>500 gm</b>
<b>Sampling &amp; Analysis Protocol</b>	<b>IS 1350</b>	<b>Packing Status:</b>	<b>Temp Sealed</b>

### TEST RESULTS

Sl. No.	Parameter	Protocol	Result	Unit
<b>ANALYSIS OF COAL</b>				
1.	Mercury (as Hg)	By AAS Method	BDL	mg/kg
2.	Lead (as Pb)	By AAS Method	3.52	mg/kg
3.	Cadmium (as Cd)	By AAS Method	0.07	mg/kg
4.	Arsenic (as As)	By AAS Method	0.06	mg/kg

(Checked By)

(Authorized Signatory)



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# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number:	VEL /W/10	Report No.:	VEL/W/2203180010
Name & Address of Party:	M/s Raipur Energen Limited Formerly GMR Chhattisgarh Energy Ltd Village- Raikheda, Block- Tilda, Dist- Raipur Chhattisgarh	Format No.:	7.8 F 01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2022
Sample Description:	Water Sample	Period of Analysis:	18-22/03/2022
Sampling Location:	Ash Pond Effluent	Receipt Date:	18/03/2021
Sample Collected by	Vardan EnviroLab Representative	Sampling Date:	15/03/2021
Preservation:	Refrigerated	Sampling Type:	Grab
Sampling & Analysis Protocol:	IS-10500-2012	Sample Quantity:	2.0 Ltr.

### TEST RESULTS

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS 3025: 1987 (P-4) Reaff.2017	*BDL(**DL 1.0)	Hazen
2	Odour	IS 3025 (P-5) : 2018	Agreeable	--
3	pH value	IS 3025 (P-11): 1983 Reaff. 2017	7.60	--
4	Turbidity	IS 3025 (Part 10): 1984, Reaff: 2017, (Nephelometric Method)	5	NTU
5	Total Dissolved Solids	IS 3025 (P-16): 1984 Reaff 2017	195.2	mg/l
6	Chloride (as Cl)	IS: 3025 (Part 32): 1988, Reaff. 2019	62.2	mg/l
7	Total Alkalinity (as CaCO <sub>3</sub> )	IS: 3025 (Part 23): 1986, Reaff. 2019	89.5	mg/l
8	Total Hardness (CaCO <sub>3</sub> )	IS: 3025 (Part 21): 2009, Reaff. 2019	102.8	mg/l
9	Calcium (as Ca)	IS: 3025 (Part 40): 1991 Reaff. 2019 (EDTA method)	32.9	mg/l
10	Magnesium	IS: 3025 (Part 46): 1994, Reaff. 2019 (EDTA method)	3.59	mg/l
11	Oil & Grease	IS 3025(P-39):1991.RA.2019	1.4	mg/l
12	Total Suspended Solids	IS 3025(P-17):1984.RA.2017	19.1	mg/l
13	Fluoride ( as F)	APHA 23rd Edition 2017, 4500FD	0.27	mg/l
14	Nitrate (as NO <sub>3</sub> )	IS: 3025 (Part 34): 1988, Reaff. 2019 (Chromotropic Method)	2.89	mg/l
15	Phenolic compounds	APHA 23rd Edition 2017, 5530C	*BDL(**DL-0.1)	mg/l
16	Anionic Surface active agents (as MBAS)	APHA 23rd Edition 2017, 5540C	*BDL(**DL-0.05)	mg/l
17	Dissolved oxygen	IS : 3025 (Part-38) : 1989, Ref: 2019	5.2	mg/l
18	Biochemical Oxygen Demand (BOD) ( 3 days at 27°C)	IS: 3025 (Part-44): 1993, Ref: 2019	5.1	mg/l
19	Chemical Oxygen Demand (COD)	IS : 3025 (Part 58) : 2006fef: 2017	22.4	mg/l
20	Residual Free Chlorine	IS:3025(P-26):1986,RA:2019:1986	*BDL(**DL-0.2)	mg/l

(Checked By)

(Authorized Signatory)



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Ph: 0124-4343750/752/753, 9810355569, 9953147268 E-mail: lab@vardan.co.in, bd@vardan.co.in





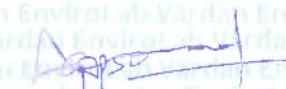
# Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)  
ISO 9001 | ISO 14001 | ISO 45001

## Test Report

Sample Number: VEL/W/10		Report No.: VEL/W/2203180010		
21	Zinc as (Zn)	APHA (23rd edition), 3030D,3113B	*BDL(**DL-0.20)	mg/l
22	Copper (Cu)	APHA (23rd edition), 3111B	*BDL(**DL-0.02)	mg/l
23	Lead as Pb	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.005)	mg/l
24	Arsenic as As	APHA (23rd edition), 3030D,3114C, 2017	*BDL(**DL-0.005)	mg/l
25	Cyanide as CN	APHA 4500 CN -D	*BDL(**DL-0.05)	mg/l
26	Aluminium as Al	IS 3025 (P-55) 2003, RA 2019	*BDL(**DL-0.03)	mg/l
27	Boron	APHA (23rd edition) 4500B, 2017	*BDL(**DL-0.2)	mg/l
28	Chromium as Cr	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.02)	mg/l
29	Cadmium as Cd	APHA (23rd edition), 3030D,3113B, 2017	*BDL(**DL-0.002)	mg/l
30	Selenium as Se	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.005)	mg/l
31	Mercury as Hg	APHA (23rd edition),3114C, 2017	*BDL(**DL-0.0005)	mg/l
32	Sulphate as (SO <sub>4</sub> )	IS: 3025 (Part 24): 1986, Reaff. 2019 Turbidity Method	10.32	mg/l
33	Iron	IS:3025(P-53):2003,RA.2019:2003	0.15	mg/l
34	Manganese as Mn	APHA3111B	*BDL(**DL-0.05)	mg/l

  
(Checked By)

  
(Authorized Signatory)



VEL/E/1/TR/PN30271

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## INTEGRATED MANAGEMENT SYSTEM POLICY

We at **RAIPUR ENERGEN LIMITED**, engaged in **Generation of Power through Operation of Coal based Thermal Power plant**, are committed to implement the requirements of Quality, Environmental, Occupational Health & Safety, Energy and Social Management Systems. All our efforts towards Nation building will be guided by our core philosophy of "Growth with Goodness". We will EMPOWER our teams in realizing:

- **Environmental protection:** Deployment of environmentally sound practices augmented with sustainable technologies will enable pollution prevention, resource efficiency, waste reduction conservation of energy, water, biodiversity and other natural resources.
- **My safest workplace:** 'Chetna' drive will transform our workplaces to 'My safest workplace' for every one through adoption of a robust health and safety practices which will prevent injury and ill health, eliminate OH&S hazards and build a safety culture with proactive participation and consultation of people at all the levels.
- **People power:** Raising awareness and capacity building of our employees and channelizing their teamwork, dedication and commitment will result in reliable plant operations. Effective Supply chain and contractor management practices will enhance our operational capabilities and scalability.
- **Operational excellence:** Adoption of good industrial practices in planning, resource allocation, procurement, operation and maintenance activities to facilitate compliance with applicable legal and other requirements, fulfillment of needs and expectations of stakeholders towards assuring sustainable outcomes.
- **World class processes:** Adoption of global best practices built on a comprehensive risk and impact assessment guided by principles of management systems, international standards and codes. Practice robust internal processes for O&M through DISHA and Adani Business Excellence Model (ABEM).
- **Engagement with Stakeholders:** Our formal, informal and constant engagement with the stakeholders gives us the humility and strength to plan and implement our activities in harmony with the conditions prevailing the communities, where we operate. We earn stakeholder confidence through an effective system of communication, grievance handling and reporting.
- **Resilient organization:** Our resilience would be demonstrated by our ability to operate under dynamic business environment yet assure business continuity. This capability would be further reinforced by seamless internal monitoring and independent external verifications and assurance mechanisms.

Date: 25.08.2020

  
 25.08.2020  
**Anil Sardana**  
**Managing Director**



The following parameters shall be considered for designing DE system:

- a) Dust concentration at extraction point : Maximum. 10 gram/m<sup>3</sup>
- b) Dust emission level at stack outlet : 50 mg / Nm<sup>3</sup> (maximum)
- c) Air to cloth ratio : Maximum 1.5 m<sup>3</sup>/m<sup>2</sup>/min
- d) Location of bag filter : i) Boiler Bunker : Top of building  
ii) Crusher house: On ground/inside/top of the building to suit with the layout/site conditions.
- e) Pressure drop : 150 mm WC (Max.)
- f) Dust factor for very dusty material : 1 at conveyor discharge point  
1.5 at conveyor receiving point
- g) Height of stack : 3 m from top of nearest building or 30 m (maximum) from ground level whichever is higher.
- h) Air Compressor (Combined for DE & SA systems) : Air cooled. 2 Nos. (1W+1S) Location at Pump house.
- i) Air Drier : 2 Nos. (1W+1S) Location at Pump house
- j) Capacity of Air receiver : 1.5 Cum
- k) Qty. of Air receiver : 1 No.
- l) Location of Air receiver : Near to Pump House.

## A. BAGFILTER

- a) Bag Material: : Non-woven Polyester needle felt type with antistatic properties Suitable for coal dust. (Fire Proof)
- b) Casing : MS, 8 mm thk
- c) Hopper : MS, 8 mm thk
- d) Holding Plate : MS, 5 thk
- e) Filter cage : MS
- f) Length and dia of bag filter : As per system requirement and manufacturer's recommendation.
- g) Height of stack : 3 m from top of nearest building or 30 m (maximum) from ground level whichever is higher.