

Ref: GKEL/MOEF&CC/2022-23/7822

Date: 25.11.2022

To

The Director

Eastern Regional Office

Ministry of Environment, Forests & Climate Change, Govt. of India
A/3, Chandrasekharapur, Bhubaneswar, Odisha - 751023

Sub: Submission of 22nd Half Yearly EC Compliance Status Report Expansion by additional of 1x350 MW, TPP (Phase-II) at Village Kamalanga, Dhenkanal District, Odisha.

Ref: 1. Env. Clearance vides your letter No. J_13012/73/2011-IA. II(T) dated 5th Dec' 2011.
2. Env. Clearance vides your letter No. J_13012/73/2011-IA. II(T) dated 11th Jan' 2019
3. Env. Clearance vides your letter No. J_13012/73/2011-IA. II(T) dated 11th Apr' 2019


Dear Sir,

With reference to the subject referred above, we are pleased to submit the 22nd Half Yearly EC Compliance Status Report of our 1 x 350 MW Thermal Power Plant (Phase-II) at village Kamalanga, Dhenkanal District, Odisha, for your kind perusal please.

Kindly acknowledge receipt of the same.

Thanking You,

Yours Sincerely,
for GMR Kamalanga Energy Limited



Manoj Mishra
Plant Head

Encl. – As above

Copy for kind information to:

- 1) Director, MoEF&CC, GOI, New Delhi
- 2) Regional Director, CPCB Zonal Office, Kolkata
- 3) Member Secretary, SPCB - Odisha, Bhubaneswar
- 4) Regional Officer, SPCB - Odisha, Hakimpada, Angul

EC Compliance Report

Name of the project : GMR Kamalanga Energy Limited, Dhenkanal, Odisha
Clearance Letter No. & Date : J 13012/73/2011-IA. II(T) dtd. 05.12. 2011, 11.01.2019 & 11.04.2020
(Phase-II: 1x350MW)
Period of Compliance Report: April – September 2022

A. SPECIFIC CONDITIONS :

Sl.	Conditions	Compliance Status
1	Vision document specifying prospective plan for the site shall be formulated and submitted to the Regional Office of the "Ministry within six months.	Vision document Submitted.
2	Scheme for implementation for harnessing solar power within the premises of the plant particularly at available roof tops shall be formulated and status of implementation shall be submitted to the Regional Office of the Ministry from time to time	Already implemented at GET hostel of our township area and solar fencing around the boundary wall, Traffic Solar blinker lights also installed.
3	In case source of fuel supply is to be changed at a later stage (now proposed to use imported coal from Indonesia) the project proponent shall intimate the Ministry well in advance along with necessary requisite documents for its concurrence for allowing the change. In such a case the necessity for re-conducting public hearing may be decided by the Ministry in consultation with the Expert Appraisal Committee.	Will be complied as applicable.
4	Provision for installation of FGD shall be provided for future use.	Space provided for FGD installation.
5	Coal transportation to plant site shall be undertaken by rail and no road transportation shall be permitted.	Complied. Rail transportation facility is developed.
6	A detailed study on chemical composition particularly heavy metal and radioactive contents shall be carried out through a reputed institute and the report shall be submitted to Regional Office of the Ministry. Only after ascertaining its radioactive level shall fly ash be utilized for brick manufacturing or supplied to brick manufacturers.	Complied.
7	The project proponent shall carry out a long term R&D on Boiler efficiency vis-a-vis large variation on ash content of coal and submit its findings to the Ministry at a later stage.	Will be complied.
8	A stack of 275m height with flue gas velocity not less than 22 m/s shall be installed and provided with continuous online monitoring equipment for SOx, NOx and PM2.5 & PM10. Mercury emissions from stack may also monitored on periodic basis.	Will be complied.
9	High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm ³	The same has been included in the specification and will be complied.
10	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.	The same has been included in the specification and will be complied.



11	Utilisation 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. Fly ash in the mine void should be used only after carrying the study regarding the impact on ground water and after permission of the DGMS. It should not be used for agriculture purpose.	Will be complied as specified.
12	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.	The same has been included in the specification and will be complied.
13	Ash pond shall be lined with HDP/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 protect the ash dyke from getting breached. Ash pond water shall be re circulated and utilized.	The same has been included in the specification and being complied.
14	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 the Ministry for suitable amendments to environmental clearance condition wherever necessary.	Will be complied
15	Hydrogeology of the 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 any 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.	Will be complied.
16	No ground water shall be extracted for use in operation of the power plant even in lean season.	Will be complied
17	No water bodies (including natural drainage system) in the area shall be disturbed due to activities associated with the setting up of operation of the power plant.	Complied
18	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.	Noted.
19	Land and Water requirement shall be restricted as per latest CEA norms issued.	Will be complied.
20	COC of 5.0 shall be adopted.	The same has been included in the specification and will be complied.
21	Regular monitoring of ground water level shall be carried out by establishing a network of existing wells and constructing new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (Hg, Cr, As, Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	Being Complied.



22	Monitoring surface water quality in the area 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.	Being Monitored regularly & record maintained. Copy the Surface Water quality report is enclosed as Annexure – I
23	Waste water generated from the plant shall be treated before discharge to comply limits prescribed by the SPCB.	Being Complied.
24	The project proponent shall undertake rain water harvesting measures and shall develop water storage for use in operation of the plant. Rain water harvesting system shall be put in place which shall comprise of rain water collection from the built up and open area in the plant premises. Action plan for implementation shall be submitted to the Regional Office of the Ministry within six months.	Complied.
25	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	Complied.
26	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.	Complied
27	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.	Complied
28	CSR scheme shall be undertaken based on need based assessment in and around the villages within 5.0 km of the site and in constant consultation with the village Panchayat and the District Administration. As part of CSR employment of local youth after imparting relevant training as may be necessary shall be undertaken as committed.	Complied. A comprehensive scheme was developed as per the felt needs of the communities. Different activities were undertaken in the thrust areas of livelihoods, health and education in 09 villages. Detail is attached as Annexure-II
29	A special scheme for upliftment of SC & ST population in the study area shall be formulated and implemented in a time bound manner. The project proponent shall also identify the rights of Tribal under existing Laws and ensure its protection and implementation thereof.	Complied. Special counseling has been carried out to identify appropriate livelihood suited for the project affected families including SC and ST families. Through this counseling so far 1500 families have chosen their livelihood options. The activities undertaken were farming, mushroom cultivation, Goatary, sheep rearing, poultry, dairy, micro enterprise development. 1549 project affected families including 50 old persons received food ration every month under Livelihood support till September-2022. Besides these activities vocational training was also provided to youth and women belonging to SC and ST community. One ST Girls undertaken

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		short term BPO course with our support and she is engaged in a Call Centre in Kolkata.
30	An amount of Rs 5.0 Crores shall be earmarked as one-time capital cost for CSR programme as committed by the project proponent. Subsequently a recurring expenditure of Rs 1.0 Crores per annum till the life of the plant shall be earmarked as recurring expenditure for CSR activities. Details of the activities to be undertaken shall be submitted within six month along with road map for implementation.	<p>Being complied.</p> <ul style="list-style-type: none"> ➤ Approx. expenditure till date is Rs. 44.3 Cores. ➤ GMRVF DAV Public School established. ➤ Hospital facility provided. ➤ Pipe water supply started to 5 villages in collaboration with RWSS department of Govt. of Odisha. ➤ 02 Nos. of Community Centers has been constructed in the village of Manpur and Kamalanga. ➤ Compound wall constructed in Govt. High School, Kamalanga. ➤ Renovation of School Building in Maniabeda ➤ 02 New class rooms constructed in Kamalanga High School. ➤ Boundary wall elevation work done in Panchayat High School Manpur ➤ Construction of CC road done in Achalkote Village, CC Road Connecting RD road to Mangalpur Harijan Sahi, CC road Kshatriya Sahi to Gopal Sahi in Manpur Village, CC road from Harijan Sahi to Barik Sahi Manpur and Renovation of Laxmi temple at Brameswar temple campus in Manpur. Class room construction done in Saraswati Sisu mandir, Mangalpur in FY 22-23.
31	It shall be ensured that an in-built monitoring mechanism for the CSR 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. The achievements should be put on company's website.	<p>Community consultation is being held on quarterly basis in which sharing of progress is done.</p> <p>The feedback/suggestion of community is being incorporated in the planning and implementation process. Quarterly monitoring of livelihood support programs are carried by an external agency. Eight quarterly monitoring reports submitted by the external agency and the suggestions are being followed.</p>
32	Green Belt consisting of 3 tiers of plantations of native species around plant and 100m width shall be raised. The density of trees shall not be less than 2500 per ha with survival rate not less than 80 %.	<p>Complied</p> <ul style="list-style-type: none"> ➤ Green belt with Indigenous species is being developed in phase wise. We have planted around 3,93,816 saplings till September 22 (including 1466 saplings in 2022-23) in around plant & township premises, avenue plantation along the Railway line & approach Road to cover land area of 358.303 Acres. ➤ Survival rate is around 90%. ➤ In addition to this, we have also developed avenue plantation and green belt in Dhenkanal area as required by District Administration.

Menu



33	An Environmental Cell shall be created at the project site itself and shall be headed by an officer of appropriate seniority and qualification. It shall be ensured that the head of the cell shall directly report to the Head of the Organization.	Environmental cell is in place.
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B. GENERAL CONDITIONS

Sl.	Conditions	Compliance status
1	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.	Being Complied
2	Sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt/ plantation.	Being Complied
3	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 of plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.	Being complied.
4	Storage facilities for auxiliary liquid fuel such as LDO /HFO/LSHS shall be made in the plant area in consultation with Dept. of Explosives, Nagpur. Sulphur content in the liquid fuel shall 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.	Complied.
5	First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	Complied
6	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 85 dB(A) from source. For people working in the high noise area, requisite personal protective equipment like earplugs/ear muffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc. shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non-noisy /less noisy areas.	Noise level will be maintained as per prescribed limit. Required PPE's will be provided to people working in noise prone areas.
7	Regular monitoring of ambient air ground level concentration of SO ₂ , NO _x , PM _{2.5} & PM ₁₀ and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to 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.	Being Complied. AAQ is being monitored regularly by MoEF&CC accredited laboratory and records maintained. Copy of monitoring report of September-2022 is enclosed as per annexure- III.
8	Provision shall be made for the housing of construction labour (as applicable) within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical, health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Presently no labour camp available at site.
9	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the Ministry of Environment and Forests at http:// envfor.nic.in .	Complied

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10	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad, Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/representations, if any, received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Complied. The EC copy has been uploaded in the following Company URL: https://www.gmrgroup.in/kamalang_a/
11	The proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM (PM _{2.5} & PM ₁₀), SO ₂ , NO _x (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.	Being Complied Pl. see compliance status on Company URL: https://www.gmrgroup.in/kamalang_a/ Online monitoring data is being displayed at Gate No – 2 & 3
12	The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	Complied.
13	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 as Specified Pl. see company website URL - https://www.gmrgroup.in/kamalang_a/
14	Regional Office of the Ministry of Environment & Forests will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring. Project proponent will up-load the compliance status in their website and up-date the same from time to time at least six monthly basis. Criteria pollutants levels including NO _x (from stack & ambient air) shall be displayed at the main gate of the power plant.	Submitted, Vide our letter ref: GKEL/KTPP/BBSR/MOEF/ 2011-12/1222 Dated 20 th September 2011.
15	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
16	The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.	Financial Closure not done yet.
17	Full cooperation shall be extended to the Scientists/Officers from the Ministry, Regional Office of the Ministry, CPCB/ SPCB who would be monitoring the compliance of environmental status.	Being complied as advised.

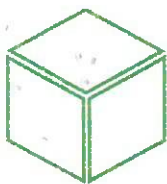


Sl.	Additional Conditions as per the MoEF&CC letter dated 11.01.2019	Compliance Status
i	No forest land is involve in the incremental area of 120.07 Acres.	Compiled
ii	Avenue Plantation shall be developed along the Railway line and Approach roads.	Avenue plantation is being developed.
iii	Revised emission standard and water consumption as per the Ministry's notification dated 07.12.2015 and subsequent amendments notified from time to time.	Will be Complied
iv	Treated water from the STP located within 50km distance from the project.	STP not available within 50 Kms radius of the plant.
V	An environmental Officer be declared to look after the matter related to the implementation of various environmental control measures. In case any non- implementation of such environmental control measures, the environmental Officer shall be held responsible.	Environmental Officer declared and communicated to the Eastern Regional Office of ministry vide letter no. 6630 dated 12.03.2019
Vi	A copy of forest diversion permission under FC Act, 1980 shall be submitted for which an application has been submitted with State Forest Department.	The forest diversion proposal already submitted to State Forest Department and is in-process.
Vii	CER Activity will be carried out as per Ministry's OM No.22-65/2017-IA.II dated 01.05.2018 for implementation of Various CER/CSR activities delineated in the Ministry's OM dated 01.05.2018 within the project affected and surrounding areas.	Complied, CER/CSR activities report has been submitted to the Eastern Regional Office ministry vide letter no. 6630 dated 12.04.2019. Detail refer to Annexure-II
Viii	The left out area of 31.19 acres shall be used for green belt development, as proposed, the periphery development area of 7.33 acres shall be used for creating infrastructure and other CSR activities for the benefit of communities surrounding the project.	Complied Peripheral development will be done as specified
Sl.	Additional Conditions as per the MoEF & CC letter dated 11.04.2019	Compliance Status
i	Progress of construction activities and expenditure incurred shall be shall be submitted along with six monthly compliance report	Will be complied
ii	While commissioning the proposed unit, the compliance of revised emission norms issued vide Notification dated 07.12.2015 for the parameter PM: 30mg/Nm ³ , SO ₂ : 100mg/Nm ³ , NO _x : 100mg/Nm ³ , and Hg: 0.03mg/Nm ³ shall be adhered along with specific water consumption as per the notification dated 28.06.2018. The Flue Gas Desulphurisation System, NO _x control measures such as SCR/SCNR/De-NO _x burners shall be installed to achieve the revised emission norms.	Will be complied.
iii	As per the Revised Tariff Policy notified by Ministry of Power vide dated 28.01.2016, Project proponent shall explore the use of treated sewage water from the sewage treatment plant of Municipality/local bodies/similar organisation located within 50 km radius of the proposed power project to minimize the water drawl from surface water bodies. The detail of sewage treatment plants located within the 50km radius along with the capacities shall be submitted.	STP not available within 50 Kms. radius of the plant.

Date: 25.11.2022


Manoj Mishra
 Plant Head





Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Annexure-I

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

Laboratory Services

Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

• Infrastructure Engineering
• Water Resource Management
• Environmental & Social Study

• Surface & Sub-Surface Investigation
• Quality Control & Project Management
• Renewable Energy

• Agricultural Development
• Information Technology
• Public Health Engineering

• Mine Planning & Design
• Mineral/Sub-Soil Exploration
• Waste Management Services

Ref: Envlab/22/R-7808

Date: 06.10.2022

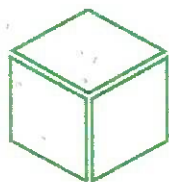
AMBIENT AIR QUALITY MONITORING REPORT FOR SEPTEMBER -2022 (CORE ZONE)

1. Name of the Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
2. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer, VOC Sampler
3. Sampling Location : AAQMS-1: Near Rain Water pump House Pit
4. Sample Collected By : VCSPL Representative in presence of Client's Representative

Date	PARAMETERS											
	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	C ₆ H ₆ (µg/m ³)	BaP (ng/m ³)
01.09.2022	68	38.1	13.6	24.1	6.9	0.51	22.8	BDL	BDL	BDL	BDL	BDL
05.09.2022	52	29.3	12.8	23.8	6.2	0.49	23.4	BDL	BDL	BDL	BDL	BDL
08.09.2022	61	33.6	11.6	22.3	5.9	0.46	21.6	BDL	BDL	BDL	BDL	BDL
12.09.2022	60	34.1	12.3	23.1	6.2	0.48	22.4	BDL	BDL	BDL	BDL	BDL
15.09.2022	63	35.2	11.4	22.8	6.1	0.38	21.6	BDL	BDL	BDL	BDL	BDL
19.09.2022	49	27.6	12.3	23.6	6.3	0.49	23.5	BDL	BDL	BDL	BDL	BDL
22.09.2022	62	35.1	13.8	22.8	6.2	0.42	24.6	BDL	BDL	BDL	BDL	BDL
26.09.2022	42	23.6	12.1	24.1	6.8	0.38	23.6	BDL	BDL	BDL	BDL	BDL
29.09.2022	62	34.1	11.8	23.5	6.3	0.39	22.8	BDL	BDL	BDL	BDL	BDL
Monthly Average	57.7	32.3	12.4	23.3	6.3	0.4	22.9	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
TEST METHOD	Gravimetric IS 5182: Part 23	Gravimetric EPA 1998	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacol & Hochheiser Method IS 5182 (Part-6) RA2017	Chemical Method Air Sampling, 3rd Edn. By James P. Lodge (Method-411)	Non Dispersive Infrared Method IS 5182 (Part-10):1999	Indo Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	AAS Method IS 5182(Part-22):2004			Gas Chromatography IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004

BDL Values: SO₂< 4 µg/m³, NO_x< 9 µg/m³, O₃<4 µg/m³, NH₃<20 µg/m³, Ni<0.01 ng/m³, As < 0.001 ng/m³, C₆H₆<0.001 µg/m³, BaP<0.002 ng/m³, Pb<0.001 µg/m³, CO<0.1 mg/m³





Ref: Envlab/22/R-7809

Date: 06.10.2022

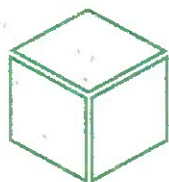
AMBIENT AIR QUALITY MONITORING REPORT FOR SEPTEMBER -2022 (CORE ZONE)

1. Name of the Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
2. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer, VOC Sample
3. Sampling Location : AAQMS-2: Near Security Watch Tower -4
4. Sample Collected By : VCSPL Representative in presence of Client's Representative

Date	PARAMETERS											
	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	C ₆ H ₆ (µg/m ³)	BaP (ng/m ³)
01.09.2022	60	33.8	13.2	23.8	6.8	0.51	24.3	BDL	BDL	BDL	BDL	BDL
05.09.2022	58	32.1	12.8	22.3	7.1	0.48	23.5	BDL	BDL	BDL	BDL	BDL
08.09.2022	68	38.6	13.1	24.1	6.2	0.55	22.8	BDL	BDL	BDL	BDL	BDL
12.09.2022	60	33.4	13.2	23.5	6.1	0.56	23.4	BDL	BDL	BDL	BDL	BDL
15.09.2022	52	28.6	12.8	22.3	7.1	0.5	22.6	BDL	BDL	BDL	BDL	BDL
19.09.2022	55	30.8	11.6	23.8	6.8	0.48	23.7	BDL	BDL	BDL	BDL	BDL
22.09.2022	64	36.2	12.8	24.6	7.2	0.42	24.1	BDL	BDL	BDL	BDL	BDL
26.09.2022	52	23.5	14.3	23.8	6.3	0.47	23.5	BDL	BDL	BDL	BDL	BDL
29.09.2022	58	32.1	13.6	24.3	6.5	0.51	22.8	BDL	BDL	BDL	BDL	BDL
Monthly Average	58.6	32.1	13.0	23.6	6.7	0.5	23.4	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
TEST METHOD	Gravimetric IS 5182: Part 23	Gravimetric EPA 1998	Improved Wes & Genke Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	Chemical Method Air Sampling 3rd Edn. By James P. Lodge (Method-411)	Non Dispersive Infrared Method IS 5182 (Part-10):1999	Indo Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	AAS Method IS 5182(Part-22):2004			Gas Chromatography IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004

BDL Values: SO₂< 4 µg/m³, NO_x< 9 µg/m³, O₃< 4 µg/m³, NH₃< 20 µg/m³, Ni<0.01 ng/m³, As < 0.001 ng/m³, C₆H₆<0.001 µg/m³, BaP<0.002 ng/m³, Pb<0.001 µg/m³, CO<0.1 mg/m³





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Ref: Envlab/22/R-7810

Date: 06.10.2022

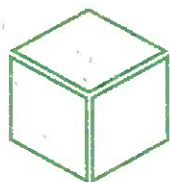
AMBIENT AIR QUALITY MONITORING REPORT FOR SEPTEMBER-2022 (CORE ZONE)

1. Name of the Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
2. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer, VOC Sampler
3. Sampling Location : AAQMS-3: Near Budhapanka Material Gate(Security Watch Tower No.1)
4. Sample Collected By : VCSPL Representative in presence of Client's Representative

Date	PARAMETERS											
	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	C ₆ H ₆ (µg/m ³)	BaP (ng/m ³)
01.09.2022	61	33.9	13.1	24.8	6.1	0.45	23.4	BDL	BDL	BDL	BDL	BDL
05.09.2022	58	32.6	12.8	22.6	6.2	0.51	22.8	BDL	BDL	BDL	BDL	BDL
08.09.2022	68	37.4	13.6	24.3	6.8	0.43	22.6	BDL	BDL	BDL	BDL	BDL
12.09.2022	59	33.1	11.8	22.3	6.1	0.46	22.4	BDL	BDL	BDL	BDL	BDL
15.09.2022	64	35.6	12.2	23.4	6.2	0.37	21.6	BDL	BDL	BDL	BDL	BDL
19.09.2022	61	33.8	11.6	22.6	6.7	0.32	23.4	BDL	BDL	BDL	BDL	BDL
22.09.2022	52	29.6	12.8	23.8	6.9	0.41	22.8	BDL	BDL	BDL	BDL	BDL
26.09.2022	62	34.6	13.4	23.4	6.2	0.49	22.3	BDL	BDL	BDL	BDL	BDL
29.09.2022	58	32.6	11.1	22.8	6.4	0.45	21.6	BDL	BDL	BDL	BDL	BDL
Monthly Average	60.3	33.7	12.5	23.3	6.4	0.4	22.5	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
TEST METHOD	Gravimetric IS 5182: Part 23	Gravimetric EPA 1998	Improved Wes & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	Chemical Method Air Sampling 3rd Edn. By James P. Lodge (Method-411)	Non Dispersive Infrared Method IS 5182 (Part-10):1999	Indo Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	AAS Method IS 5182(Part-22):2004			Gas Chromatography IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004

BDL Values: SO₂< 4 µg/m³, NO_x< 9 µg/m³, O₃<4 µg/m³, NH₃<20 µg/m³, Ni<0.01 ng/m³, As < 0.001 ng/m³, C₆H₆<0.001 µg/m³, BaP<0.002 ng/m³, Pb<0.001 µg/m³, CO<0.1 mg/m³





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Ref: Envlab/22/R-7811

Date: 06.10.2022

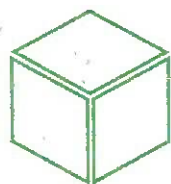
AMBIENT AIR QUALITY MONITORING REPORT FOR SEPTEMBER-2022 (BUFFER ZONE)

1. Name of the Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
2. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer, VOC Sampler
3. Sample Collected By : VCSPL Representative in presence of Client's Representative

Location Name	Date	PARAMETERS											
		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	C ₆ H ₆ (µg/m ³)	BaP (ng/m ³)
AAQMS1: Kamalanga (Township)	19.09.2022	57	32.1	12.4	22.3	BDL	0.34	BDL	BDL	BDL	BDL	BDL	BDL
AAQMS-2: Mangalpur	20.09.2022	59	33.1	12.8	21.9	BDL	0.41	BDL	BDL	BDL	BDL	BDL	BDL
AAQMS3: Budhapanka	21.09.2022	55	31.2	11.9	21.3	BDL	0.34	BDL	BDL	BDL	BDL	BDL	BDL
AAQMS4: Bhogamunda	22.09.2022	56	31.2	12.1	22.3	BDL	0.37	BDL	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard		100	60	80	80	100	4	400	1	20	6	5	1
TEST METHOD		Gravimetric IS 5182: Part 23	Gravimetric EPA 1998	Improved West & Geake Method S 5182 (Part 2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	Chemical Method Air Sampling, 3rd Edn. By James P. Lodge (Method-411)	Non Dispersive Infrared Method IS 5182 (Part- 10):1999	Indo Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method- 401)	AAS Method IS 5182(Part -22):2004			Gas Chromato graphy IS 5182 (Part- 11):2006	Solvent Extraction IS 5182 (Part- 12):2004

BDL Values: SO₂< 4 µg/m³, NO_x< 9 µg/m³, O₃<4 µg/m³, NH₃<20 µg/m³, Ni<0.01 ng/m³, As < 0.001 ng/m³, C₆H₆<0.001 µg/m³, BaP<0.002 ng/m³, Pb<0.001 µg/m³, CO-<0.1 mg/m³





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Ref: Envlab/22/R-7812

Date: 06.10.2022

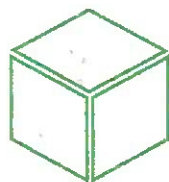
SOURCE EMISSION MONITORING REPORT SEPTEMBER-2022

1. Name of Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
2. Sampling Location : ST-1 : Stack attached to ESP Outlet of UNIT-1
: ST-2 : Stack attached to ESP Outlet of UNIT-2
: ST-3 : Stack attached to ESP Outlet of UNIT-3
3. Date of Sampling : 14.09.2022
4. Date of Analysis : 15.09.2022 to 19.09.2022
5. Sample Collected by : VCSPL Representative in presence of GMR representative

Sl. No.	Parameters	Unit of Measurement	Standard as per MoEF & CC & CPCB	Analysis Results		
				ST-1	ST-2	ST-3
1.	Stack Temperature	°C	--	128.0	137.0	145.0
2.	Velocity	m/sec	--	21.6	21.8	27.3
3.	Volume of Flue gas	m ³ /hour	-	1780539.9	1804445.3	2246283.4
4.	Particulate Matter as PM	mg/Nm ³	50.0	32.3	29.3	32.8
5.	Sulphur Dioxide as SO ₂	mg/Nm ³	600.0	1264	1208	1292
6.	Oxides of Nitrogen as NOx	mg/Nm ³	450.0	288	301	294
7.	Carbon Monoxide as CO	mg/Nm ³	--	11.1	9.2	10.7
8.	Carbon Dioxide as CO ₂	%	--	9.8	8.9	9.7
9.	Oxygen as O ₂	%	--	6.9	6.8	7.1
10.	Mercury as Hg	mg/Nm ³	0.03	0.0192	0.0201	0.0176

Note: The value of SO₂, NOx are corrected @6% O₂ level in flue gas emission.





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Ref: Envlab/22/R-7814

Date: 04.10.2022

ETP WATER ANALYSIS REPORT SEPTEMBER-2022

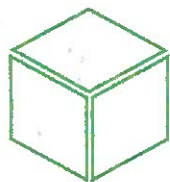
1. Name of the Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
2. Sampling Location : W1: Plant ETP-Inlet
W2: Plant ETP-Outlet
3. Date of Sampling : 14.09.2022
4. Date of Analysis : 15.09.2022 to 21.09.2022
5. Sample Collected By : VCSPL Representative in presence of Client's Representative

Sl. No	Parameter	Unit	Testing Methods	Inland Surface Water Standard Effluents Part-A	Analysis Results	
					W-1	W-2
1.	Colour and Odour	Hazen	APHA 2120 B & APHA 2150B	5 & U/O	<5.0 & Agreeable	<5.0 & Agreeable
2.	Suspended solids	mg/l	APHA 2540 D	100.0	116	25
3.	Particle size of suspended solids	--	APHA 2540 D	Shall Pass 850µ IS Sieve	passed	passed
4.	pH Value (at 25 °C)	--	APHA 4500H ⁺ B	5.5-9.0	7.24	7.84
5.	Temperature	°C	APHA 2550 B	Shall not exceed 5°C above the receiving water Temp	26.8	26.6
6.	Oil and grease	mg/l	APHA 5520 B	10.0	9.3	ND
7.	Total Residual Chlorine (as RFC)	mg/l	APHA 4500 Cl ⁻ B	1.0	ND	ND
8.	Ammonical Nitrogen (as NH ₃ -N)	mg/l	APHA 4500 NH ₃ F	50.0	3.1	0.8
9.	Total Kjeldahl Nitrogen (as N)	mg/l	APHA 4500 N _{org} B	100.0	5.8	1.7
10.	Free ammonia (as NH ₃)	mg/l	By Calculation	5.0	ND	ND
11.	Biochemical Oxygen Demand (3 days at 27°C)	mg/l	APHA 5210 B	30.0	13.8	2.6
12.	Chemical Oxygen Demand	mg/l	APHA 5220 C	250.0	78.3	10.3
13.	Arsenic(as As)	mg/l	APHA 3114 B	0.2	BDL	BDL
14.	Mercury (As Hg)	mg/l	APHA 3500 Hg	0.01	BDL	BDL
15.	Lead (as Pb)	mg/l	APHA 3111 B,C	0.1	BDL	BDL
16.	Cadmium (as Cd)	mg/l	APHA 3111 B,C	2.0	BDL	BDL
17.	Hexavalent chromium (as Cr ⁺⁶)	mg/l	APHA 3500Cr B	0.1	BDL	BDL
18.	Total chromium (as Cr)	mg/l	APHA 3111 B	2.0	0.31	BDL
19.	Copper (as Cu)	mg/l	APHA 3111 B,C	3.0	BDL	BDL
20.	Zinc (as Zn)	mg/l	APHA 3111 B,C	5.0	0.17	BDL
21.	Selenium (as Se)	mg/l	APHA 3114 B	0.05	BDL	BDL
22.	Nickel (as Ni)	mg/l	APHA 3111 B	3.0	BDL	BDL
23.	Cyanide (as CN)	mg/l	APHA 4500 CN ⁻ C,D	0.2	BDL	BDL
24.	Fluoride (as F)	mg/l	APHA 4500 F C	2.0	1.43	0.16
25.	Dissolved phosphates (as P)	mg/l	APHA 4500 P,D	5.0	1.68	0.38
26.	Sulphide (as S)	mg/l	APHA 4500 S ²⁻ D	2.0	0.61	ND
27.	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	APHA 5530 B,D	1.0	0.18	BDL
28.	Bio-assay test	mg/l	APHA 10600 D	90% survival of fish after 96 hours in 100% effluent	80%	92%
29.	Manganese (as Mn)	mg/l	APHA 3500Mn B	2.0	0.071	BDL
30.	Iron (as Fe)	mg/l	APHA 3500Fe B	3.0	0.68	0.27
31.	Vanadium (as V)	mg/l	APHA 3500V B	0.2	BDL	BDL
32.	Nitrate Nitrogen (as N)	mg/l	APHA:4500 NO ₃ ⁻ B	10.0	7.1	1.23

Note: CL: Colourless, U/O: Unobjectionable, ND: Not Detected.

BDL (Below Detectable Limits) Values: C₆H₅OH<0.05 mg/l, Hg<0.002 mg/l, Cd<0.003 mg/l, Se<0.001 mg/l, CN <0.01mg/l, As<0.004 mg/l, Pb<0.01 mg/l, Zn<0.05 mg/l, Cr<6<0.01 mg/l, B<0.01 mg/l, Ni <0.05mg/l, V<0.01mg/l.





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Ref: Envlab/22/R-7815

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STP WATER ANALYSIS REPORT SEPTEMBER-2022

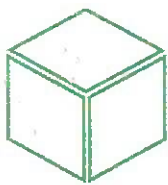
1. Name of the Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
2. Sampling Location : W1: Plant STP Inlet
W2: Plant STP Outlet
3. Date of Sampling : 14.09.2022
4. Date of Analysis : 15.09.2022 to 21.09.2022
5. Sample Collected By : VCSPL Representative in presence of Client's Representative

Sl. No	Parameter	Unit	Testing Methods	Schedule-VI and new CPCB norms (* standard as per G.S.R.1265(E)	Analysis Results	
					W-1	W-2
1.	Colour and Odour	Hazen	APHA 2120 B& APHA 2150B	5 & U/O	30 & Pungent Smell	<5.0 & Agreeable
2.	Suspended solids	mg/l	APHA 2540 D	100.0*	128	25
3.	Particle size of suspended solids	--	APHA 2540 D	Shall Pass 850µ IS Sieve	passed	passed
4.	pH Value (at 25 °C)	NTU	APHA 4500H'B	6.5-9.0*	7.41	7.81
5.	Temperature	°C	APHA 2550 B	Shall not exceed 5°C above the receiving water Temp	26.3	26.8
6.	Oil and grease	mg/l	APHA 5520 B	10.0	9.8	ND
7.	Total residual chlorine	mg/l	APHA 4500 Cl' B	1.0	ND	ND
8.	Ammonical Nitrogen (as NH ₃ -N)	mg/l	APHA 4500 NH ₃ F	50.0	6.4	1.6
9.	Total Kjeldahl Nitrogen (as N)	mg/l	APHA 4500 N _{org} B	100.0	9.3	3.4
10.	Free ammonia (as NH ₃)	mg/l	By Calculation	5.0	ND	ND
11.	Biochemical Oxygen Demand (3 days at 27°C)	mg/l	APHA 5210 B	30.0*	18.3	5.8
12.	Chemical Oxygen Demand (as COD)	mg/l	APHA 5220 C	250.0	86.2	23.6
13.	Arsenic(as As)	mg/l	APHA 3114 B	0.2	BDL	BDL
14.	Mercury (As Hg)	mg/l	APHA 3500 Hg	0.01	BDL	BDL
15.	Lead (as Pb)	mg/l	APHA 3111 B,C	0.1	BDL	BDL
16.	Cadmium (as Cd)	mg/l	APHA 3111 B,C	2.0	BDL	BDL
17.	Hexavalent chromium (as Cr +6)	mg/l	APHA 3500Cr B	0.1	BDL	BDL
18.	Total chromium (as Cr)	mg/l	APHA 3111 B	2.0	0.069	BDL
19.	Copper (as Cu)	mg/l	APHA 3111 B,C	3.0	BDL	BDL
20.	Zinc (as Zn)	mg/l	APHA 3111 B,C	5.0	0.31	0.048
21.	Selenium (as Se)	mg/l	APHA 3114 B	0.05	BDL	BDL
22.	Nickel (as Ni)	mg/l	APHA 3111 B	3.0	BDL	BDL
23.	Cyanide (as CN)	mg/l	APHA 4500 CN'C,D	0.2	BDL	BDL
24.	Fluoride (as F)	mg/l	APHA 4500 F C	2.0	0.78	0.21
25.	Dissolved phosphates (as P)	mg/l	APHA 4500 P,D	5.0	1.82	BDL
26.	Sulphide (as S)	mg/l	APHA 4500 S'D	2.0	0.92	ND
27.	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	APHA 5530 B,D	1.0	BDL	BDL
28.	Bio-assay test	mg/l	APHA 10600 D	90% survival of fish after 96 hours in 100% effluent	81%	93%
29.	Manganese (as Mn)	mg/l	APHA 3500Mn B	2.0	BDL	BDL
30.	Iron (as Fe)	mg/l	APHA 3500Fe B	3.0	0.68	0.21
31.	Vanadium (as V)	mg/l	APHA 3500V B	0.2	BDL	BDL
32.	Nitrate Nitrogen (as N)	mg/l	APHA4500 NO ₃ B	10.0	2.38	0.84
33.	Faecal Coliform (as FC)	MPN/100ml	APHA 9221 E	100	220	63

Note: CL: Colourless, U/O: Unobjectionable, ND: Not Detected.

BDL (Below Detectable Limits) Values: C₆H₅OH<0.05 mg/l, Hg<0.002 mg/l, Cd<0.003 mg/l, Se<0.001 mg/l, CN <0.01mg/l, As<0.004 mg/l, Pb<0.01 mg/l, Zn<0.05 mg/l, Cr+6<0.01 mg/l, B<0.01 mg/l, Ni <0.05mg/l, V<0.01mg/l.





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Ref: Envlab/22/R-7816

Date: 04.10.2022

STP WATER ANALYSIS REPORT SEPTEMBER-2022

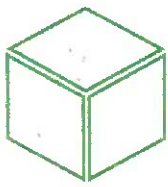
- Name of the Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
- Sampling Location : W3 : Township STP Inlet
W4 : Township STP Outlet
- Date of Sampling : 14.09.2022
- Date of Analysis : 15.09.2022 to 21.09.2022
- Sample Collected By : VCSPL Representative in presence of Client's Representative

Sl. No	Parameter	Unit	Testing Methods	Schedule-VI and new CPCB norms (* standard as per G.S.R.1265(E)	Analysis Results	
					W3	W4
1.	Colour and Odour	Hazen	APHA 2120 B& APHA 2150B	5 & U/O	30 & Pungent Smell	<5.0 & Agreeable
2.	Suspended solids	mg/l	APHA 2540 D	100.0*	118	32
3.	Particle size of suspended solids	--	APHA 2540 D	Shall Pass 850µ IS Sieve	Passed	passed
4.	pH Value (at 25 °C)	NTU	APHA 4500H'B	6.5-9.0*	7.14	7.64
5.	Temperature	°C	APHA 2550 B	Shall not exceed 5°C above the receiving water Temp	26.3	27.5
6.	Oil and grease	mg/l	APHA 5520 B	10.0	15.3	ND
7.	Total residual chlorine	mg/l	APHA 4500 Cl' B	1.0	ND	ND
8.	Ammonical Nitrogen (as NH ₃ -N)	mg/l	APHA 4500 NH ₃ F	50.0	6.2	3.2
9.	Total Kjeldahl Nitrogen (as N)	mg/l	APHA 4500 N _{org} B	100.0	8.9	4.2
10.	Free ammonia (as NH ₃)	mg/l	By Calculation	5.0	ND	ND
11.	Biochemical Oxygen Demand (3 days at 27°C)	mg/l	APHA 5210 B	30.0*	45	7.9
12.	Chemical Oxygen Demand (as COD)	mg/l	APHA 5220 C	250.0	186.3	32.2
13.	Arsenic(as As)	mg/l	APHA 3114 B	0.2	BDL	BDL
14.	Mercury (As Hg)	mg/l	APHA 3500 Hg	0.01	BDL	BDL
15.	Lead (as Pb)	mg/l	APHA 3111 B,C	0.1	BDL	BDL
16.	Cadmium (as Cd)	mg/l	APHA 3111 B,C	2.0	BDL	BDL
17.	Hexavalent chromium (as Cr ⁺⁶)	mg/l	APHA 3500Cr B	0.1	BDL	BDL
18.	Total chromium (as Cr)	mg/l	APHA 3111 B	2.0	BDL	BDL
19.	Copper (as Cu)	mg/l	APHA 3111 B,C	3.0	BDL	BDL
20.	Zinc (as Zn)	mg/l	APHA 3111 B,C	5.0	0.21	0.034
21.	Selenium (as Se)	mg/l	APHA 3114 B	0.05	BDL	BDL
22.	Nickel (as Ni)	mg/l	APHA 3111 B	3.0	BDL	BDL
23.	Cyanide (as CN)	mg/l	APHA 4500 CN'C,D	0.2	BDL	BDL
24.	Fluoride (as F)	mg/l	APHA 4500 F C	2.0	0.038	0.013
25.	Dissolved phosphates (as P)	mg/l	APHA 4500 P,D	5.0	1.64	0.48
26.	Sulphide (as S)	mg/l	APHA 4500 S ² D	2.0	ND	ND
27.	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	APHA 5530 B,D	1.0	BDL	BDL
28.	Bio-assay test	mg/l	APHA 10600 D	90% survival of fish after 96 hours in 100% effluent	80%	91%
29.	Manganese (as Mn)	mg/l	APHA 3500Mn B	2.0	BDL	BDL
30.	Iron (as Fe)	mg/l	APHA 3500Fe B	3.0	0.51	0.26
31.	Vanadium (as V)	mg/l	APHA 3500V B	0.2	BDL	BDL
32.	Nitrate Nitrogen (as N)	mg/l	APHA4500 NO ₃ ⁻ B	10.0	2.3	0.53
33.	Faecal Coliform (as FC)	MPN/100ml	APHA 9221 E	100	280	70

Note: CL: Colourless, U/O: Unobjectionable, ND: Not Detected.

BDL (Below Detectable Limits) Values: C₆H₅OH<0.05 mg/l, Hg<0.002 mg/l, Cd<0.003 mg/l, Se<0.001 mg/l, CN <0.01mg/l, As<0.004 mg/l, Pb<0.01mg/l, Zn<0.05 mg/l, Cr⁺⁶<0.01 mg/l, B<0.01 mg/l, Ni <0.05mg/l, V<0.01mg/l.





Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

- Infrastructure Engineering
- Water Resource Management
- Environmental & Social Study

- Surface & Sub-Surface Investigation
- Quality Control & Project Management
- Renewable Energy

- Agricultural Development
- Information Technology
- Public Health Engineering

- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
 Environment Lab
 Food Lab
 Material Lab
 Soil Lab
 Mineral Lab
 &
 Microbiology Lab

Ref: Envlab/22/R-7813

Date: 04.10.2022

DRINKING WATER ANALYSIS REPORT SEPTEMBER-2022

1. Name of the Industry : M/s GMR Kamalanga Energy Ltd, Dhenkanal
2. Sampling Location : DW1: Potable Drinking Water Before Treatment
DW2: Potable Drinking Water After Treatment
3. Date of Sampling : 14.09.2022
4. Date of Analysis : 15.09.2022 to 21.09.2022
5. Sample Collected By : VCSPL Representative in presence of Client's Representative

Sl. No	Parameter	Unit	Testing Methods	Standard as per IS -10500:2012, Amd. 2015 & 2018	Analysis Results	
					DW-1	DW-2
1.	Colour	Hazen	APHA 2120 B	5.0	<5.0	<5.0
2.	Odour	--	APHA 2150B	Agreeable	Agreeable	Agreeable
3.	Taste	--	APHA 2160 C	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA 2130 B	1	8.5	<1.0
5.	pH Value (at 25 °C)	--	APHA 4500H ⁺ B	6.5-8.5	8.26	7.32
6.	Total Hardness (as CaCO ₃) (max)	mg/L	APHA 2340 C	200	132	81
7.	Iron (as Fe) (max)	mg/L	APHA 3500 Fe B	1.0	0.59	0.29
8.	Chloride (as Cl) (max)	mg/L	APHA 4500 Cl B	250.0	38.6	17.3
9.	Residual, free Chlorine (min)	mg/L	APHA 4500 Cl B	0.2	ND	ND
10.	Dissolved Solids (max)	mg/L	APHA 2540 C	500.0	308	178
11.	Calcium (as Ca) (max)	mg/L	APHA 3500 Ca B	75.0	34.3	25.6
12.	Copper (as Cu) (max)	mg/L	APHA 3111 B,C	0.05	0.051	BDL
13.	Manganese (as Mn) (max)	mg/L	APHA 3500Mn B	0.1	BDL	BDL
14.	Sulphate (as SO ₄) (max)	mg/L	APHA 4500 SO ₄ ²⁻ E	200.0	42.3	32.8
15.	Nitrate (as NO ₃) (max)	mg/L	APHA 4500 NO ₃ ⁻ E	45.0	3.2	0.8
16.	Fluoride (as F) (max)	mg/L	APHA 4500 F,C	1.0	0.82	0.28
17.	Phenolic Compounds (as C ₆ H ₅ OH) (max)	mg/L	APHA 5530 B,D	0.001	BDL	BDL
18.	Mercury (as Hg) (max)	mg/L	APHA 3500 Hg	0.001	BDL	BDL
19.	Cadmium (as Cd) (max)	mg/L	APHA 3111 B,C	0.003	BDL	BDL
20.	Selenium (as Se) (max)	mg/L	APHA 3114 B	0.01	BDL	BDL
21.	Arsenic (as As) (max)	mg/L	APHA 3114 B	0.01	BDL	BDL
22.	Cyanide (as CN) (max)	mg/L	APHA 4500CN ⁻ C,D	0.05	BDL	BDL
23.	Lead (as Pb) (max)	mg/L	APHA 3111 B,C	0.05	BDL	BDL
24.	Zinc (as Zn) (max)	mg/L	APHA 3111 B,C	5.0	0.28	0.06
25.	Chromium (as Cr ⁶⁺) (max)	mg/L	APHA 3500Cr B	--	BDL	BDL
26.	Mineral Oil (max)	mg/L	APHA 5520 B	0.5	ND	ND
27.	Alkalinity (max)	mg/L	APHA 2320 B	200.0	81	53
28.	Aluminium as Al (max)	mg/L	APHA 3500Al B	0.03	BDL	BDL
29.	Boron (max)	mg/L	APHA 4500 B,B	0.5	BDL	BDL
30.	Total Coliform (as TC)	MPN/100ml	APHA 9221 B	Shall not be detectable in any 100 ml Sample	220	<1.1
31.	E. Coli	MPN/100ml	APHA 9221 E		Absent	Absent
32.	Faecal Coliform (as FC)	MPN/100ml	APHA 9221 F	--	70	<1.1

Note: CL: Colourless, Al: Agreeable, U/O: Unobjectionable, ND: Not Detected.

BDL (Below Detectable Limits) Values: C₆H₅OH<0.05 mg/l, Hg<0.002 mg/l, Cd<0.003 mg/l, Se<0.001 mg/l, As<0.004 mg/l, Pb<0.01 mg/l, Zn<0.01 mg/l, Cr-6<0.05 mg/l, B<0.01 mg/l, TC & FC: MPN/100 ml < 1.1 (0-0-0)



CSR SCHEME IMPLEMENTATION DETAILS

Status of CSR activities completed in 2020-21, 2021-22 and 2022-23 (till September 2022).

GMR Kamalanga Energy Ltd. has been supporting the community for enhancing their socio economic condition through various CSR activities for the last 12 years. A comprehensive scheme was developed as per the felt needs of the communities. Different activities were undertaken in the thrust areas of Education, Health & Sanitation, livelihoods and Infrastructure Development in 9 villages.

A. Highlights of CSR activities around GKEL in the year 2020-21 are as follows.

CSR Activities Undertaken Directly by GKEL

- Provided concession in school fees to 177 children from land loser families at GMR DAV Public School
- Installed 15,000 LPH capacity Potable Water Treatment Plant for Community Water Supply Scheme catering to the requirement of Kamalanga, Durgapur and Bhagamunda. Treated water from the Potable water treatment plant is fed to the over ground reservoir for further distribution to the user end.
- Infrastructure development works under progress are as follows
 - a) School boundary elevation work of Mangalpur Panchayat High school.
 - b) Anganwadi Centre at Kamalanga -1A.

CSR Activities undertaken by GMR Varalakshmi Foundation

Education :

- 400 masks provided to children of all 16 Anganwadi centers and 300 to 2 High schools.
- Engaged 10 support teachers (Vidya Volunteers) to organize on line and off line Tuition for primary class students of 8 Government Primary schools.
- Engaged 3 support teachers for conducting online Tuition classes for class 9th & 10th students benefitting 70 students.
- 16 students benefitted from coaching class for Navodaya entrance exam.
- Provided test papers to 141 students of Std. 10th from 2 High schools
- Construction of two class rooms in Kamalanga high school completed.
- Wall paintings done in one primary school
- Smart phone with recharging distributed to 119 students to enable them to access on line classes.
- Six students including 3 girls who scored more than 60% marks in High School class 10th Board examination selected to receive cash award.
- Provided Scholarship to 18 girls and one boy for better education.
- Awareness on sanitization, wearing mask and hand wash explained to class 9th and 10th students in 2 high schools and materials provided to students. Sanitization done in 2 schools before reopening of schools
- One batches of girls (8 girls) continuing basic computer learning course.

Health, Hygiene and Sanitation

- Provided health treatment support to 28 project affected families
- Three Nutrition Centers run by GMRVF benefited 43 pregnant and lactating women in this year. Nutritious food materials provided to pregnant and lactating mothers at their doorstep.
- Kitchen garden support provided to nutrition center pregnant & lactating mothers



Empowerment and Livelihoods

- Necessary market linkages made for selling of products made by SHG and Tailoring units

Community Development Activities

- Two tailoring units are supported in two villages benefiting about 36 girls for stitching and selling of garments, bags etc.

Livelihood Restoration Program Undertaken by GKEL and GMRVF

- 19 project affected families received support for farming. This includes 6 new farmers and 13 last year farmers who have taken partial support for farming.
- 96 project affected families received support for developing various micro-enterprises (77 for enterprise development + 19 got cross breed jersey cow).
- Organized one animal health camp benefitting cow, bullock and sheep of 53 project affected families
- Organised one trainings for farmers and exhibition to promote organic farming and taking up of high value crops.
- Soil testing organised for farmers in association with District Soil Testing Laboratory benefitting about 70 farmers.
- 50 old and poor people received dry food ration every month at their door step.

Employee involvement programs

- Implementation of Six social volunteering projects completed involving 45 employees of GKEL.
- Rs.10.76 lakhs donated by employees and contractors towards Daan Utsav. More than 1100 people benefitted through various programs under DAAN UTSAV.

B. Highlights of CSR activities around GKEL in the year 2021-22 are as follows

CSR Activities Undertaken Directly by GKEL

- Provided concession in school fees to 177 children from land loser families at GMR DAV Public School
- Construction of CC road in Achalkote Village, CC Road Connecting RD road to Mangalpur Harijan Sahi, CC road Kshatriya Sahi to Gopal Sahi in Manpur Village, CC road from Harijan Sahi to Barik Sahi Manpur and Renovation of Laxmi temple at Brameswar temple Campus Manpur

CSR Activities undertaken by GMR Varalakshmi Foundation

Education

- Engaged 10 support teachers (Vidya Volunteers) to organize on line and off line Tuition for primary class students of 8 Government Primary schools
- Engaged 3 support teachers for doing on line Tuition classes for class 10th students benefitting 50 students.
- 25 students benefitted from coaching class for Navodaya, Adarsha and NMMS entrance exam.
- Provided test papers to 276 students of Std. 9th and 10th from 2 High schools
- Prathama Story books provided to 202 students
- Toys provided to 370 children in Anganwadi centers
- Wall paintings done in one Anganwadi center.
- Four students who scored more than 70% marks in Class 10th Board examination received cash award.
- Provided Scholarship to 15 girls and one boy for better education.
- One batches of girls (10 girls) continuing basic computer learning course.



Health, Hygiene and Sanitation

- Provided Rs.7.43 lakhs as health treatment reimbursement support to 83 project affected families
- Three Nutrition Centers run by GMRVF benefited 40 pregnant and lactating women in this year. Nutritious food materials provided to pregnant and lactating mothers at their door step
- Kitchen garden support provided to nutrition center pregnant & lactating mothers
- Health treatment through telemedicine program benefitted 2133 persons
- Health treatment using Mobile Medical Unit (MMU) benefitted 1782 persons.
- 1735 persons supported for on line, off line slot booking and conveyance support and vaccinated.

Empowerment and Livelihoods

- Necessary market linkages made for selling of products made by SHG and Tailoring units

Community Development Activities

- Two tailoring units are supported in two villages benefiting about 35 girls for stitching and selling of garments, bags etc.

Livelihood Restoration Program Undertaken by GKEL and GMRVF

- 7 project affected families received support for farming and 54 received support for strengthening micro enterprises.
- 50 old and poor people received dry food ration every month at their doorstep.

The cumulative status of Livelihood Restoration Program from 2016-17 to 2022 is as follows:

Year	Farm & Livestock	Skill	Micro enterprise	Total
2016-17	118	10	151	279
2017-18	206	0	332	538
2018-19	84	0	189	273
2019-20	23	0	221	244
2020-21	6	0	96	102
2021-22	7	0	54	61
Total	444	10	1043	1497

** Besides above 50 old people receive food ration every month.

Employee involvement programs

- Implementation of Six social volunteering projects completed involving 46 employees of GKEL.
- Rs.15.95 lakhs donated by employees and contractors towards Daan Utsav. More than 1200 people benefitted through various programs under DAAN UTSAV.

C. Highlights of CSR activities around GKEL in the year 2022-23 till Sept' 2022 are as follows

CSR Activities Undertaken Directly by GKEL

- Provided concession in school fees to 176 children from land loser families at GMR DAV Public School



CSR Activities undertaken by GMR Varalakshmi Foundation

Education

- Engaged 14 support teachers (Vidya Volunteers) to teach in schools and organize Tuition for primary class students of 8 Government Primary schools
- Engaged 2 support teachers for doing on line Tuition classes for class 10th students benefitting 30 students.
- Provided test papers to 300 students of Std. 9th and 10th from 2 High schools
- 21 students who scored more than 70% marks in High School class 10th Board examination received cash award.
- Provided monthly Scholarship to 14 girls and one boy for better education.
- One batches of girls (10 girls) completed basic computer learning course.

Health, Hygiene and Sanitation

- Provided Rs.4.3 lakhs as health treatment reimbursement support to 45 project affected families
- Five Nutrition Centers run by GMRVF benefited 55 pregnant and lactating women in this year
- Health treatment through telemedicine program benefitted average 100 persons/children every month.
- Health treatment using Mobile Medical Unit(MMU) benefitted average 800 persons per month
- 1179 persons supported for on line, off line slot booking and conveyance support and vaccinated.

Empowerment and Livelihoods

- Necessary market linkages made for selling of products made by SHG and Tailoring units.

Community Development Activities

- Two tailoring units are supported in two villages benefiting about 35 girls for stitching and selling of garments, bags etc.

Livelihood Restoration Program Undertaken by GKEL and GMRVF

- 48 old and poor people received dry food ration every month at their doorstep.
- 20 farmers received input support and grown Kuber variety paddy and 4 grown sugar free paddy
- Fish yearlings supported to 92 persons
- Groundnut seed supported to 16 farmers and mustard, black gram, chana supported to 12 farmers to grow in Rabi season

Employee involvement programs

- Implementation of four social volunteering projects is in progress involving 30 employees of GKEL.
- Rs.16.93 lakhs contributed by 198 employees and 37 contractors towards Daan Utsav.

