

Ref. No.: MCL/MA/PO/B[W]OCP/22-23/02

Date: 29.05.2022

To
The Director (S)
MOEF, Eastern Regional Office A/3,
Chandrasekharpur Bhubaneswar-751023

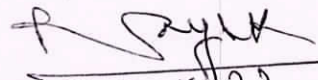
Sub: Submission of Half Yearly Compliance Report of the Environmental conditions with respect to Basundhara (West) OCP, MCL for the period of **October 2021 to March 2022**.

Respected Sir,

Please find enclosed herewith the Half-yearly compliance report (**October 2021 to March 2022**) in respect of Basundhara (West) OCP, Mahalaxmi Area of M/s Mahanadi Coalfields Limited for your kind perusal and necessary action.

Encl.: As above.

Yours faithfully,


Project Officer, Basundhara (W) OCP
परियोजना अधिकारी, बसुंधरा (प) ओसीपी
Basundhara (W) OCP, Mahalaxmi Area, MCL
Sujay Das.
29/05/22

Copy to:

1. Director E.I.A Monitoring Cell, MoEF, Paryvaran Bhawan, CGO Complex, New Delhi-10003 (By REGD.POST) - For kind information and necessary action.
2. General Manager (Envt.), MCL, HQ - For kind information through mail.
3. General Manager, Mahalaxmi Area - For kind information.
4. Office copy.

FORM -I

MONITORING PROFORMA-I (DATA SHEET)

1	Project Type: River-Valley/Mining Industry/Thermal/Nuclear/Other (Specify)	Mining										
2	Name of the Project.	Basundhara (West) O.C.P.										
3	Clearance Letter(s) No. OM No. & Date.	J-11018/10/95-IA(II). (M) dated 24.12.2002, E.C.No.J.11015/205/2008-IA.11(M) dtd:25/02/2013										
4	Location: (a) District(s), State(s).	Sundargarh, Odisha										
5(a)	Address of concerned Project Chief Engineer (with pin code & Telephone/Telex/Fax No.).	Sri Prabhanjan Nayak, Project Officer At/PO-Basundhara, Dist-Sundargarh (Orissa)770076 Ph. No.-(0661)-286135										
(b)	Address of Executive Project Engineer/ Manager (with pin code Telephone/Telex/ Fax No.)	Sri Kabi Chandra Dakua Manager, Basundhara (West) OCP At/Po-Basundhara Dist- Sundargarh, Orissa										
6	Salient features of the Project:											
(a)	Of the Project	Project with sanctioned capital outlay of Rs.700.59 crores. To produce coal suitable for power plants & local industries of the state & outside.										
(b)	Environmental Management Plan	EMP-being implemented as per the conditions of the Env't. Clearance granted by GOI in Feb'2013; Ref-EC No.J-11015/205/2008- IA.11(M) dtd:25/02/2013										
7	Breakup of the Project Area	<table border="1"> <tr> <td>a.) ML Area</td> <td>437.10Ha</td> </tr> <tr> <td>Excavation Area</td> <td>214.30Ha</td> </tr> <tr> <td>External OB dump</td> <td>039.15Ha</td> </tr> <tr> <td>Infrastructure</td> <td>096.63Ha</td> </tr> <tr> <td>Embankment</td> <td>015.52Ha</td> </tr> </table>	a.) ML Area	437.10Ha	Excavation Area	214.30Ha	External OB dump	039.15Ha	Infrastructure	096.63Ha	Embankment	015.52Ha
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Excavation Area	214.30Ha											
External OB dump	039.15Ha											
Infrastructure	096.63Ha											
Embankment	015.52Ha											

		Safety zone	052.90Ha
		Roads	018.60Ha
		b.) Out of ML Area	021.90Ha
		Residential colony	016.00Ha
		R&R colony	005.90Ha
		Total Project Area	459.00Ha
(a)	Submergence Area (Forest land & Non-Forest Land)	Nil	
(b)	Others	Nil	
8	Break – up of Project affected population when enumeration of those losing houses/dwelling House only, agriculture land & land less labourers / artisans.	SC: 13 (Approximately.) ST: 184 (Approximately) Others: 103 (Approximately) Total: 300 (Provisional)	
9	Finance Details.		
(a)	Project cost as originally planned & subsequent Revised estimates and the years of price reference.	Project with sanctioned capital outlay of Rs.700.59cr as on 31.03.2019.	
(b)	Allocation made for Environmental Management Plans, with item – wise and Year-wise break – up.	Rehab & Resettlement	531.22
		Land reclamation	330.18
		Comp. afforestation	210.07
		Anti-pollution measure	890.06
		Community development	005.00
		Miscellaneous	210.05

		Total	2176.58
(c)	Benefit cost ratio / internal rate of return and the year of assessment.	IRR 25.52% at 100% production level 18.85% at 85% production level Assessment year 2003	
(d)	Whether @ includes the cost of Environmental Management as shown in (b) Above.	Yes	
(e)	Actual expenditure incurred on the project So far.	Capital-Rs. 196.52 cr	
(f)	Actual expenditure incurred on the Environmental Management Plan.	Approximately Rs. 4.48/- per ton of coal produced being spent on Environmental management as per EMP for the year 2016-17.	
10	Forest land requirements.		
(a)	The date & status of approval for a diversion of Forest land for non-forestry purpose.	Forest land 149.50 ha. Stage-II approval obtained on dt. 12.04.2002	
(b)	The status of clear felling in forest And non-forest land	Tree felling done by OFDC, Odisha	
(c)	Comments on the viability and sustainability of Compensation afforestation program in the light of actual field experience so far.	Compensatory forestation cost deposited in CAMPA fund. After approval of the compensatory afforestation scheme by forest dept. Govt of Orissa.	
11	Status of construction.		
(a)	Date of commencement (Actual and/or planned)	Started in schedule time in 2003-04 as scheduled.	
(b)	Date of completion (Actual and/or planned)	Still in operation	
12	Reason for the delay if project is yet to start	No delay	
13	Date of site visits		
(a)	The dated on which the project was monitored by the regional office on previous occasional if any.	-	

(b)	Date of site visit for this monitoring	-
14	Details of correspondence with project Authorities for obtaining action plans information & status of compliance to safeguards	Basundhara (West) has obtained Env't. Clearance for 8 M.T.Y from MoEF, New Delhi.

S. Das
29.5.22

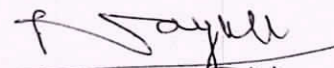
Project Officer, Basundhara (W) OCP.
परियोजना अधिकारी, बसुंधरा (पश्चिम) ओ.सी.पी.
परियोजना अधिकारी, बसुंधरा (पश्चिम) ओ.सी.पी.

Sujay Das.
29/05/2022

FORM – II

PROFORMA FOR PROVIDING FOR IMPLEMENTATION OF REHABILITATION

1	No. of village affected	2 (Sardega, Kulapada)		
2	Families affected	300 (Provisional) Actual		
3	Compensation package offered per families	}		
State / Central Norms		As per State and CIL norms		
4	Budget estimate for rehabilitation			
(a)	Total out lay	Rs. 7567.72 Lakhs (includes Land and R&R)		
(b)	Amount paid /under	Rs. 7098.64 Lakhs		
5	Employment details			
(a)	Total employment to be provided	165		
(b)	Employment given so far	159		
		Name of the Village	Employment provided	Under consideration
		Sardega	128	06
		Kulapara	31	00
6	Rehabilitation & Resettlement details			
(a)	No. of families rehabilitated	185/218 Kulapara-37, Sardega-148 and cash compensation has been sanctioned for 22.		
(b)	Name of the site	Mahalaxmi Area, Tikilipara AT/P.O.- Basundhara		
7	Any other information	---		


 Project Officer, Basundhara (W) OCP
 परियोजना अधिकारी, बसुंधरा (प) ओसीएफ
 ପରିଯୋଜନା ଅଧିକାରୀ, ବସୁନ୍ଧରା (ପ) ପ୍ରକଳ୍ପ
 Basundhara (W) OCP
 Sujay Das.
 29/05/22 .

FORM -III

FORMAT FOR PROVIDING PARTICULARS ON GREEN BELT / PLANTATION

UNDER FOREST CONSERVATION ACT-1980 & ENVIRONMENT PROTECTION ACT-1986

1 (a)	Name of the project	Basundhara (West) OCP	
(b)	Environment / Forest clearance under NOC	J-11018/10/95-IA(II). (M) Dated 24/12/2002, EC No.J-11015/205/2008-IA.11(M) dtd:25/02/2013	
2	Location, Block / Sub-Division / State	Hemgir, Sundargarh, Orissa	
3	Address for communication	Project officer, B(W)OCP AT/PO: Basundhara-770076 Dist: Sundargarh (Orissa)	
4	Existing vegetation in the Area/ Region		
(a)	Species (Trees/Shrubs/Climber)	SHOREA ROBUSTA, MADHUCA LATIFOLIA, PALAS etc.	
(b)	Major prevalent species of each tree	Shorea Robusta etc.	
5	Land coverage by the project		
(a)	Total area under the project	459.00Ha	
(b)	Area covered for basic infrastructure (Road/Building/Factory etc.)	a.) ML Area	437.10Ha
		Excavation Area	214.30Ha
		External OB dump	039.15Ha
		Infrastructure	096.63Ha
		Embankment	015.52Ha
		Safety zone	052.90Ha
		Roads	018.60Ha
		b.) Out of ML Area	021.90Ha
		Residential colony	016.00Ha
		R&R colony	005.90Ha
	Total Project Area	459.00Ha	
6	Details about natural vegetation		

(a)	Name and number of tree/species felled	N.A.
(b)	Name and number of plant species still available in the area	<i>SHOREA ROBUSTA</i> , <i>MADHUCA LATIFOLIA</i> , PALAS etc.
©	By protecting the area will indigenous stock come up	Partially may come up.
(d)	Extent of green belt development	28.12 Ha area has been planted in the safety zone. 8.0 Ha of plantation in the backfilled and technically reclaimed area.
7	Plantation required to be carried out as per.	
(a)	Conditions of environmental Clearance in Ha./Nos.	Plantation on external & internal dump to be planted with spacing of 2 meter internal in 2500/ha.
(b)	Conditions of Forest © Act. Clearance in Ha./Nos.	not mentioned

8. Details about plantation:

(a) Total area of plantation in each category. B (E&W) OCP:

Category	Dumps	Backfield Area	Road side	Block plantation/green belt
Area	19.50 ha.	11.40 ha.	2.36 Ha	44.40 Ha

(b) Plantation Details (Category wise and methodology used):

Year of Plantation	No. of Species Planted	Spacing	Height Attained (in ft)	Total Area
2004-05	19410	2mx2m	14	7.76 Ha
2005-06	46000	2mx2m	11	18.40 Ha
2006-07	103725	2mx2m	10	41.50 Ha
2007-08	Nil	-	-	-

2008-09	10000	2mx2m	10	4.00 Ha
2009-10	Nil	-	-	-
2010-11	10000	2mx2m	7	4.0 Ha
2011-12	1350	2mx2m	6	0.54 Ha
2012-13	Nil	Nil	-	Nil
2013-14	Nil	-	-	-
2014-15	1500 Saplings distributed to PAF in R&R site.	-	-	-
2015-16	1650 Saplings distributed to nearby villages.	-	-	-
2016-17	4200	2mx2m	-	2 Ha
2017-18	15800	2mx2m	--	6 Ha
2018-19	3000 nos. of seed balls have been thrown in backfilled area and mine premises	--	--	1.15 Ha
2019-20	17500 plants	2m x 2m	Just Planted	7 Ha
2020-21	250 plants	5m x 5m	Planted on the Occasion of Van Mahotsav 2020	0.22 Ha
Total	2,34,385			91.42 Ha

(c) Survival % plantation: More than 70%.

9. Agency carrying out plantation & Maintenance:

- OFDC, Jharsuguda and Chhattisgarh Rajya Van Vikash Nigam Ltd, Bilaspur

Financial details (Year wise)/Plantation wise at Basundhara (W) OCP

SL.	Year	Nos. of trees	Expenditure made (Rs.)
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		planted.	
I	2004-2005	19410	4.5 lakhs
ii	2005-2006	46000	8.9 lakhs
iii	2006-2007	103725	13.8 lakhs
iv	2007-2008	Nil	-
V	2008-2009	10000	4.98 lakhs
Vi	2009-2010	Nil	-
Vii	2010-2011	10,000.00	9.46 lakhs
Viii	2011-2012	1350	3.36 Lakh
Ix	2012-13	Nil	Nil
X	13-14	Nil	Nil
Xi	14-15	Nil	1500 Saplings distributed to PAF in R&R site. Saplings received from Forest nurseries free of cost.
Xii	15-16	Nil	1650 Saplings distributed to nearby villages. Amount spent – Rs. 0.28 lacs
Xiii	16-17	4200	7.41 lakhs
xiv	17-18	15800	8.59 lakhs
Xv	19-20	17500	126.76 lakhs
Xvi	20-21	250 plants	Rs. 60000.00
9	Inspection of plantation by fixed experts comments & follow up action.		Regular inspection done by OFDC Jharsuguda.
10	Remarks / any other information		Joint enumeration of the plantation has been done.

10. Inspection of plantation by field experts and their comments and follow up action

- Regular inspection done by afforestation division, Rourkela and other State Govt. Dept.

11. Remarks/ any other information: NIL


 29.5.22
 Project Officer, Basundhara (W) OCP
 परियोजना अधिकारी, बसुंधरा (प) ओपीपी
 बसुंधरा (W) OCP

Sujay Das,
 29/05/22

Six Monthly Progress Report

On the implementation

of

Environmental Clearance Conditions

October'2021 to March'2022

BASUNDHARA (WEST) OCP

of

MAHALAXMI AREA, MCL

**Clearance letter: - J-11018/10/95-IA (II). (M)
dated 24.12.2002,**

No.J.11015/205/2008-1A.11(M) dtd:25/02/2013

Half Yearly Compliance Report of Basundhara (West) OCP MCL

(October 2021 to March 2022)

Sl.	General Condition	Response from the project proponent
i)	No diversion of river Basundhara or Telendra Nala shall be taken up. The embankment constructed along the river Basundhara shall be stabilized by vegetation consisting of a mix of native species found in the study area.	No diversion of river Basundhara or Telendra Nala has been done. Stone pitching has been done in sensitive areas on the slope of embankment along the Basundhara River. Further native species have been planted at the embankment for stabilization of the slope.
ii)	Top soil if any created in the balance life of the mine, should be stacked properly with proper slope at earmarked site(s) and should not be kept active and shall be used within a year of its generation for mine reclamation and development of green belt.	The mine is on the verge of exhaustion, and the total excavation area of 214.30 ha has been completely excavated, hence there is no production of top soil.
iii)	Balance OB shall be simultaneously backfilled in the de-coaled area. No new OB dumps shall be created for the OB to be generated in the balance life of mine.	OB Dumps have been stacked at earmarked sites which were started during the period of 2004-05. Back filling has been started in 2006-07 (4th year of mine operation) and a volume of 33.011 Mm ³ OB has been backfilled till 31.03.2022.
iv)	At the mine closure stage, all the external OB dumps of 39.15 Ha shall be re-handled and backfilled and there shall be no external OB dump at the post-mining stage and the area reclaimed and afforested. Monitoring of the reclamation shall continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on yearly basis	Around 2,34,785 trees have been planted in an area of 92.42 ha till 31.03.2022 by OFDC/CGRVVN govt. agencies of Orissa & Chhattisgarh in and around mines, the density being 2500/ ha. The OB dump is being re-handled and will be used for technical reclamation of internal dump.

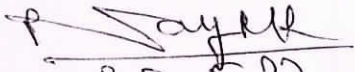
v)	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development, etc. The drains should be regularly desilted and maintained properly.	The total runoff generated over the OB Dump & coal stock is collected back & is allowed to settle down for sufficient time for sedimentation of the suspended particles in the mine sump. Water so collected is being reused for dust suppression of mine road, and firefighting of coal stock yards. The drains are being regularly de-silted and maintained. Garland drains with check dams have been constructed all along the mine boundary so that the runoff is taken care off even in monsoons. Garland drains around external OB dump in North side of mine has been constructed up to a length of 1120 m. 3 nos. of check dams also have been constructed along this garland drain and on the eastern side of the mine lease area, 1480 m long garland drain have been constructed. Regular monitoring & Management of the measures are being taken to achieve zero discharge within the mines.
vi)	Garland drains (size, gradient, and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also be provided adequate retention period to allow proper settling of silt material	The total runoff generated over the OB Dump & coal stock is collected back in the mine sump inside the mine which has sufficient capacity for the peak rainfall. This runoff is allowed to settle down for sufficient time for sedimentation of the suspended particles. Water thus collected is being reused for dust suppression on mine road, and firefighting at coal stock yards.
vii)	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.	The external OB dump is currently being re-handled and will be used for technical reclamation of internal dump and top soil is being spread over the surface for carrying out plantation. The total runoff generated over the OB Dump & coal stock is collected back in the mine sump inside the mine which has sufficient capacity for the peak rainfall. Once the dump stabilizes, retaining wall will be constructed.

viii)	Crushers at the CHP should be operated with high efficiency bag filters, water sprinkling system should be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.	CHP is not in operation.
ix)	Drills should be wet operated. Roads shall be metal topped and mechanical sweepers shall be regularly deployed to clear the dust off the main approach and mineral transportation roads. Water sprinkling (fixed and mist type, mobile) shall be regularly done along the main haul roads.	Both wet drilling & NVE dust extraction are provided in the single departmental drill. 02 nos. of 28 KL mobile water tankers are used for dust suppression. A new technology, i.e. a mobile water tanker fitted with a swivel joint robotic nozzle has been deployed to arrest fugitive dust emissions. The tender for the procurement of mechanical road sweeper has been floated in the month of February 2022 and the road sweeper will be deployed within May 2022.
x)	Of the total ML area, an area not less than 226.47 Ha shall be brought under plantation which includes 133.80 Ha of reclaimed quarry area, 3.72Ha along roads, 19.32 Ha in built-up area, 10.58 Ha is for safety zone; 4 Ha is for embankment by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per Ha.	Around 2,34,785 trees have been planted in an area of 92.42 ha till 31.03.2022 by OFDC/CGRVVN govt. agencies of Orissa & Chhattisgarh in and around mines, the density being 2500/ ha.
xi)	A progressive Mine Closure Plan shall be implemented and OB generated shall be simultaneously backfilled so as to backfill and reclaim 133.80 Ha of de-coaled area and stabilized with plantation, leaving an area of 32.30 Ha of quarry area along dip side being left for future mining and a water body of 48.21 Ha of the excavated void being left as a water body at the post-	Mine closure plan shall be submitted in time as stipulated. Back filling has been started in 2006-07 (4th year of mine operation) and a volume of 33.011 Mm ³ OB has been backfilled till 31.03.2022. An area of 112.10 ha has been backfilled till 31.03.2022.

	mining stage shall be gently sloped and the upper benches stabilized with plantation using a mix of native species.	
xii)	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and construction of new piezometers. The monitoring for quantity should be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected should be submitted to the Ministry of Environment & Forest and to the Central Pollution Control Board quarterly within on month of monitoring	Ground water monitoring is being done regularly by the CMPDIL at required interval. The ground water level is being measured at 3 dug wells located at Bankibahal village, Sardega village and Tiklipara village and at the required frequency. The quality of the water from these wells are also monitored monthly. The ground water level as seen in the ground water table shows an increasing trend.
xiii)	The company shall put up artificial ground water recharge measures for augmentation of groundwater resource. The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	Two numbers of sumps have been established in the abandoned quarry area and in Basundhara (W) OCP's mine void, which serves as artificial ground water recharge resource. Water supply to the nearby villages like Tiklipara, Siarmal, Gopalpur and Khamarpara are being made through tankers in summer.
xiv)	ETP should be provided to treat workshop effluents and for CHP wastewater to prescribed standards before discharge.	Conventional safety tanks/soak pit arrangement is provided for the colony. ETP is provided in the Excavation workshop, (Dimensions; 1 st settling tank (16.1m*4.6m*2m*2), O> (3.6m*2m*2m*2, 2m*2m*2m*2, 1m*1m*1m*2) & the final settling tank (16.1m*4.6m*2m*2)). Further, mine effluent is stored in the abandoned quarry in Basundhara (East).
xv)	Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from work force engaged in active mining operations shall	Regular Periodic Medical Examination is being done and the reports are being communicated to DGMS. The P.M.E. reports for past years are as follows:

	be subjected to health check-up for occupational diseases and hearing impairment, if any, through an agency within the district/State and the results reported to this Ministry and to DGMS	Year	No of individuals undergone P.M.E.		Remarks
		Departmental	Contractual		
		2021-22	78	Nil	Fit
xvi)	For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1:5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for anyone particular season which is consistent in the time series), and the report submitted to MoEF and its Regional Office at Bhubaneswar.	Land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1:5000) of the core zone and buffer zone, from the start of the project until the end of mine life has been prepared and is published in the MCL website. The same has been communicated to MoEF and its Regional Office at Bhubaneswar. Ref- MCL/SBP/GM (Envvt.)/2016/7631, dated-17.12.2016			
xvii)	A detailed final mine closure plan along with details of corpus fund shall be submitted to the Ministry of Environment & Forests within 6 months of grant of this letter for approval.	Final mine closure plan has been submitted to MoC for approval. Escrow account (Account No. 365203800000323) has been opened and funds are deposited on regular basis in respect of Basundhara (W) OCP. The total balance in Escrow account of Basundhara (W) OCP is Rs. 56.08 crores as on 31.03.2022.			
(xviii)	R&R for the expansion project for the remaining 207 PAFs in village Sardega shall be completed during the year. R&R norms shall be not less that of the National R&R policy. Details of the status of R&R shall be furnished as part of the Compliance Report to MoEF RO, Bhubaneswar and also uploaded on the company website.	Complied.			
xix)	CSR shall be implemented for the balance life of the mine for the villages near the mine. Details of village-wise activities	CSR is being implemented for the villages near the mine. Details of village-wise activities under CSR			

under CSR shall be furnished as part of the Compliance Report to MoEF, RO, Bhubaneswar and also uploaded on the company website.	are maintained at the area level and it is also uploaded on the company website.
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Project Officer, Basundhara (W) OCP
परियोजना अधिकारी, बसुंधरा (व) ओसीपी
ପରିଯୋଜନା ଅଧିକାରୀ, ବସୁନ୍ଧରା (ଘ) ଓସିପି
Basundhara (W) OCP
Sujay Das.
21/05/22

Half Yearly Compliance Report of Basundhara (West) OCP, MCL
(October 2021 to March 2022)

Sl.	Specific Condition	Response from the project proponent						
(i)	No change in mining technology and scope of work shall be made without prior approval of the Ministry of Environment and Forests.	No change in technology and scope of work. The mine is using Shovel-Dumper technology for excavation of Overburden whereas for Coal extraction Surface Miner with Pay loader & Tipper combination are employed which reduces dust emissions.						
ii)	No change in the calendar plan including quantum of mineral coal and waste being produced shall be made.	<p>No change in the calendar plan including quantum of mineral coal and waste being produced will be made.</p> <p>The details of production of coal & OB during the last eight years are as follows:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Coal (Te)</th> <th>Over Burden (m³)</th> </tr> </thead> <tbody> <tr> <td>2021-22</td> <td>999988.49</td> <td>97852.89</td> </tr> </tbody> </table>	Year	Coal (Te)	Over Burden (m ³)	2021-22	999988.49	97852.89
Year	Coal (Te)	Over Burden (m ³)						
2021-22	999988.49	97852.89						
iii)	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring PM ₁₀ , PM _{2.5} , SO ₂ and NO _x . Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Ch, Cr, in particulates shall be carried out at least once in six months	<p>Air quality is presently being monitored at 06 stations in consultation with the State Pollution Control Board and the location has been finalized on the basis of environmental & ecological sensitivity.</p> <p>The monitoring reports have been analysed accordingly and Max., Min. & Avg. readings at different stations have been derived.</p> <p>In order to suppress dust suspension, the following measures have been taken by the project proponent:</p> <ol style="list-style-type: none"> sprinkling is being done by 02 nos. of 28Kl departmental water tanker. 11 nos. of fixed mist type Sprinklers have been installed in CHP, weigh bridge and at the Coal transportation road near east sump. 						

		<p>3. Installation of 80 nos. of mist sprayers on a stretch of 2.2 km, from Bankibahal check gate to Basundhara check gate, has been completed. 03 instant water showering systems have been installed near the Basundhara check gate.</p> <p>4. 4 km of coal transportation road have been concreted within the mines.</p> <p>5. The tender for the procurement of mechanical road sweeper has been floated in the month of February 2022 and the road sweeper will be deployed within May 2022.</p> <p>6. A new technology, i.e. a water tanker fitted with a swivel joint robotic nozzle has been deployed to arrest fugitive dust emissions. Reports for individual months are attached herewith.</p> <p>Reports for individual months are attached herewith.</p>
iv)	<p>Data on ambient air quality (PM10, PM2.5, SO2, and NOx and heavy metals such as Hg, As, Ni, Cr, etc) and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and the Central, Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the EP rules, 1986 shall be furnished as part of the compliance report.</p>	<p>Air quality is presently being monitored at 04 stations in consultation with the State Pollution Control Board and the location has been finalized on the basis of environmental & ecological sensitivity.</p> <p>The monitoring reports have been analysed accordingly and Max., Min. & Avg. readings at different stations have been derived.</p> <p>In order to suppress dust suspension, the following measures have been taken by the project proponent:</p> <ol style="list-style-type: none"> 1. sprinkling is being done by 02 nos. of 28Kl departmental water tanker 2. 11 nos. of fixed mist type Sprinklers have been installed in CHP, weigh bridge and at the Coal transportation road near east sump.

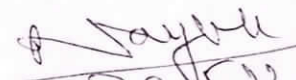
		<p>3. Installation of 80 nos. of mist sprayers on a stretch of 2.2 km, from Bankibahal check gate to Basundhara check gate, has been completed.</p> <p>4. 4 km of coal transportation road have been concreted within the mines.</p> <p>5. The tender for the procurement of mechanical road sweeper has been floated in the month of February 2022 and the road sweeper will be deployed within May 2022.</p> <p>6. A new technology, i.e. a water tanker fitted with a swivel joint robotic nozzle has been deployed to arrest fugitive dust emissions. Reports for individual months are attached herewith.</p>
v)	Adequate measures shall be taken for control of noise levels below 85dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc. shall be provided with ear plugs/muffs.	Adequate measures are being taken to control the noise level within the prescribed limits. Noise proof & AC Cabins are being provided and maintained in HEMMs. The data regarding the noise levels are being properly recorded near the working environment. Please refer to www.mcl.gov.in for latest reports. Reports for individual months are attached herewith.
vi)	Industrial waste water (workshop and waste water from the mine) shall be properly collected, and treated so as to conform to the standards including for heavy metals before discharge prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December 1993 or as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluents.	The mine effluent is being stored at the abandoned quarry in Basundhara (East) & mine voids of Basundhara (W) OCP & the industrial waste water is being reused for dust suppression of mine road, and fire-fighting of coal stocks. ETP & OGT has been constructed and are in working condition. The treated water is being reused for washing purpose, (Dimensions; 1 st settling tank (16.1m*4.6m*2m*2m), O> (3.6m*2m*2m*2m, 2m*2m*2m*2m, 1m*1m*1m*2m) & the final settling tank

		(16.1m*4.6m*2m*2m)). Reports for individual months are attached herewith.				
vii)	Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transportation of the mineral shall be covered with tarpaulins and optimally loaded.	Vehicles used for transportation of the coal are being covered with tarpaulin and are optimally loaded in order to control the vehicular emission.				
viii)	Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognized under EP rules, 1986	<p>Environmental monitoring is carried out by CMPDI (A subsidiary of CIL) BBSR. It has its air and water analysis Laboratory which is recognized by the CPCB. The following equipment are available in the laboratory:</p> <table border="1"> <tr> <td>Air Quality Analysis</td> <td> 1. PM₁₀ – RDS 2. PM_{2.5} – Fine particulate RDS 3. SO_x & NO_x – Spectrophotometer and titration method </td> </tr> <tr> <td>Water Quality Analysis</td> <td> 1. Spectrophotometer 2. Atomic Adsorption Spectrophotometer 3. pH meter, conductivity meter, TDS meter, incubator, COD digester, UV double beam spectrophotometer. </td> </tr> </table>	Air Quality Analysis	1. PM ₁₀ – RDS 2. PM _{2.5} – Fine particulate RDS 3. SO _x & NO _x – Spectrophotometer and titration method	Water Quality Analysis	1. Spectrophotometer 2. Atomic Adsorption Spectrophotometer 3. pH meter, conductivity meter, TDS meter, incubator, COD digester, UV double beam spectrophotometer.
Air Quality Analysis	1. PM ₁₀ – RDS 2. PM _{2.5} – Fine particulate RDS 3. SO _x & NO _x – Spectrophotometer and titration method					
Water Quality Analysis	1. Spectrophotometer 2. Atomic Adsorption Spectrophotometer 3. pH meter, conductivity meter, TDS meter, incubator, COD digester, UV double beam spectrophotometer.					
ix)	Personnel working in dusty areas wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed.	<p>Personnel working in dusty area have been provided with 110 pair of mining shoes, 40 pair of gumboots, 70 helmets, 150 dust masks, 100 fluorescent jackets, and 30 goggles to protect themselves from occupational hazards.</p> <p>The workers are trained at VTC regarding safety & health awareness. Their health is being monitored through Periodical Medical Examination which is held at every 5 years interval. Regular Periodic Medical Examination is being done and the reports are being</p>				

		communicated to DGMS. The P.M.E. reports for past years are as follows:										
		<table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="2">No of individuals undergone P.M.E.</th> <th rowspan="2">Remarks</th> </tr> <tr> <th>Departmental</th> <th>Contractual</th> </tr> </thead> <tbody> <tr> <td>2021-22</td> <td>78</td> <td>Nil</td> <td>Fit</td> </tr> </tbody> </table>	Year	No of individuals undergone P.M.E.		Remarks	Departmental	Contractual	2021-22	78	Nil	Fit
Year	No of individuals undergone P.M.E.			Remarks								
	Departmental	Contractual										
2021-22	78	Nil	Fit									
x)	A separate environmental management cell with suitable qualified personnel shall be set up under the control of a senior executive, who will report directly to the head of the company.	Environment management cell has been established in Project as well as area and head quarter level. One Assistant Manager (E-3) level is heading the Project Environment cell under the guidance of Area Environment Officer & Staff Officer (P&P) and reporting to the General Manager, Mahalaxmi area and to the G.M.(Envt.) who is heading the company's environment dept. And reporting to Director (Tech., P&P)										
xi)	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its regional Office at Bhubaneswar.	The environmental protection measures are being kept in separate account and are not diverted for other purpose. Year-wise expenditure is being reported to the Ministry and the regional office at Bhubaneswar.										
xii)	The Project authorities shall advertise at least in two local newspaper widely circulated around the project, one of which shall be in vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at the website of Ministry of Environment & Forests at http://envfor.nic.in	EC publication details of Basundhara (W) OCP are as follows: <table border="1"> <tbody> <tr> <td>1</td> <td>Dainik Jagran, Jamshedpur</td> <td>04.03.2013</td> </tr> <tr> <td>2</td> <td>The Samaja, Rourkela</td> <td>02.03.2013</td> </tr> <tr> <td>3</td> <td>The New Indian Express, Bhubaneswar</td> <td>02.03.2013</td> </tr> </tbody> </table>	1	Dainik Jagran, Jamshedpur	04.03.2013	2	The Samaja, Rourkela	02.03.2013	3	The New Indian Express, Bhubaneswar	02.03.2013	
1	Dainik Jagran, Jamshedpur	04.03.2013										
2	The Samaja, Rourkela	02.03.2013										
3	The New Indian Express, Bhubaneswar	02.03.2013										
xiii)	A copy of the environmental clearance letter shall be marked to the concerned panchayat/Zila Parishad, Municipal Corporation or Urban Local	The condition has been complied with.										

	Body and the local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on the company's website	
xiv)	A copy of the clearance letter shall be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the regional office, District Industry Centre and collector's Office/ Tehsildar's Office for 30 days.	Action has been taken to comply with.
xv)	The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once in every six months so as to bring the same in the public domain. The monitoring data of environmental quality parameters (air, water, noise and soil) and critical pollutants such as PM _{2.5} , SO ₂ , and NO _x (ambient and stack if any) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mines office and in corporate office and on the company's website.	The condition has been complied with. A CAAQMS station has been set up under Basundhara West OCP which provides the real time concentrations of environmental parameters in the ambient air.
xvi)	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the MoEF, the respective zonal offices of CPCB and the SPCB	The condition has been complied with.
xvi i)	The regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the	Full cooperation is extended to the officer(s) of the Regional Office and required data is being submitted. The condition is being complied with.

	Regional Office by furnishing the requisite data/information/monitoring reports	
xvi ii)	The environmental statement for each financial year ending 31 st March in form-v 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 uploaded on the company's website along with the status of compliance of EC conditions and shall be sent the respective Regional Offices of the MoEF by E-mail.	Being complied.


 29/05/22
 Project Officer, Basundhara (W) OCP
 परियोजना अधिकारी, बसुंधरा (प) आसीपी
 ପରିଯୋଜନା ଅଧିକାରୀ, ବସୁନ୍ଧରା (ପ) ଆସିପି
 Basundhara (W) OCP
 Sujay Das.
 29/05/22

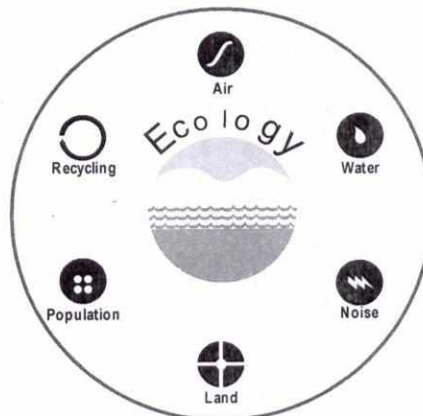
Job No.750001

**Environmental Monitoring Report
Of
Mahalaxmi Area
For
October- 2021**

Ib Valley Coalfield



Mahanadi Coalfields Limited



cmpdi

A Mini Ratna Company

Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Compliance Station)

Project :

Basundhara (w) OCP

(conc. in $\mu\text{g}/\text{cu.m.}$)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
16-Oct-21	West of Coal Stock	261	169	51	12.92	25.87	Mining Activities, OCP, Transportation	About 500m
16-Oct-21	South West of Working Face Gopalpur Village, Near CMPDI Camp	264	159	55	14.88	20.46	Mining Activity	About 500m
16-Oct-21	North of the Sardega Railway Siding	278	162	48	19.32	28.44	Mining Activities, OCP, Coal Transportation	About 500m
27-Oct-21	North of the Sardega Railway Siding	301	183	57	15.84	28.84	Mining Activities, OCP, Coal Transportation	About 500m
29-Oct-21	West of Coal Stock	327	198	63	11.12	25.57	Mining Activities, OCP, Transportation	About 500m
29-Oct-21	South West of Working Face Gopalpur Village, Near CMPDI Camp	288	172	61	17.23	23.95	Mining Activity	About 500m

Tattarai
Authorised Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR

[Signature]
O. I. C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar

MoEF Standards Notification dated 25th September, 2000	500	250		120	120
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Reference Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
04-Oct-21	Sarangijharia Community Centre	87	51	27	11.88	30.64	Domestic	About 500m
05-Oct-21	Sarangijharia Community Centre	96	58	29	17.86	24.75	Domestic	About 500m
08-Oct-21	Sarangijharia Community Centre	111	68	34	11.43	30.19	Domestic	About 500m
09-Oct-21	Sarangijharia Community Centre	127	78	39	14.03	30.37	Domestic	About 500m
18-Oct-21	Sarangijharia Community Centre	101	57	35	14.81	29.12	Domestic	About 500m
19-Oct-21	Sarangijharia Community Centre	116	70	38	17.35	33.98	Domestic	About 500m
25-Oct-21	Sarangijharia Community Centre	126	77	41	15.45	35.16	Domestic	About 500m
26-Oct-21	Sarangijharia Community Centre	128	73	40	34.59	81.78	Domestic	About 500m

Tattansik
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CMPDI, RI-VII, LAB
BHUBANESWAR

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Env. Lab
CMPDI, RI-VII
Bhubaneswar

*NAAQS,2009

100	60	80	80
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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

Project	Basundhara (W) OCP				
Monitoring Station	Sarangijharia Community Centre				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
04-Oct-2021	<20.0	3.76	<0.1	<1.0	<1.0
05-Oct-2021	<20.0	6.12	<0.1	<1.0	<1.0
08-Oct-2021	<20.0	4.12	<0.1	<1.0	<1.0
09-Oct-2021	<20.0	4.56	<0.1	<1.0	<1.0
18-Oct-2021	<20.0	5.40	<0.1	<1.0	<1.0
19-Oct-2021	<20.0	3.91	<0.1	<1.0	<1.0
25-Oct-2021	<20.0	5.15	<0.1	<1.0	<1.0
26-Oct-2021	<20.0	3.76	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

Kattanaik
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CMPDI, RI-VII, LAB
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Env. Lab
CMPDI, RI-VII
Bhubaneswar



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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Mahalaxmi

PROJECT :

Basundhara (W) OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
06-Oct-21	South-West of Working Face	60.8	59.6
06-Oct-21	North of the Sardega Railway Siding	64.3	60.8
06-Oct-21	West of Coal Stock	61.7	58.5
06-Oct-21	Sarangijharia Community Centre	62.9	60.7
27-Oct-21	North of the Sardega Railway Siding	68.4	65.5
27-Oct-21	Sarangijharia Community Centre	64.8	59.6
27-Oct-21	West of Coal Stock	65.2	60.7
27-Oct-21	South-West of Working Face	67.6	64.2

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CMPDI, RI-VII
Bhubaneswar

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)



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TABLE--

EFFLUENT QUALITY DATA

Area :

Mahalaxmi

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Basundhara (W) OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
08-Oct-21	M1-Basundhara (E) OCP's Sump	7.86	<4.0	76	84	-	-	-	
18-Oct-21	M1-Basundhara (E) OCP's Sump	7.59	<4.0	76	84	-	-	-	

K. Banerjee
**Authorised Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR**

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Env. Lab
CMPDI, RI-VI:
Bhubaneswar**

MoEF Standard Notification dated 25th September, 2000
and MoEF Schedule VI, General standard for discharge
of Environmental Pollutants Part A: Effluents

5.5-9.0	10	100	250	30
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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water Reservoir		
Date of Sampling	1-Oct-2021	Acceptable	Permissible
Colour(Hazen)	2	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	5
pH	7.53	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	32	200	600
Total Hardness (Ca CO ₃)(mg/L)	96	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	18	250	1000
Total Dissolve Solid(mg/L)	154	500	2000
Calcium(mg/L)	20.84	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	47.67	200	400
Nitrate(mg/L)	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.1	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

K. Pattanaiik
Authorised Signatory
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Bhubaneswar



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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water Reservoir		
Date of Sampling	1-Oct-2021	Acceptable	Permissible
MPN (Index/100 ml)	4	–	–
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0

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CMPDI, RI-VII
Bhubaneswar

Basundhara (W) Air Stations

Basundhara (W) Air monitoring stations

Sumura

Sarangijharia community Centre

Sarangijharia

Banjikachhar

North of sardega railway siding (Kulapada)

Sardega

West of coal stock (Near golf course)

Ratansara

Tikilipara

South-west of working face (Gopalpur village)

Gopalpur

Siarmal

Job No.750001

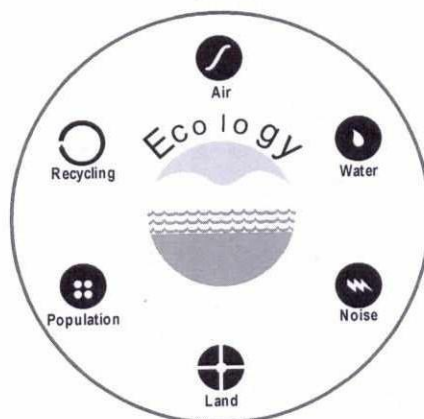
**Environmental Monitoring Report
Of
Mahalaxmi Area
For
November- 2021**

Ib Valley Coalfield



MCL

Mahanadi Coalfields Limited



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A Mini Ratna Company

Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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A Bharat Coal Company

Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Compliance Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
12-Nov-21	West of Coal Stock	301	183	61	15.09	27.65	Mining Activities, OCP, Transportation	About 500m
12-Nov-21	South West of Working Face Gopalpur Village, Near CMPDI Camp	283	171	58	18.05	23.33	Mining Activity	About 500m
12-Nov-21	North of the Sardega Railway Siding	279	168	49	23.03	22.85	Mining Activities, OCP, Coal Transportation	About 500m
22-Nov-21	West of Coal Stock	326	209	66	8.78	14.16	Mining Activities, OCP, Transportation	About 500m
22-Nov-21	South West of Working Face Gopalpur Village, Near CMPDI Camp	317	186	62	10.15	20.82	Mining Activity	About 500m
22-Nov-21	North of the Sardega Railway Siding	309	193	59	11.79	19.34	Mining Activities, OCP, Coal Transportation	About 500m

Hattanaik

Authorised Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR

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Env. Lab
CMPDI, RI-VII
Bhubaneswar

MoEF Standards Notification dated 25th
September, 2000

500	250		120	120
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A Mini Ratna Company

Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Reference Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
01-Nov-21	Sarangijharia Community Centre	109	64	37	18.01	28.68	Domestic	About 500m
02-Nov-21	Sarangijharia Community Centre	126	69	39	17.16	33.04	Domestic	About 500m
08-Nov-21	Sarangijharia Community Centre	139	77	43	17.86	36.76	Domestic	About 500m
09-Nov-21	Sarangijharia Community Centre	133	80	46	13.53	32.38	Domestic	About 500m
16-Nov-21	Sarangijharia Community Centre	104	63	35	13.10	23.95	Domestic	About 500m
17-Nov-21	Sarangijharia Community Centre	124	78	38	11.17	23.20	Domestic	About 500m
24-Nov-21	Sarangijharia Community Centre	137	84	43	11.90	23.58	Domestic	About 500m
25-Nov-21	Sarangijharia Community Centre	141	80	44	12.29	21.60	Domestic	About 500m

Hatanaih
 Authorised Signatory
 CMPDI, RI-VII, LAB
 BHUBANESWAR

[Signature]
 O. I. C.
 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar

*NAAQS,2009

100	60	80	80
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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

Project	Basundhara (W) OCP				
Monitoring Station	Sarangijharia Community Centre				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
01-Nov-2021	<20.0	3.96	<0.1	<1.0	<1.0
02-Nov-2021	<20.0	4.15	<0.1	<1.0	<1.0
08-Nov-2021	<20.0	3.88	<0.1	<1.0	<1.0
09-Nov-2021	<20.0	6.25	<0.1	<1.0	<1.0
16-Nov-2021	<20.0	6.82	<0.1	<1.0	<1.0
17-Nov-2021	<20.0	7.16	<0.1	<1.0	<1.0
24-Nov-2021	<20.0	5.92	<0.1	<1.0	<1.0
25-Nov-2021	<20.0	6.53	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

Sattarath

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BHUBANESWAR

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Env. Lab
CMPDI, RI-VII
Bhubaneswar



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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Mahalaxmi

PROJECT :

Basundhara (W) OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
10-Nov-21	North of the Sardega Railway Siding	71.6	65.8
10-Nov-21	Sarangijharia Community Centre	65.2	60.7
10-Nov-21	West of Coal Stock	66.3	62.7
10-Nov-21	South-West of Working Face	70.4	68.3
18-Nov-21	North of the Sardega Railway Siding	63.2	57.7
18-Nov-21	South-West of Working Face	64.6	57.6
18-Nov-21	West of Coal Stock	65.8	59.8
18-Nov-21	Sarangijharia Community Centre	63.4	56.3

T. Tanak
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 Bhubaneswar

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)



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TABLE--

EFFLUENT QUALITY DATA

Area :

Mahalaxmi

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Basundhara (W) OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
13-Nov-21	M1-Basundhara (E) OCP's Sump	7.03	<4.0	26	20	-	-	-	
24-Nov-21	M1-Basundhara (E) OCP's Sump	7.18	<4.0	34	32	-	-	-	

Tattanaiah
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 CMPDI, RI-VII
 Bhubaneswar

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water Reservoir	Acceptable	Permissible
Date of Sampling	2-Nov-2021	Acceptable	Permissible
Colour(Hazen)	1	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	5
pH	6.82	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	28	200	600
Total Hardness (Ca CO ₃)(mg/L)	156	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	8	250	1000
Total Dissolve Solid(mg/L)	258	500	2000
Calcium(mg/L)	20.80	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	11.138	200	400
Nitrate(mg/L)	4.55	45	No relaxation
Fluoride(mg/L)	0.38	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

Hattanauh
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BHUBANESWAR

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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water Reservoir	Acceptable	Permissible
Date of Sampling	2-Nov-2021		
MPN (Index/100 ml)	<1.8	–	–
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation

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BHUBANESWAR

[Signature]
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Env. Lab
CMPDI, RI-VII
Bhubaneswar



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A Coal India Company

TABLE--

Well Water Level Monitoring Data

Area :

Mahalaxmi

Project

Basundhara OCP

<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
27-Nov-21	Tiklipada Village Well	2.58
27-Nov-21	Sardega Village Well	2.93

Aattanab

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Bhubaneswar



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Test Report

GROUND WATER LEVEL MONITORING DATA

Area:

Mahalaxmi

Project:

Basundhara (W) OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
27-Nov-21	Piezometer No MIP 15; Back Side of Sardega Primary School. Latitude 22 °4'8" N Longitude 83°43'19" E	5.19
27-Nov-21	Piezometer No MIP 16; Village Kulhaparha (new basti) on the road from Sardega to Gopalpur Latitude 22 °3'25" N Longitude 83 ° 42'36" E	14.39
27-Nov-21	Piezometer No MIP 17; Village Gopalpur; CMPDI Exploration Camp. Latitude 22° 3' 15"N Longitude 83 ° 42'17" E	11.22
27-Nov-21	Piezometer No MIP 13; Village Tumlia; Inside the Campus of Manikeswar College.	Pipe fitted. Level could not be measured

Kattanaiah

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Bhubaneswar

Basundhara (W) Air Stations

Basundhara (W) Air monitoring stations

Sumura

Sarangijharia community Centre

Sarangijharia

Banjikachhar

North of sardega railway siding (Kulapada)

Sardega

West of coal stock (Near golf course)

Ratansara

Tikilipara

South-west of working face (Gopalpur village)

Gopalpur

Siarmal

Google Earth

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Image © 2021 Maxar Technologies

Job No.750001

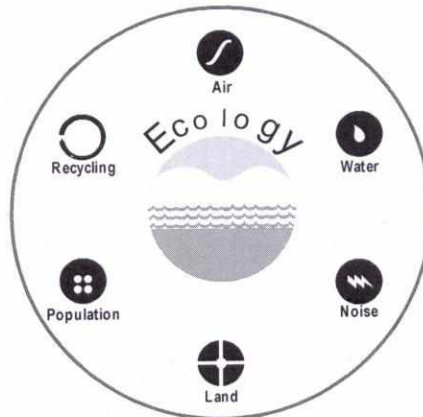
**Environmental Monitoring Report
Of
Mahalaxmi Area
For
December- 2021**

Ib Valley Coalfield



MCL

Mahanadi Coalfields Limited



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A Mini Ratna Company

Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Compliance Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
09-Dec-21	West of Coal Stock	192	132	48	12.02	24.81	Mining Activities, OCP, Transportation	About 500m
09-Dec-21	North of the Sardega Railway Siding	236	160	42	17.48	30.62	Mining Activities, OCP, Coal Transportation	About 500m
13-Dec-21	South West of Working Face Gopalpur Village, Near CMPDI Camp	139	120	53	13.63	21.28	Mining Activity	About 500m
22-Dec-21	North of the Sardega Railway Siding	261	152	32	18.14	28.93	Mining Activities, OCP, Coal Transportation	About 500m
23-Dec-21	West of Coal Stock	217	123	56	12.64	24.40	Mining Activities, OCP, Transportation	About 500m
23-Dec-21	South West of Working Face Gopalpur Village, Near CMPDI Camp	251	80	53	14.58	19.89	Mining Activity	About 500m

Saffarade
 Authorised Signatory
 CMPDI, RI-VII, LAB
 BHUBANESWAR

Antulnall
 O. I. C.
 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar

MoEF Standards Notification dated 25th September, 2000

500	250		120	120
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A Mini Ratna Company

Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Reference Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
01-Dec-21	Sarangijharia Community Centre	104	64	30	13.44	35.48	Domestic	About 500m
02-Dec-21	Sarangijharia Community Centre	152	98	37	16.19	33.63	Domestic	About 500m
08-Dec-21	Sarangijharia Community Centre	135	91	38	11.51	34.74	Domestic	About 500m
09-Dec-21	Sarangijharia Community Centre	154	95	46	14.96	30.03	Domestic	About 500m
16-Dec-21	Sarangijharia Community Centre	177	87	52	20.85	20.78	Domestic	About 500m
17-Dec-21	Sarangijharia Community Centre	167	82	42	15.96	28.48	Domestic	About 500m
24-Dec-21	Sarangijharia Community Centre	180	89	41	17.92	29.68	Domestic	About 500m
25-Dec-21	Sarangijharia Community Centre	182	98	36	22.09	35.71	Domestic	About 500m

Hattaraste

**Authorised Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR**

Anto Nandl
**O. I. C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar**

*NAAQS, 2009

100	60	80	80
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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

Project	Basundhara (W) OCP				
Monitoring Station	Sarangijharia Community Centre				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
01-Dec-2021	<20.0	3.95	<0.1	<1.0	<1.0
02-Dec-2021	<20.0	4.55	<0.1	<1.0	<1.0
08-Dec-2021	<20.0	3.83	<0.1	<1.0	<1.0
09-Dec-2021	<20.0	4.55	<0.1	<1.0	<1.0
16-Dec-2021	<20.0	5.80	<0.1	<1.0	<1.0
17-Dec-2021	<20.0	5.36	<0.1	<1.0	<1.0
24-Dec-2021	<20.0	4.91	<0.1	<1.0	<1.0
25-Dec-2021	<20.0	5.53	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

Halkawade

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BHUBANESWAR

Antar Nandall
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Env. Lab
CMPDI, RI-VII
Bhubaneswar



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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Mahalaxmi

PROJECT :

Basundhara (W) OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
04-Dec-21	North of the Sardega Railway Siding	64.3	57.6
04-Dec-21	South-West of Working Face	64.8	56.3
04-Dec-21	West of Coal Stock	66.6	58.7
04-Dec-21	Sarangijharia Community Centre	62.6	58.2
22-Dec-21	West of Coal Stock	63.2	58.9
22-Dec-21	South-West of Working Face	64.3	57.3
22-Dec-21	North of the Sardega Railway Siding	66.3	57.6
22-Dec-21	Sarangijharia Community Centre	60.8	55.8

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 CMPDI, RI-VII, LAB
 BHUBANESWAR

Anil Roul
 O. I. C.
 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar

MoEF Standard Notification dated 25th September, 2000	6.00 AM -10.00 PM Leq 75dB(A)	10.00 PM -6.00 AM Leq 70dB(A)
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TABLE--

EFFLUENT QUALITY DATA

Area :

Mahalaxmi

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Basundhara (W) OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
11-Dec-21	Inlet of Settling Pond at Excavation Workshop, B(W) OCP	7.62	<4.0	22	56				
11-Dec-21	Outlet of Settling Pond at Excavation Workshop, B(W) OCP	7.66	<4.0	18	32				
11-Dec-21	M1-Basundhara (E) OCP's Sump	7.65	<4.0	24	24	-	-	-	
25-Dec-21	M1-Basundhara (E) OCP's Sump	6.34	<4.0	30	72	-	-	-	

Signature
 Analytical Laboratory
 CMPDI, RI-VII
 Bhubaneswar

O. I. C.
 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Basundhara Colony Tap Water	Acceptable	Permissible
Date of Sampling	8-Dec-2021	Acceptable	Permissible
Colour(Hazen)	<1.0	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	5
pH	7.61	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	44	200	600
Total Hardness (Ca CO ₃)(mg/L)	96	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	6	250	1000
Total Dissolve Solid(mg/L)	278	500	2000
Calcium(mg/L)	22.40	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	107.39	200	400
Nitrate(mg/L)	4.23	45	No relaxation
Fluoride(mg/L)	<0.30	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

K. J. Jaisankar
Authorised Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR

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O. I. C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar



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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara OCP	Indian Drinking Standards (IS-10500):2012	
		Acceptable	Permissible
Monitoring Station	Basundhara Colony Tap Water		
Date of Sampling	8-Dec-2021		
MPN (Index/100 ml)	<1.8	-	-
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation

Hattawat

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Antinordh
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Env. Lab
f CMPDI, RI-VII
Bhubaneswar

Basundhara (W) Air Stations

Basundhara (W) Air monitoring stations

Sumura

Sarangijharia community Centre

Sarangijharia

Banjikachhar

North of sardega railway siding (Kulapada)

Sardega

West of coal stock (Near golf course)

Tikilipara

Ratansara

South-west of working face (Gopalpur village)

Gopalpur

Siarmal

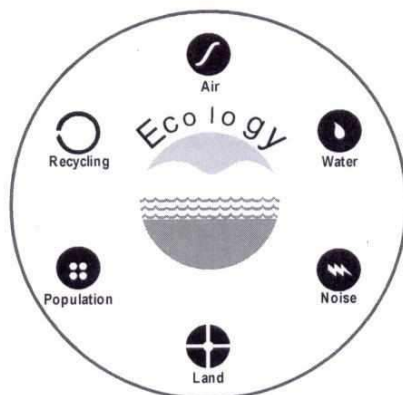
Job No.750001

**Environmental Monitoring Report
Of
Mahalaxmi Area
For
January- 2022**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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A Mini Ratna Company

Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Reference Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
03-Jan-22	Sarangijharia Community Centre	165	90	55	15.51	22.39	Domestic	About 500m
04-Jan-22	Sarangijharia Community Centre	159	85	50	16.65	26.45	Domestic	About 500m
10-Jan-22	Sarangijharia Community Centre	165	96	44	16.21	31.53	Domestic	About 500m
11-Jan-22	Sarangijharia Community Centre	142	88	35	16.96	29.92	Domestic	About 500m
17-Jan-22	Sarangijharia Community Centre	185	92	52	15.32	25.16	Domestic	About 500m
18-Jan-22	Sarangijharia Community Centre	160	82	44	14.68	24.88	Domestic	About 500m
24-Jan-22	Sarangijharia Community Centre	159	73	37	17.09	23.23	Domestic	About 500m
25-Jan-22	Sarangijharia Community Centre	133	90	32	16.93	23.95	Domestic	About 500m

*NAAQS, 2009

	100	60	80	80
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BIRUBANEWAR

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Env. Lab
CMPDI, RI-VII
Birubaneswar



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A Tata Steel Company

Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Compliance Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
11-Jan-22	West of Coal Stock	201	130	59	9.03	23.23	Mining Activities, OCP, Transportation	About 500m
11-Jan-22	North of the Sardega Railway Siding	222	149	44	15.31	33.23	Mining Activities, OCP, Coal Transportation	About 500m
14-Jan-22	South West of Working Face Gopalpur Village, Near CMPDI Camp	184	99	45	10.31	21.79	Mining Activity	About 500m
31-Jan-22	West of Coal Stock	245	145	55	17.93	31.53	Mining Activities, OCP, Transportation	About 500m
31-Jan-22	South West of Working Face Gopalpur Village, Near CMPDI Camp	176	93	40	16.43	25.29	Mining Activity	About 500m
31-Jan-22	North of the Sardega Railway Siding	200	136	47	19.28	25.85	Mining Activities, OCP, Coal Transportation	About 500m

M.P.E. Standards Notification dated 25th September, 2000

500 250 120 120

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CMPDI, RI-VII, LAB**

**O. I. C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar**



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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

Project	Basundhara (W) OCP				
Monitoring Station	Sarangijharia Community Centre				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
03-Jan-2022	<20.0	7.15	<0.1	<1.0	<1.0
04-Jan-2022	<20.0	3.56	<0.1	<1.0	<1.0
10-Jan-2022	<20.0	4.12	<0.1	<1.0	<1.0
11-Jan-2022	<20.0	6.23	<0.1	<1.0	<1.0
17-Jan-2022	<20.0	6.08	<0.1	<1.0	<1.0
18-Jan-2022	<20.0	7.21	<0.1	<1.0	<1.0
24-Jan-2022	<20.0	5.52	<0.1	<1.0	<1.0
25-Jan-2022	<20.0	4.60	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

T. Pattanaik
Authorized Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR

[Signature]
O. I. C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar



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A Miniratna Company

TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Mahalaxmi

PROJECT :

Basundhara (W) OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
12-Jan-22	West of Coal Stock	62.6	59.3
12-Jan-22	South-West of Working Face	64.3	62.1
12-Jan-22	North of the Sardega Railway Siding	64.8	57.7
12-Jan-22	Sarangijharia Community Centre	63.7	58.6
27-Jan-22	North of the Sardega Railway Siding	65.7	63.9
27-Jan-22	South-West of Working Face	63.9	61.3
27-Jan-22	Sarangijharia Community Centre	59.8	57.2
27-Jan-22	West of Coal Stock	60.6	58.7

MoEF Standard Notification dated 25th September, 2000	6.00 AM -10.00 PM Leq 75dB(A)	10.00 PM -6.00 AM Leq 70dB(A)
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 BHUBANESWAR

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 Bhubaneswar



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TABLE--

EFFLUENT QUALITY DATA

Area :

Mahalaxmi

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Basundhara (W) OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
12-Jan-22	M1-Basundhara (E) OCP's Sump	6.86	<4.0	28	24	-	-	-	
27-Jan-22	M1-Basundhara (E) OCP's Sump	6.80	<4.0	26	16	-	-	-	

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara (W)	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water reservoir	Acceptable	Permissible
Date of Sampling	5-Jan-2022		
Colour(Hazen)	<2.0	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	1	5
pH	7.48	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	48	200	600
Total Hardness (Ca CO ₃)(mg/L)	172	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	6	250	1000
Total Dissolve Solid(mg/L)	282	500	2000
Calcium(mg/L)	49.6	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	158.35	200	400
Nitrate(mg/L)	3.34	45	No relaxation
Fluoride(mg/L)	0.71	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.1	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara (W)	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water reservoir	Acceptable	Permissible
Date of Sampling	5-Jan-2022		
MPN (Index/100 ml)	6	-	-
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation

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Piezometer Water Quality Data: Mahalaxmi Area

Project / OCP	Basundhara OCP		Indian Drinking Standards (IS-10500):2012	
Monitoring Station	MIP13, Village Tumlia, Inside the Cmpus of Manikeswari	MIP15, Backside of Sardega Primary School	Acceptable	Permissible
Date of Sampling	27-Jan-2022	27-Jan-2022	Acceptable	Permissible
Colour(Hazen)	Not Functional	2	5	15
Odour		Agreeable	Agreeable	Agreeable
Taste		Agreeable	Agreeable	Agreeable
Turbidity(NTU)		3	1	5
pH		7.63	6.5-8.5	No relaxation
Total Alkalinity(mg/L)		80	200	600
Total Hardness (Ca CO ₃)(mg/L)		116	200	600
Iron(mg/L)		<0.1	0.3	No relaxation
Chloride(mg/L)		32	250	1000
Total Dissolve Solid(mg/L)		219	500	2000
Calcium(mg/L)		24.0	75	200
Copper(mg/L)		<0.03	0.05	1.5
Manganese(mg/L)		<0.04	0.1	0.3
Sulphate(mg/L)		13.5	200	400
Nitrate(mg/L)		<0.5	45	No relaxation
Fluoride(mg/L)		<0.3	1	1.5
Arsenic(mg/L)		<0.005	0.01	0.05
Lead(mg/L)		<0.005	0.01	No relaxation
Zinc(mg/L)		<0.04	5	15
Total Chromium (mg/L)		<0.01	0.01	No relaxation
Boron(mg/L)	<0.2	0.5	2.4	
Cadmium(mg/L)	<0.001	0.003	No relaxation	

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Piezometer Water Quality Data: Mahalaxmi Area

Project / OCP	Basundhara OCP		Indian Drinking Standards (IS-10500):2012	
	MIP16, Village Kulhaparha (New Basti) On the Road From Sardega to Gopalpur	MIP17, Village Gopalpur CMPDI Exploration Camp		
Monitoring Station				
Date of Sampling	27-Jan-2022	27-Jan-2022	Acceptable	Permissible
Colour(Hazen)	1	1	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	1	5
pH	7.02	7.46	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	80	168	200	600
Total Hardness (Ca CO ₃)(mg/L)	100	200	200	600
Iron(mg/L)	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	10	23	250	1000
Total Dissolve Solid(mg/L)	148	349	500	2000
Calcium(mg/L)	19.2	40.0	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	20.54	1.93	200	400
Nitrate(mg/L)	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

K. Pattnaik
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Piezometer Water Quality Data: Mahalaxmi Area

Project / OCP	Basundhara OCP		Indian Drinking Standards (IS-10500):2012	
Monitoring Station	MIP13, Village Tumlia, Inside the Cmpus of Manikeswari	MIP15, Backside of Sardegga Primary School		
Date of Sampling	27-Jan-2022	27-Jan-2022	Acceptable	Permissible
MPN (Index/100ml)	Not Functional	<1.8	-	-
Residual Free Chlorine (mg/L)		<0.2	0.2	1
Phenolics (mg/L)		<0.001	0.001	0.002
Selenium (mg/L)		<0.005	0.01	No relaxation

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Piezometer Water Quality Data: Mahalaxmi Area

Project / OCP	Basundhara OCP		Indian Drinking Standards (IS-10500):2012	
	Monitoring Station			
	MIP16, Village Kulhaparha (New Basti) On the Road From Sardega to Gopalpur	MIP17, Village Gopalpur CMPDI Exploration Camp		
Date of Sampling	27-Jan-2022	27-Jan-2022	Acceptable	Permissible
MPN (Index/100ml)	<1.8	<1.8	-	-
Residual Free Chlorine (mg/L)	<0.2	<0.2	0.2	1
Phenolics (mg/L)	<0.001	<0.001	0.001	0.002
Selenium (mg/L)	<0.005	<0.005	0.01	No relaxation

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TABLE--

Well Water Level Monitoring Data

Area :

Mahalaxmi

Project

Basundhara OCP

Date of sampling	Name of the Station	Depth to Water Level (in m. bgl)
27-Jan-22	Tiklipada Village Well	7.11
27-Jan-22	Sardega Village Well	9.10

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GROUND WATER LEVEL MONITORING DATA

Area:

Mahalaxmi

Project:

Basundhara (W) OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
27-Jan-22	Piezometer No MIP 17; Village Gopalpur; CMPDI Exploration Camp. Latitude 22° 3' 15"N Longitude 83 ° 42'17" E	7.17
27-Jan-22	Piezometer No MIP 13; Village Tumlia; Inside the Campus of ManikeswarCollege.	Pipe fitted. Level could not be measured .
27-Jan-22	Piezometer No MIP 16; Village Kulhparha (new basti) on the road fromSardega to Gopalpur Latitude 22 °3'25" N Longitude 83 ° 42'36" E	12.59
27-Jan-22	Piezometer No MIP 15; Back Side of Sardega Primary School.Latitude 22 °4'8" N Longitude 83°43'19" E	8.66

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Basundhara (W) Air Stations

Basundhara (W) Air monitoring stations



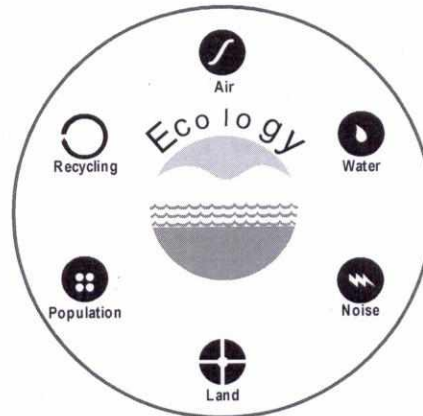
Job No.750001

**Environmental Monitoring Report
Of
Mahalaxmi Area
For
February- 2022**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Compliance Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
10-Feb-22	West of Coal Stock	173	136	56	15.84	13.91	Mining Activities, OCP, Transportation	About 500m
10-Feb-22	North of the Sardega Railway Siding	184	122	52	20.79	20.09	Mining Activities, OCP, Coal Transportation	About 500m
14-Feb-22	South West of Working Face Gopalpur Village, Near CMPDI Camp	188	111	43	17.06	16.64	Mining Activity	About 500m
23-Feb-22	West of Coal Stock	165	111	51	10.25	18.75	Mining Activities, OCP, Transportation	About 500m
23-Feb-22	South West of Working Face Gopalpur Village, Near CMPDI Camp	167	100	39	10.42	23.93	Mining Activity	About 500m
23-Feb-22	North of the Sardega Railway Siding	183	133	50	13.11	22.71	Mining Activities, OCP, Coal Transportation	About 500m

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MoEF Standards Notification dated 25th September, 2000	500	250		120	120
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Reference Station)

Project :

Basundhara (w) OCP

(conc. in $\mu\text{g}/\text{cu.m.}$)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
01-Feb-22	Sarangijharia Community Centre	129	69	26	15.52	21.50	Domestic	About 500m
02-Feb-22	Sarangijharia Community Centre	139	77	38	14.45	23.49	Domestic	About 500m
09-Feb-22	Sarangijharia Community Centre	155	85	34	11.25	24.01	Domestic	About 500m
10-Feb-22	Sarangijharia Community Centre	168	80	29	16.48	19.68	Domestic	About 500m
18-Feb-22	Sarangijharia Community Centre	120	88	33	12.52	23.74	Domestic	About 500m
19-Feb-22	Sarangijharia Community Centre	115	76	23	12.92	21.01	Domestic	About 500m
25-Feb-22	Sarangijharia Community Centre	125	80	30	16.49	28.73	Domestic	About 500m
26-Feb-22	Sarangijharia Community Centre	145	84	36	15.40	26.09	Domestic	About 500m

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*NAAQS, 2009

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

Project	Basundhara (W) OCP				
Monitoring Station	Sarangijharia Community Centre				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
01-Feb-2022	<20.0	5.86	<0.1	<1.0	<1.0
02-Feb-2022	<20.0	3.96	<0.1	<1.0	<1.0
09-Feb-2022	<20.0	4.39	<0.1	<1.0	<1.0
10-Feb-2022	<20.0	3.88	<0.1	<1.0	<1.0
18-Feb-2022	<20.0	7.23	<0.1	<1.0	<1.0
19-Feb-2022	<20.0	4.86	<0.1	<1.0	<1.0
25-Feb-2022	<20.0	5.01	<0.1	<1.0	<1.0
26-Feb-2022	<20.0	4.91	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Mahalaxmi

PROJECT :

Basundhara (W) OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
05-Feb-22	North of the Sardega Railway Siding	68.3	66.1
05-Feb-22	South-West of Working Face	64.3	62.5
05-Feb-22	Sarangijharia Community Centre	63.5	60.8
05-Feb-22	West of Coal Stock	63.9	61.2
25-Feb-22	North of the Sardega Railway Siding	64.7	62.1
25-Feb-22	South-West of Working Face	66.8	62.5
25-Feb-22	Sarangijharia Community Centre	63.6	57.6
25-Feb-22	West of Coal Stock	62.3	57.6

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MoEF Standard Notification dated 25th September, 2000	6.00 AM -10.00 PM Leq 75dB(A)	10.00 PM -6.00 AM Leq 70dB(A)
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TABLE--

EFFLUENT QUALITY DATA

Area :

Mahalaxmi

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Basundhara (W) OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
05-Feb-22	M1-Basundhara (E) OCP's Sump	6.89	<4.0	34	24	-	-	-	
26-Feb-22	M1-Basundhara (E) OCP's Sump	7.01	<4.0	40	36	-	-	-	

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MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara (W)	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water reservoir	Acceptable	Permissible
Date of Sampling	4-Feb-2022	Acceptable	Permissible
Colour(Hazen)	<1.0	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	5
pH	7.36	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	51.1	200	600
Total Hardness (Ca CO ₃)(mg/L)	164	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	8	250	1000
Total Dissolve Solid(mg/L)	308	500	2000
Calcium(mg/L)	44.8	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	165.72	200	400
Nitrate(mg/L)	3.55	45	No relaxation
Fluoride(mg/L)	0.68	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	0.17	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.1	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara (W)	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water reservoir	Acceptable	Permissible
Date of Sampling	4-Feb-2022	Acceptable	Permissible
MPN (Index/100 ml)	6.8	–	–
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation

Hattawalk

Anil K. Bhardwaj

Basundhara (W) Air Stations

Basundhara (W) Air monitoring stations

Sumura

Sarangijharia community Centre

Sarangijharia

Banjikachhar

North of sardega railway siding (Kulapada)

Sardega

West of coal stock (Near golf course)

Tikilipara

Ratansara

South-west of working face (Gopalpur village)

Gopalpur

Siarmal

Google Earth

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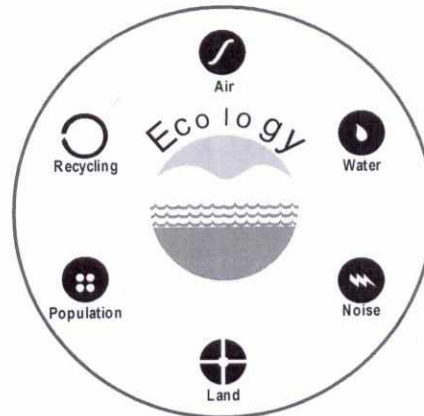
Job No.750001

**Environmental Monitoring Report
Of
Mahalaxmi Area
For
March- 2022**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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A Mini Ratna Company

Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Compliance Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
07-Mar-22	North of the Sardega Railway Siding	160	108	44	19.09	18.14	Mining Activities, OCP, Coal Transportation	About 500m
08-Mar-22	West of Coal Stock	189	133	48	16.43	14.62	Mining Activities, OCP, Transportation	About 500m
08-Mar-22	South West of Working Face Gopalpur Village, Near CMPDI Camp	129	68	27	17.33	16.82	Mining Activity	About 500m
24-Mar-22	West of Coal Stock	187	122	56	18.70	25.23	Mining Activities, OCP, Transportation	About 500m
24-Mar-22	South West of Working Face Gopalpur Village, Near CMPDI Camp	153	80	32	12.39	21.08	Mining Activity	About 500m
24-Mar-22	North of the Sardega Railway Siding	200	136	55	18.34	27.36	Mining Activities, OCP, Coal Transportation	About 500m

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BHUBANESWAR

Signature
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MoEF Standards Notification dated 25th September, 2000	500	250		120	120
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Reference Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
01-Mar-22	Sarangijharia Community Centre	145	77	30	20.30	24.66	Domestic	About 500m
02-Mar-22	Sarangijharia Community Centre	155	80	36	13.58	21.46	Domestic	About 500m
09-Mar-22	Sarangijharia Community Centre	125	60	24	11.21	25.17	Domestic	About 500m
10-Mar-22	Sarangijharia Community Centre	136	75	29	18.91	27.45	Domestic	About 500m
16-Mar-22	Sarangijharia Community Centre	134	70	30	14.23	24.56	Domestic	About 500m
17-Mar-22	Sarangijharia Community Centre	109	70	20	13.68	22.10	Domestic	About 500m
25-Mar-22	Sarangijharia Community Centre	115	75	23	11.29	19.30	Domestic	About 500m
26-Mar-22	Sarangijharia Community Centre	140	80	30	11.23	20.39	Domestic	About 500m

Signature

**Authorized Signatory
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Kattanak
**O.L.C.
Env. Lab
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100	60	80	80
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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

Project	Basundhara (W) OCP				
Monitoring Station	Sarangijharia Community Centre				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
01-Mar-2022	<20.0	6.28	<0.1	<1.0	<1.0
02-Mar-2022	<20.0	5.99	<0.1	<1.0	<1.0
09-Mar-2022	<20.0	6.02	<0.1	<1.0	<1.0
10-Mar-2022	<20.0	6.02	<0.1	<1.0	<1.0
16-Mar-2022	<20.0	5.62	<0.1	<1.0	<1.0
17-Mar-2022	<20.0	5.73	<0.1	<1.0	<1.0
25-Mar-2022	<20.0	5.82	<0.1	<1.0	<1.0
26-Mar-2022	<20.0	6.02	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Mahalaxmi

PROJECT :

Basundhara (W) OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-Mar-22	North of the Sardega Railway Siding	64.5	57.6
09-Mar-22	South-West of Working Face	64.6	57.3
09-Mar-22	West of Coal Stock	63.2	58.9
09-Mar-22	Sarangijharia Community Centre	63.2	59.6
26-Mar-22	South-West of Working Face	64.9	55.7
26-Mar-22	North of the Sardega Railway Siding	64.8	56.7
26-Mar-22	West of Coal Stock	62.6	58.5
26-Mar-22	Sarangijharia Community Centre	62.3	56.8

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MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)



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TABLE--

EFFLUENT QUALITY DATA

Area :

Mahalaxmi

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Basundhara (W) OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-Mar-22	Inlet of Settling Pond at Excavation Workshop, B(W) OCP	7.45	<4.0	34	24				
09-Mar-22	Outlet of Settling Pond at Excavation Workshop, B(W) OCP	7.55	<4.0	28	16				
09-Mar-22	M1-Basundhara (E) OCP's Sump	7.48	<4.0	28	20	-	-	-	
26-Mar-22	M1-Basundhara (E) OCP's Sump	7.30	<4.0	26	28	-	-	-	

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MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara (W)	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water reservoir	Acceptable	Permissible
Date of Sampling	9-Mar-2022	Acceptable	Permissible
Colour(Hazen)	4	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	5
pH	7.78	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	93.7	200	600
Total Hardness (Ca CO ₃)(mg/L)	96	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	8	250	1000
Total Dissolve Solid(mg/L)	154	500	2000
Calcium(mg/L)	25.6	75	200
Copper(mg/L)	<0.04	0.05	1.5
Manganese(mg/L)	<0.07	0.1	0.3
Sulphate(mg/L)	13.29	200	400
Nitrate(mg/L)	<0.5	45	No relaxation
Fluoride(mg/L)	0.33	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara (W)	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water reservoir	Acceptable	Permissible
Date of Sampling	9-Mar-2022	Acceptable	Permissible
MPN (Index/100 ml)	<1.8	–	–
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation


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Surface Water Quality Data Mahalaxmi Area

Project/OCP	Basundhara OCP		IS:2296-1982 Tolerance for inland Surface water (Class C)
	Basundhara River u/s Point Near Tilkipara	Basundhara River d/s Point Near Tilkipara	
NAME OF STATIONS			
Date of sampling	26-Feb-2022	26-Feb-2022	
pH	6.57	6.73	6.5-8.5
Dissolved Oxygen(mg/L)	6.5	6.1	4
BOD (3 days 27oc(mg/L)	2.2	<2.0	3
Color (Hazen unit)	1	3	300
Total dissolved solids (mg/L)	126	58	1500
TSS(mg/L)	34	38	-
Total Hardness(mg/L)	56	32	-
Copper(mg/L)	<0.04	<0.04	1.5
Iron(mg/L)	<0.1	<0.1	50
Chlorides(mg/L)	20	8	600
Sulphate(mg/L)	11.43	3.14	400
Nitrate(mg/L)	<0.5	<0.5	50
Fluoride(mg/L)	<0.3	<0.3	1.5
Cadmium(mg/L)	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	0.1
Zinc(mg/L)	0.05	<0.04	15
Chromium(as Cr6)(mg/L)	<0.05	<0.05	0.05
Oil & Grease	<4.0	<4.0	0.1

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Surface Water Quality Data Mahalaxmi Area

Project/OCP	Basundhara OCP		IS:2296-1982 Tolerance for inland Surface water (Class C)
NAME OF STATIONS	Basundhara River u/s Point Near Tilkipara	Basundhara River d/s Point Near Tilkipara	
Date of sampling	26-Feb-2022	26-Feb-2022	
MPN (Index/100 ml)	14	12	—
Selenium(mg/L)	<0.005	<0.005	0.01

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Basundhara (W) Air Stations

Basundhara (W) Air monitoring stations

Sumura

Sarangijharia community Centre

Sarangijharia

Banjikachhar

North of sardega railway siding (Kulapada)

Sardega

West of coal stock (Near golf course)

Tikiipara

Ratanpara

South-west of working face (Gopalpur village)

Gopalpur

Siarnal

Google Earth

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