

Job No.750001

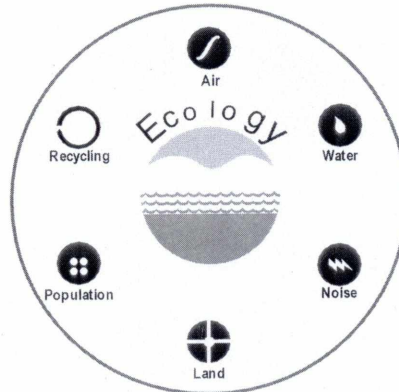
**Environmental Monitoring Report
Of
Ib Valley Area
For
July- 2021**

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 :

Ib Valley

(Compliance Station)

Project :

Lajkura OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
03-Jul-21	Near South Coal Stock	269	168	46	11.76	18.24	Mining Activities, Coal Transportation	About 500m
03-Jul-21	Near Project Office	237	149	44	9.86	18.67	Domestic, OCP, Transportation	About 500m
05-Jul-21	North of the Mine	289	217	45	10.68	13.99	Mining Activity	About 500m
21-Jul-21	North of the Mine	247	144	39	8.99	12.49	Mining Activity	About 500m
21-Jul-21	Near South Coal Stock	213	124	44	14.21	23.68	Mining Activities, Coal Transportation	About 500m
21-Jul-21	Near Project Office	186	102	35	9.03	19.22	Domestic, OCP, Transportation	About 500m

Project :

Samleswari OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
03-Jul-21	West of the Mine	247	132	44	16.13	33.60	Distance From 'y' Curve Railway Siding	About 450m
03-Jul-21	South-East of the Mine	137	74	39	13.60	23.50	Coal Transportation Road	About 500m
03-Jul-21	South of the Mine	271	159	49	14.31	25.24	Mine Haul Roads	About 400m
03-Jul-21	East of the Mine	243	164	47	15.20	31.66	Coal Transportation Road	About 500m
19-Jul-21	West of the Mine	221	130	41	14.64	21.15	Distance From 'y' Curve Railway Siding	About 450m
19-Jul-21	South of the Mine	243	136	46	11.73	20.95	Mine Haul Roads	About 400m
20-Jul-21	South-East of the Mine	166	103	44	12.31	19.73	Coal Transportation Road	About 500m
20-Jul-21	East of the Mine	209	114	40	13.33	21.55	Coal Transportation Road	About 500m

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MoEF Standards Notification dated 25th September 2000

600	300	120	120
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Ib Valley

(Reference Station)

Project :

Lajkura 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-Jul-21	Khokelmal	107	77	31	10.70	20.06	Railway siding	About 1000m FromSiding
02-Jul-21	Khokelmal	98	61	29	13.10	24.36	Railway siding	About 1000m FromSiding
09-Jul-21	Khokelmal	108	68	35	11.13	21.92	Railway siding	About 1000m FromSiding
10-Jul-21	Khokelmal	95	59	30	11.22	20.95	Railway siding	About 1000m FromSiding
16-Jul-21	Khokelmal	88	54	28	11.40	22.16	Railway siding	About 1000m FromSiding
17-Jul-21	Khokelmal	98	63	29	9.13	17.97	Railway siding	About 1000m FromSiding
23-Jul-21	Khokelmal	121	69	32	10.36	18.56	Railway siding	About 1000m FromSiding
24-Jul-21	Khokelmal	110	66	27	11.78	22.12	Railway siding	About 1000m FromSiding

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*NAAQS,2009

	100	60	80	80
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Test Report

AMBIENT AIR QUALITY DATA

Area : **Ib Valley**

(Reference Station)

Project :

Samleswari 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-Jul-21	Rampur Sub Area(Reported Only)	153	81	46	10.26	13.44	Coal Stock And CT Road	About 900m
01-Jul-21	Khokelmal (Reported Only)	107	77	31	10.70	20.06	Railway siding	About 1000m FromSiding
02-Jul-21	Khokelmal (Reported Only)	98	61	29	13.10	24.36	Railway siding	About 1000m FromSiding
02-Jul-21	Rampur Sub Area(Reported Only)	144	76	41	11.97	17.96	Coal Stock And CT Road	About 900m
09-Jul-21	Khokelmal (Reported Only)	108	68	35	11.13	21.92	Railway siding	About 1000m FromSiding
09-Jul-21	Rampur Sub Area(Reported Only)	121	70	37	10.90	20.44	Coal Stock And CT Road	About 900m
10-Jul-21	Rampur Sub Area(Reported Only)	107	66	30	9.42	14.72	Coal Stock And CT Road	About 900m
10-Jul-21	Khokelmal (Reported Only)	95	59	30	11.22	20.95	Railway siding	About 1000m FromSiding
16-Jul-21	Rampur Sub Area(Reported Only)	115	62	34	8.84	23.87	Coal Stock And CT Road	About 900m
16-Jul-21	Khokelmal (Reported Only)	88	54	28	11.40	22.16	Railway siding	About 1000m FromSiding
17-Jul-21	Khokelmal (Reported Only)	98	63	29	9.13	17.97	Railway siding	About 1000m FromSiding
17-Jul-21	Rampur Sub Area(Reported Only)	102	53	30	12.05	16.31	Coal Stock And CT Road	About 900m
23-Jul-21	Khokelmal (Reported Only)	121	69	32	10.36	18.56	Railway siding	About 1000m FromSiding
23-Jul-21	Rampur Sub Area(Reported Only)	108	70	33	8.99	18.74	Coal Stock And CT Road	About 900m
24-Jul-21	Rampur Sub Area(Reported Only)	114	66	29	10.29	17.46	Coal Stock And CT Road	About 900m
24-Jul-21	Khokelmal (Reported Only)	110	66	27	11.78	22.12	Railway siding	About 1000m FromSiding

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

Project	Samleswari OCP				
Monitoring Station	Rampur Sub Area (Reported Only)				
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-Jul-2021	<20.0	5.32	<0.1	<1.0	<1.0
02-Jul-2021	<20.0	4.99	<0.1	<1.0	<1.0
09-Jul-2021	<20.0	3.89	<0.1	<1.0	<1.0
10-Jul-2021	<20.0	4.01	<0.1	<1.0	<1.0
16-Jul-2021	<20.0	4.73	<0.1	<1.0	<1.0
17-Jul-2021	<20.0	5.26	<0.1	<1.0	<1.0
23-Jul-2021	<20.0	5.16	<0.1	<1.0	<1.0
24-Jul-2021	<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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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

Project	Samleswari OCP				
Monitoring Station	Khokelmal (Reported Only)				
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-Jul-2021	<20.0	3.82	<0.1	<1.0	<1.0
02-Jul-2021	<20.0	2.86	<0.1	<1.0	<1.0
09-Jul-2021	<20.0	4.08	<0.1	<1.0	<1.0
10-Jul-2021	<20.0	3.25	<0.1	<1.0	<1.0
16-Jul-2021	<20.0	4.83	<0.1	<1.0	<1.0
17-Jul-2021	<20.0	3.78	<0.1	<1.0	<1.0
23-Jul-2021	<20.0	4.03	<0.1	<1.0	<1.0
24-Jul-2021	<20.0	3.84	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

Project	Lajkura OCP				
Monitoring Station	Khokelmal				
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-Jul-2021	<20.0	3.82	<0.1	<1.0	<1.0
02-Jul-2021	<20.0	2.86	<0.1	<1.0	<1.0
09-Jul-2021	<20.0	4.08	<0.1	<1.0	<1.0
10-Jul-2021	<20.0	3.25	<0.1	<1.0	<1.0
16-Jul-2021	<20.0	4.83	<0.1	<1.0	<1.0
17-Jul-2021	<20.0	3.78	<0.1	<1.0	<1.0
23-Jul-2021	<20.0	4.03	<0.1	<1.0	<1.0
24-Jul-2021	<20.0	3.84	<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 :

Ib Valley

PROJECT :

Lajkura OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
08-Jul-21	Near Project Office	66.8	63.2
08-Jul-21	North of Mine	63.2	57.7
08-Jul-21	Near South Coal Stock	65.4	62.7
08-Jul-21	Khokelmal	64.6	59.6
22-Jul-21	North of Mine	65.3	62.8
22-Jul-21	Khokelmal	62.7	55.6
22-Jul-21	Near South Coal Stock	64.6	61.8
22-Jul-21	Near Project Office	66.7	63.2

PROJECT :

Samleswari OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
08-Jul-21	South of the Mine	64.6	63.7
08-Jul-21	East of the Mine	66.8	62.6
08-Jul-21	West of the Mine	66.3	62.1
08-Jul-21	Khokelmal (Reported Only)	64.6	59.6
08-Jul-21	South-East of the Mine	63.7	58.8
08-Jul-21	Rampur Sub Area	67.6	63.2
22-Jul-21	Khokelmal (Reported Only)	62.7	55.6
22-Jul-21	South of the Mine	65.4	62.8
22-Jul-21	South-East of the Mine	64.7	62.1
22-Jul-21	Rampur Sub Area	62.8	57.9
22-Jul-21	West of the Mine	66.7	63.2
22-Jul-21	East of the Mine	66.7	64.3

K. Hanaiik
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 MoEF, Standard Notification dated 25th September, 2000
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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 :

IB Valley

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

Project :

Central Hospital

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
12-Jul-21	Tap Discharge Water of Central Hospital	6.40	<4.0	48	24	<2.0	

Project :

Lajkura OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
12-Jul-21	STP Outlet	6.46		42		<2.0	
12-Jul-21	Outlet of MDTP	3.25	<4.0	20	12		
22-Jul-21	STP Outlet	-		-		-	DRY
22-Jul-21	Outlet of MDTP	3.26	<4.0	40	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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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

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

Project :

Samaleswari OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
12-Jul-21	Mine Sump Water Discharge Point	6.68	<4.0	32	40		

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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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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

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

Project :

Samaleswari OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
22-Jul-21	Mine Sump Water Discharge Point	6.67	<4.0	32	44		

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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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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

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

Project :

Samaleswari OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
12-Jul-21	Outlet of Orampada Sump	-	-	-	-		Dry
12-Jul-21	STP Outlet	7.79		30		<2.0	
12-Jul-21	Outlet of Sedimentation Pond	-	-	-	-		Dry
22-Jul-21	Outlet of Sedimentation Pond	-	-	-	-		Dry
22-Jul-21	STP Outlet	7.82		38		<2.0	

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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 IB Valley Area

Project / OCP	Samaleswari OCP		Indian Drinking Standards (IS-10500):2012	
	Well Water From Kudopali	Tap Water From Samaleswari OCP Colony		
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	1	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	4	1	5
pH	6.82	6.91	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	108	104	200	600
Total Hardness (Ca CO₃)(mg/L)	88	84	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	23.83	19.86	250	1000
Total Dissolve Solid(mg/L)	186	190	500	2000
Calcium(mg/L)	19.24	22.44	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)	12.94	15.00	200	400
Nitrate(mg/L)	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.35	0.42	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.08	0.06	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.10	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

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Drinking Water Quality Data IB Valley Area

Project / OCP	Samaleswari OCP		Indian Drinking Standards (IS-10500):2012	
	Well Water From Kudopali	Tap Water From Samaleswari OCP Colony		
Monitoring Station				
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
MPN (Index/100 ml)	6	5.5	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0

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24/9/21



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Drinking Water Quality Data IB Valley Area

Project / OCP	Samleswari OCP		Indian Drinking Standards (IS-10500):2012	
	Water from IWSS, IB Valley Area	Well Water From Lajkura		
Monitoring Station				
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
MPN (Index/100 ml)	<1.8	<1.8	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0

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Drinking Water Quality Data IB Valley Area

Project / OCP	Samleswari OCP		Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water from IWSS, IB Valley Area	Well Water From Lajkura	Acceptable	Permissible
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	1	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	3	1	5
pH	7.28	7.02	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	116	108	200	600
Total Hardness (Ca CO ₃)(mg/L)	96	84	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	21.84	25.81	250	1000
Total Dissolve Solid(mg/L)	202	188	500	2000
Calcium(mg/L)	32.06	24.05	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)	16.32	16.62	200	400
Nitrate(mg/L)	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.49	0.38	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	0.06	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.10	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

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Drinking Water Quality Data IB Valley Area

Project / OCP	Lajkura OCP		Indian Drinking Standards (IS-10500):2012	
	Madhuban Nagar Well Water	Adarsh Nagar Colony Well Water		
Monitoring Station				
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	1	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	1	5
pH	6.58	6.81	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	88	112	200	600
Total Hardness (Ca CO₃)(mg/L)	28	96	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	27.8	41.7	250	1000
Total Dissolve Solid(mg/L)	106	274	500	2000
Calcium(mg/L)	11.22	32.06	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.07	0.1	0.3
Sulphate(mg/L)	39.56	30.74	200	400
Nitrate(mg/L)	21.74	13.47	45	No relaxation
Fluoride(mg/L)	0.34	<0.30	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.07	0.09	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.10	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

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Drinking Water Quality Data IB Valley Area

Project / OCP	Lajkura OCP		Indian Drinking Standards (IS-10500):2012	
	Madhuban Nagar Well Water	Adarsh Nagar Colony Well Water		
Monitoring Station				
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
MPN (Index/100 ml)	4	1.8	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0

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Drinking Water Quality Data IB Valley Area

Project / OCP	Lajkura OCP		Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Chhualiberna Village Well Water	VIP Guest House Tap Water	Acceptable	Permissible
Date of Sampling	12-Jul-2021	12-Jul-2021		
MPN (Index/100 ml)	<1.8	4		
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0

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Drinking Water Quality Data IB Valley Area

Project / OCP	Lajkura OCP		Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Chhualiberna Village Well Water	VIP Guest House Tap Water	Acceptable	Permissible
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	1	1	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	2	1	5
pH	6.71	7.46	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	96	84	200	600
Total Hardness (Ca CO ₃)(mg/L)	64	80	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	19.86	15.89	250	1000
Total Dissolve Solid(mg/L)	134	168	500	2000
Calcium(mg/L)	19.24	24.05	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)	17.50	28.38	200	400
Nitrate(mg/L)	1.38	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	0.67	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
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	0.05	No relaxation
Boron(mg/L)	<0.10	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

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Surface Water Quality Data IB Valley Area

Project/OCP	Samaleswari OCP		IS:2296-1982 Tolerance for inland Surface water (Class C)
NAME OF STATIONS	Pandren Nallah Near Muchtibahal	Pandren Nallah Before Confluence Point With Lilari Nallah	
Date of sampling	22-Jul-2021	22-Jul-2021	
pH	6.99	6.81	6.5-8.5
Dissolved Oxygen(mg/L)	6.8	6.6	4
BOD (3 days 27oc)(mg/L)	<2.0	<2.0	3
Color (Hazen unit)	1	2	300
Total dissolved solids (mg/L)	364	336	1500
TSS(mg/L)	64	74	-
Total Hardness(mg/L)	228	208	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	<0.1	<0.1	50
Chlorides(mg/L)	17.87	17.87	600
Sulphate(mg/L)	148.09	140.44	400
Nitrate(mg/L)	3.23	3.05	50
Fluoride(mg/L)	0.66	0.72	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)	<0.04	<0.04	15
Oil & Grease(mg/L)	<4.0	<4.0	0.1

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Surface Water Quality Data IB Valley Area

Project/OCP	Lajkura OCP		IS:2296-1982 Tolerance for inland Surface water (Class C)
NAME OF STATIONS	U/S of Baghmara Nala at Discharge Point	D/S of Baghmara Nala at Discharge Point	
Date of sampling	22-Jul-2021	22-Jul-2021	
pH	6.83	6.90	6.5-8.5
Dissolved Oxygen(mg/L)	7.1	7.2	4
BOD (3 days 27oc)(mg/L)	<2.0	<2.0	3
Color (Hazen unit)	1	2	300
Total dissolved solids (mg/L)	96	102	1500
TSS(mg/L)	84	92	-
Total Hardness(mg/L)	44	48	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	<0.1	<0.1	50
Chlorides(mg/L)	9.93	9.93	600
Sulphate(mg/L)	24.85	26.76	400
Nitrate(mg/L)	2.04	1.35	50
Fluoride(mg/L)	<0.30	0.42	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)	<0.04	<0.04	15
Oil & Grease(mg/L)	<4.0	<4.0	0.1

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Lajkura Air Stations

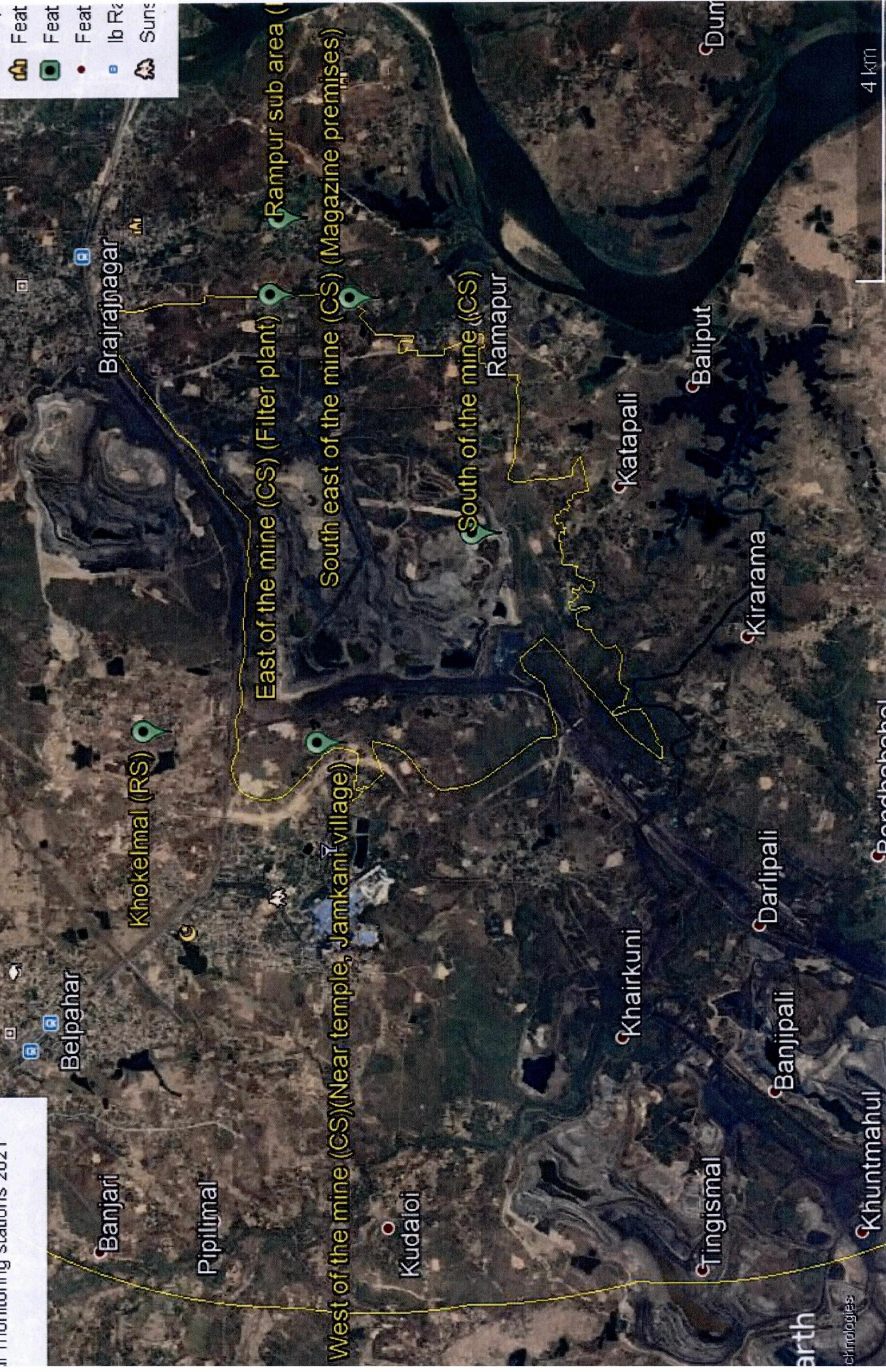
Lajkura Air monitoring stations



wari Air stations

air monitoring stations 2021

- Legend**
- Belp
 - Feat
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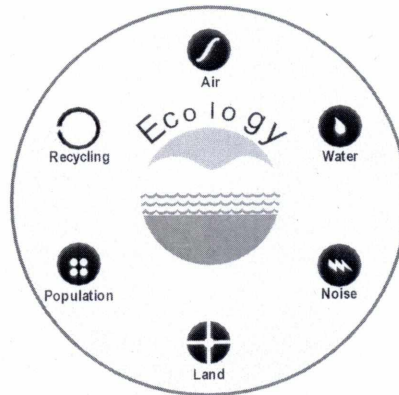
Job No.750001

**Environmental Monitoring Report
Of
Lakhanpur Area
For
July- 2021**

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 :

Lakhanpur I

(Compliance Station)

Project :

Lilari 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
05-Jul-21	Near Lilari Magazine House	206	121	43	9.25	15.42	Coal Transportation	About 500m
22-Jul-21	Near Lilari Magazine House	198	139	46	14.32	20.87	Coal Transportation	About 500m

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MoEF Standards Notification dated 25th
September, 2000

600

300

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120



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Test Report

AMBIENT AIR QUALITY DATA

Area :

Lakhanpur

(Compliance Station)

Project :

Belpahar OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
07-Jul-21	Near Magazine House	210	123	39	14.50	15.02	Mining Activities	About 500m
07-Jul-21	Near Central Workshop	247	161	47	8.72	14.53	Mining Activities	About 500m
26-Jul-21	Near Magazine House	207	137	42	12.42	23.12	Mining Activities	About 500m
26-Jul-21	Near Central Workshop	257	149	44	10.33	20.25	Mining Activities	About 500m

Project :

Lakhanpur OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
06-Jul-21	Near Quarry 3	237	131	49	12.21	21.91	Coal Stockyard, Surface Bunker, Coal Transport	About 500m
06-Jul-21	Near Lilari Nallah Pump House	152	89	39	11.10	15.86	Mining Activities	About 500m
22-Jul-21	Near Quarry 3	231	125	45	12.89	15.61	Coal Stockyard, Surface Bunker, Coal Transport	About 500m
22-Jul-21	Near Lilari Nallah Pump House	167	95	31	8.93	19.77	Mining Activities	About 500m

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September, 2000

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Lakhanpur

(Reference Station)

Project :

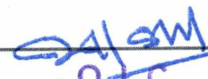
Lakhanpur OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
01-Jul-21	South West of Quarry 6	123	69	44	14.33	16.86	Mining Related Activities	About 500m
01-Jul-21	South of Quarry 6	139	88	25	15.21	19.01	Mining Activities	About 500m
02-Jul-21	South of Quarry 6	127	76	30	10.23	18.48	Mining Activities	About 500m
02-Jul-21	South West of Quarry 6	127	75	38	12.57	16.46	Mining Related Activities	About 500m
09-Jul-21	South West of Quarry 6	107	72	28	11.86	17.29	Mining Related Activities	About 500m
09-Jul-21	South of Quarry 6	118	80	35	14.21	20.73	Mining Activities	About 500m
10-Jul-21	South of Quarry 6	104	62	28	11.10	21.87	Mining Activities	About 500m
10-Jul-21	South West of Quarry 6	89	50	30	8.42	18.23	Mining Related Activities	About 500m
16-Jul-21	South West of Quarry 6	99	61	31	13.39	16.36	Mining Related Activities	About 500m
16-Jul-21	South of Quarry 6	116	74	38	12.71	16.24	Mining Activities	About 500m
17-Jul-21	South of Quarry 6	108	62	32	13.30	22.16	Mining Activities	About 500m
17-Jul-21	South West of Quarry 6	115	71	36	10.09	21.02	Mining Related Activities	About 500m
23-Jul-21	South of Quarry 6	126	78	40	11.23	15.26	Mining Activities	About 500m
23-Jul-21	South West of Quarry 6	137	81	43	13.26	16.36	Mining Related Activities	About 500m
24-Jul-21	South West of Quarry 6	144	79	38	9.12	19.45	Mining Related Activities	About 500m
24-Jul-21	South of Quarry 6	129	71	37	9.72	18.78	Mining Activities	About 500m


 Anshu Khatiwala
 Authorized Signatory
 CMPDI, RI-VII, LAB
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Lakhanpur

(Reference Station)

Project :

Belpahar 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-Jul-21	South of the Mine	154	88	46	9.94	16.57	Mining Activities, Coal Transportation	About 500m
01-Jul-21	East of the Mine	152	79	33	13.07	18.43	Mining Activities	About 500m
02-Jul-21	East of the Mine	148	82	39	10.17	11.80	Mining Activities	About 500m
02-Jul-21	South of the Mine	133	80	36	16.41	18.01	Mining Activities, Coal Transportation	About 500m
09-Jul-21	South of the Mine	125	76	40	11.40	24.54	Mining Activities, Coal Transportation	About 500m
09-Jul-21	East of the Mine	140	75	37	16.59	13.83	Mining Activities	About 500m
10-Jul-21	East of the Mine	107	68	34	12.08	20.87	Mining Activities	About 500m
10-Jul-21	South of the Mine	112	71	42	8.47	16.93	Mining Activities, Coal Transportation	About 500m
16-Jul-21	South of the Mine	86	53	30	8.66	16.94	Mining Activities, Coal Transportation	About 500m
16-Jul-21	East of the Mine	83	58	26	11.05	16.75	Mining Activities	About 500m
17-Jul-21	East of the Mine	97	53	24	9.29	21.67	Mining Activities	About 500m
17-Jul-21	South of the Mine	94	50	27	16.59	18.68	Mining Activities, Coal Transportation	About 500m
23-Jul-21	East of the Mine	102	61	29	8.25	24.33	Mining Activities	About 500m
23-Jul-21	South of the Mine	103	56	25	9.06	15.23	Mining Activities, Coal Transportation	About 500m
24-Jul-21	South of the Mine	111	67	32	11.56	19.63	Mining Activities, Coal Transportation	About 500m
24-Jul-21	East of the Mine	110	65	33	11.45	17.88	Mining Activities	About 500m

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South of Quarry 6				
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-Jul-2021	<20.0	4.26	<0.1	<1.0	<1.0
02-Jul-2021	<20.0	5.07	<0.1	<1.0	<1.0
09-Jul-2021	<20.0	4.87	<0.1	<1.0	<1.0
10-Jul-2021	<20.0	4.01	<0.1	<1.0	<1.0
16-Jul-2021	<20.0	4.72	<0.1	<1.0	<1.0
17-Jul-2021	<20.0	6.02	<0.1	<1.0	<1.0
23-Jul-2021	<20.0	5.04	<0.1	<1.0	<1.0
24-Jul-2021	<20.0	4.74	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South West of Quarry 6				
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-Jul-2021	<20.0	6.81	<0.1	<1.0	<1.0
02-Jul-2021	<20.0	4.86	<0.1	<1.0	<1.0
09-Jul-2021	<20.0	5.22	<0.1	<1.0	<1.0
10-Jul-2021	<20.0	4.99	<0.1	<1.0	<1.0
16-Jul-2021	<20.0	5.08	<0.1	<1.0	<1.0
17-Jul-2021	<20.0	4.76	<0.1	<1.0	<1.0
23-Jul-2021	<20.0	4.84	<0.1	<1.0	<1.0
24-Jul-2021	<20.0	5.20	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

roject	Belpahar OCP				
Monitoring Station	South of the Mine				
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-Jul-2021	<20.0	4.71	<0.1	<1.0	<1.0
02-Jul-2021	<20.0	3.91	<0.1	<1.0	<1.0
09-Jul-2021	<20.0	6.23	<0.1	<1.0	<1.0
10-Jul-2021	<20.0	5.84	<0.1	<1.0	<1.0
16-Jul-2021	<20.0	5.16	<0.1	<1.0	<1.0
17-Jul-2021	<20.0	4.36	<0.1	<1.0	<1.0
23-Jul-2021	<20.0	3.96	<0.1	<1.0	<1.0
24-Jul-2021	<20.0	4.41	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

T. Pattawalk

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Belpahar OCP				
Monitoring Station	East of the Mine				
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-Jul-2021	<20.0	3.71	<0.1	<1.0	<1.0
02-Jul-2021	<20.0	4.08	<0.1	<1.0	<1.0
09-Jul-2021	<20.0	3.44	<0.1	<1.0	<1.0
10-Jul-2021	<20.0	2.66	<0.1	<1.0	<1.0
16-Jul-2021	<20.0	3.12	<0.1	<1.0	<1.0
17-Jul-2021	<20.0	4.15	<0.1	<1.0	<1.0
23-Jul-2021	<20.0	3.78	<0.1	<1.0	<1.0
24-Jul-2021	<20.0	4.73	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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[Signature]
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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Lakhanpur

PROJECT :

Belpahar OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-Jul-21	East of the Mine	67.6	64.2
09-Jul-21	Near Central Workshop	65.3	62.1
09-Jul-21	South of the Mine	64.2	60.8
09-Jul-21	Near Magazine House	66.7	62.1
23-Jul-21	Near Magazine House	64.7	60.8
23-Jul-21	Near Central Workshop	65.2	62.6
23-Jul-21	South of the Mine	60.3	57.6
23-Jul-21	East of the Mine	63.8	58.2

PROJECT :

Lakhanpur OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-Jul-21	Near Lilari Nallah Pump House	64.7	59.8
09-Jul-21	South of Quarry 6	62.6	58.6
09-Jul-21	Near Quarry 3	63.2	57.7
09-Jul-21	South West of Quarry 6	64.5	57.3
23-Jul-21	South of Quarry 6	64.4	59.3
23-Jul-21	Near Quarry 3	62.7	57.6
23-Jul-21	South West of Quarry 6	62.1	55.3
23-Jul-21	Near Lilari Nallah Pump House	66.8	63.9

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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--

NOISE LEVEL MONITORING DATA

AREA :

Lakhanpur

PROJECT :

Lilari OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-Jul-21	Near Lilari Magazine House	66.9	63.2
23-Jul-21	Near Lilari Magazine House	64.8	62.3

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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 :

Lakhanpur

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

Project :

Belpahar OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
13-Jul-21	Clear Water Tank of MDTP	6.93	<4.0	44	32		
13-Jul-21	Mine Sump Water	6.92	<4.0	38	28		
13-Jul-21	Inlet of ETP	7.05	<4.0	54	36		
13-Jul-21	Outlet of ETP	7.35	<4.0	48	28		
13-Jul-21	Clear Water Tank of Sewage Treatment Plant	-	-	-	-	-	DRY
13-Jul-21	ECO Tank	-	-	-	-	-	DRY
23-Jul-21	Clear Water Tank of Sewage Treatment Plant	7.18		66		<2.0	
23-Jul-21	Clear Water Tank of MDTP	-	-	-	-		Dry

Project :

Lakhanpur OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
13-Jul-21	O & G Trap Outlet	7.06	<4.0	64	48		
13-Jul-21	Mine Sump Water	6.89	<4.0	60	40		
13-Jul-21	Outlet of Secondary Sedimentation Tank	7.03	<4.0	48	52		
13-Jul-21	O & G Trap Inlet	6.96	<4.0	78	64		
13-Jul-21	Inlet of Secondary Sedimentation Tank	6.92	<4.0	68	92		
23-Jul-21	Mine Sump Water	7.17	<4.0	68	52		
23-Jul-21	Outlet of Secondary Sedimentation Tank	7.06	<4.0	64	44		

Project :

Lilari OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
13-Jul-21	Mine Sump Water	6.87	<4.0	54	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 Lakhanpur Area

Project / OCP	Lakhanpur OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	LKP Canteen Tap Water	Acceptable	Permissible
Date of Sampling	12-Jul-2021		
Colour(Hazen)	2	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	5
pH	7.58	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	88	200	600
Total Hardness (Ca CO ₃)(mg/L)	84	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	17.87	250	1000
Total Dissolve Solid(mg/L)	174	500	2000
Calcium(mg/L)	25.65	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	25.59	200	400
Nitrate(mg/L)	<0.5	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)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

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Drinking Water Quality Data Lakhanpur Area

Project / OCP	Lakhanpur OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	LKP Canteen Tap Water		
Date of Sampling	12-Jul-2021	Acceptable	Permissible
MPN (Index/100 ml)	<1.8	–	–
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0

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Drinking Water Quality Data Lakhanpur Area

Project / OCP	Belpahar OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	IWSS Outlet	Acceptable	Permissible
Date of Sampling	12-Jul-2021		
MPN (Index/100 ml)	14	—	—
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0

Katavail

MS/SM



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Drinking Water Quality Data Lakhanpur Area

Project / OCP	Belpahar OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	IWSS Outlet	Acceptable	Permissible
Date of Sampling	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	1	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	5
pH	7.48	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	84	200	600
Total Hardness (Ca CO ₃)(mg/L)	84	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	15.89	250	1000
Total Dissolve Solid(mg/L)	158	500	2000
Calcium(mg/L)	24.05	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	22.06	200	400
Nitrate(mg/L)	<0.5	45	No relaxation
Fluoride(mg/L)	0.63	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)	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

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Surface Water Quality Data Lakhanpur Area

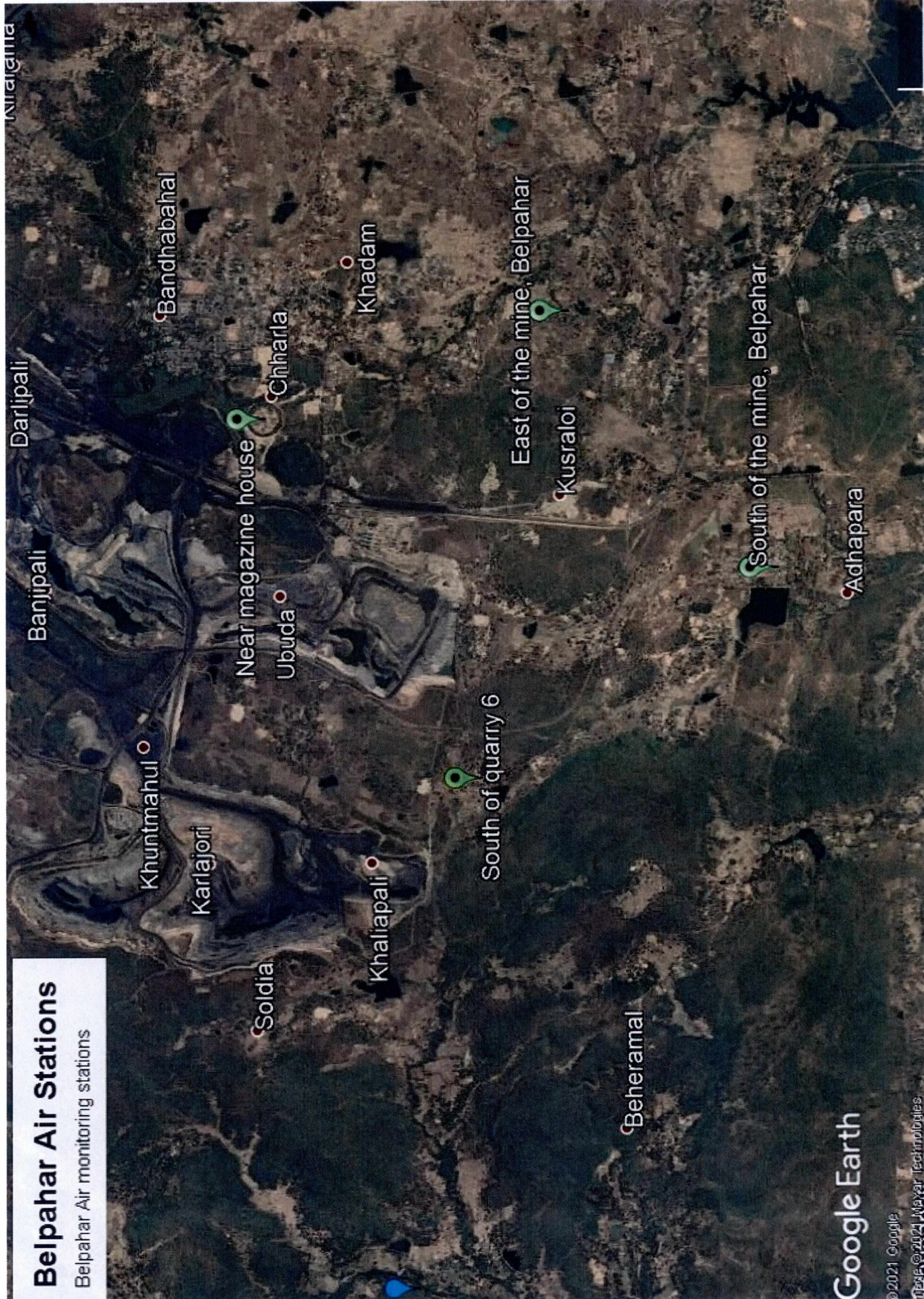
Project/OCP	Lakhanpur				IS:2296-1982 Tolerance for inland Surface water (Class C)
	Pulijhor Stream Near Tingismal Village as u/s for Lakhanpur OCP	Pulijhor Stream Near Darlipalil Village Before Confluence to Lilari Nallah as d/s Water of Lakhanpur OCP	Lilari Nallah Near Kudaloi Village as u/s of Lakhanpur OCP	Lilari Nallah Near Project Office Lilari Bridge Village as d/s of Lakhanpur OCP	
NAME OF STATIONS					
Date of Sampling	23-Jul-2021	23-Jul-2021	23-Jul-2021	23-Jul-2021	
pH	6.68	6.96	6.63	7.01	6.5-8.5
Dissolved Oxygen(mg/L)	6.9	6.7	6.7	6.9	4
BOD (3 days 27oc)(mg/L)	<2.0	<2.0	<2.0	<2.0	3
Color (Hazen unit)	2	3	1	2	300
Total dissolved solids (mg/L)	56	110	54	108	1500
TSS(mg/L)	72	96	78	112	-
Total Hardness(mg/L)	20	44	16	44	-
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	1.5
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	50
Chlorides(mg/L)	7.94	15.89	5.96	13.9	600
Sulphate(mg/L)	23.82	28.53	23.53	25.00	400
Nitrate(mg/L)	9.06	8.99	8.73	<0.50	50
Fluoride(mg/L)	<0.30	<0.30	<0.30	<0.30	1.5
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	15
Oil & Grease(mg/L)	<4.0	<4.0	<4.0	<4.0	0.1

K. S. S. S.
Authorized Signatory
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BHUBANESWAR

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CMPDI, RI-VII
Bhubaneswar

Belpahar Air Stations

Belpahar Air monitoring stations



Khanpur Air Station 2021

anpur Air monitoring station

Near quarry 3

Near Lilari nallah pump house

South west of quarry 6

South of quarry 6



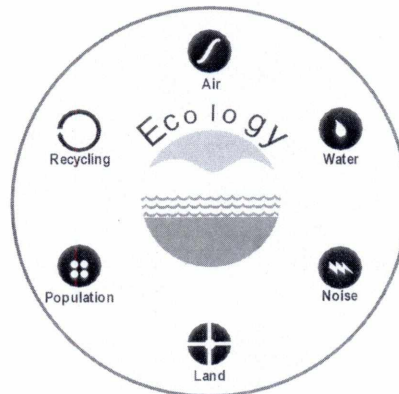
Job No.750001

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

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-Jul-21	North of the Sardega Railway Siding	244	135	47	11.68	21.71	Mining Activities, OCP, Coal Transportation	About 500m
08-Jul-21	West of Coal Stock	218	131	45	11.35	19.62	Mining Activities, OCP, Transportation	About 500m
08-Jul-21	South West of Working Face Gopalpur Village, Near CMPDI Camp	179	107	36	9.97	15.98	Mining Activity	About 500m
27-Jul-21	West of Coal Stock	229	140	47	9.15	18.63	Mining Activities, OCP, Transportation	About 500m
27-Jul-21	North of the Sardega Railway Siding	265	148	49	15.22	22.30	Mining Activities, OCP, Coal Transportation	About 500m
28-Jul-21	South West of Working Face Gopalpur Village, Near CMPDI Camp	198	125	40	8.23	16.28	Mining Activity	About 500m

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MoEF Standards Notification dated 25th
September, 2000

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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
05-Jul-21	Sarangijharia Community Centre	158	84	37	13.48	15.73	Domestic	About 500m
06-Jul-21	Sarangijharia Community Centre	150	75	42	11.05	15.07	Domestic	About 500m
12-Jul-21	Sarangijharia Community Centre	112	62	28	9.44	17.89	Domestic	About 500m
13-Jul-21	Sarangijharia Community Centre	133	70	33	10.10	19.23	Domestic	About 500m
19-Jul-21	Sarangijharia Community Centre	97	57	26	11.05	17.71	Domestic	About 500m
20-Jul-21	Sarangijharia Community Centre	88	51	31	8.04	20.84	Domestic	About 500m
26-Jul-21	Sarangijharia Community Centre	101	60	29	14.36	18.55	Domestic	About 500m
27-Jul-21	Sarangijharia Community Centre	114	67	34	9.87	21.78	Domestic	About 500m

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*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)
05-Jul-2021	<20.0	6.01	<0.1	<1.0	<1.0
06-Jul-2021	<20.0	4.92	<0.1	<1.0	<1.0
12-Jul-2021	<20.0	3.84	<0.1	<1.0	<1.0
13-Jul-2021	<20.0	4.82	<0.1	<1.0	<1.0
19-Jul-2021	<20.0	3.72	<0.1	<1.0	<1.0
20-Jul-2021	<20.0	3.86	<0.1	<1.0	<1.0
26-Jul-2021	<20.0	3.84	<0.1	<1.0	<1.0
27-Jul-2021	<20.0	3.89	<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
10-Jul-21	South-West of Working Face	63.1	58.6
10-Jul-21	West of Coal Stock	66.7	62.1
10-Jul-21	Sarangijharia Community Centre	63.2	57.6
10-Jul-21	North of the Sardega Railway Siding	64.3	60.3
24-Jul-21	West of Coal Stock	66.4	61.3
24-Jul-21	North of the Sardega Railway Siding	64.7	62.6
24-Jul-21	Sarangijharia Community Centre	64.8	58.1
24-Jul-21	South-West of Working Face	63.2	57.6

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[Signature]

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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	Remarks
14-Jul-21	MI-Basundhara (E) OCP's Sump	7.23	<4.0	32	20		
24-Jul-21	MI-Basundhara (E) OCP's Sump	8.16	<4.0	32	40		

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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 OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water Reservoir		
Date of Sampling	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	2	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	5
pH	6.93	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	24	200	600
Total Hardness (Ca CO ₃)(mg/L)	176	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	9.93	250	1000
Total Dissolve Solid(mg/L)	276	500	2000
Calcium(mg/L)	38.48	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	138.68	200	400
Nitrate(mg/L)	2.49	45	No relaxation
Fluoride(mg/L)	0.90	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)	<0.10	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 OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water Reservoir	Acceptable	Permissible
Date of Sampling	12-Jul-2021		
MPN (Index/100 ml)	6	—	—
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0

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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	24-Jul-2021	24-Jul-2021	
pH	7.04	7.18	6.5-8.5
Dissolved Oxygen(mg/L)	7.0	7.1	4
BOD (3 days 27oc(mg/L)	<2.0	<2.0	3
Color (Hazen unit)	1	2	300
Total dissolved solids (mg/L)	60	62	1500
TSS(mg/L)	44	52	-
Total Hardness(mg/L)	20	20	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	<0.1	<0.1	50
Chlorides(mg/L)	5.96	5.96	600
Sulphate(mg/L)	9.85	8.82	400
Nitrate(mg/L)	1.52	1.45	50
Fluoride(mg/L)	0.35	0.39	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)	0.04	0.04	15
Oil & Grease(mg/L)	<4.0	<4.0	0.1

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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)

Tikilipara

Ratansara

South-west of working face (Gopalpur village)

Gopalpur

Siarnal

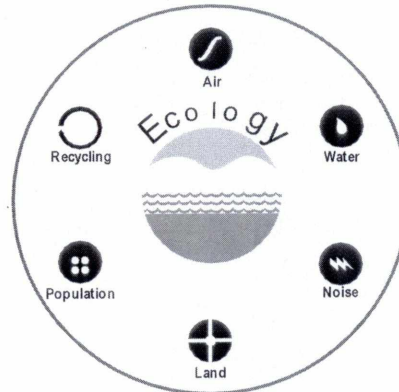
Job No.750001

**Environmental Monitoring Report
Of
Basundhara Area
For
July- 2021**

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 :

Basundhara

(Compliance Station)

Project :

Garjanbahal OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
07-Jul-21	South West of Coal Face	207	118	40	14.82	20.21	Mining Activity	About 500m
15-Jul-21	Near Coal Sampling Lab	132	84	35	15.83	16.40	Railway Siding, Transportation	About 500m
15-Jul-21	220 KV Substation	149	86	37	12.17	14.20	C.T Road, Mining	About 350m
28-Jul-21	220 KV Substation	189	105	41	8.12	22.42	C.T Road, Mining	About 350m
29-Jul-21	South West of Coal Face	227	131	37	10.88	20.25	Mining Activity	About 500m
29-Jul-21	Near Coal Sampling Lab	155	98	39	12.89	16.36	Railway Siding, Transportation	About 500m

Project :

Kulda OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
08-Jul-21	External CT Road	251	140	51	10.55	19.04	Mining Activities, Coal Transportation	About 500m
28-Jul-21	External CT Road	243	129	46	11.40	19.89	Mining Activities, Coal Transportation	About 500m

Kattawalk

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MoEF Standards Notification dated 25th
September, 2000

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A Mini Ratna Company

Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Reference Station)

Project :

Kulda 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
05-Jul-21	South of Working Face	132	74	36	11.51	17.58	Mining Activities, Coal Transportation, CHP	About 500m
05-Jul-21	North of CHP	161	90	49	15.65	19.74	Domestic, OCP, Transportation	About 500m
05-Jul-21	West of Working Face	137	77	42	11.36	19.63	Mining Activities	About 500m
06-Jul-21	West of Working Face	112	56	37	9.89	17.98	Mining Activities	About 500m
06-Jul-21	South of Working Face	137	65	33	10.41	20.01	Mining Activities, Coal Transportation, CHP	About 500m
06-Jul-21	North of CHP	126	86	40	9.89	17.23	Domestic, OCP, Transportation	About 500m
12-Jul-21	North of CHP	125	71	34	10.20	24.09	Domestic, OCP, Transportation	About 500m
12-Jul-21	West of Working Face	80	50	29	9.60	20.81	Mining Activities	About 500m
12-Jul-21	South of Working Face	144	77	37	10.76	19.42	Mining Activities, Coal Transportation, CHP	About 500m
13-Jul-21	West of Working Face	102	58	26	14.09	17.79	Mining Activities	About 500m
13-Jul-21	South of Working Face	119	67	40	16.59	17.93	Mining Activities, Coal Transportation, CHP	About 500m
13-Jul-21	North of CHP	106	70	31	11.44	17.47	Domestic, OCP, Transportation	About 500m
19-Jul-21	South of Working Face	105	69	28	8.52	14.21	Mining Activities, Coal Transportation, CHP	About 500m
19-Jul-21	North of CHP	113	75	32	13.65	20.40	Domestic, OCP, Transportation	About 500m
19-Jul-21	West of Working Face	94	72	28	10.32	19.44	Mining Activities	About 500m
20-Jul-21	West of Working Face	124	87	35	11.74	17.93	Mining Activities	About 500m
20-Jul-21	South of Working Face	94	57	21	9.85	20.88	Mining Activities, Coal Transportation, CHP	About 500m

*NAAQS, 2008

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Reference Station)

20-Jul-21	North of CHP	104	66	29	14.75	14.75	Domestic, OCP, Transportation	About 500m
26-Jul-21	West of Working Face	111	69	31	13.56	21.36	Mining Activities	About 500m
26-Jul-21	South of Working Face	114	63	26	12.35	23.72	Mining Activities, Coal Transportation, CHP	About 500m
26-Jul-21	North of CHP	129	77	35	10.27	19.45	Domestic, OCP, Transportation	About 500m
27-Jul-21	North of CHP	117	70	34	12.56	18.63	Domestic, OCP, Transportation	About 500m
27-Jul-21	West of Working Face	103	61	27	11.25	25.66	Mining Activities	About 500m
27-Jul-21	South of Working Face	108	69	33	9.68	22.96	Mining Activities, Coal Transportation, CHP	About 500m

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Reference Station)

Project :

Garjanbahal 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
07-Jul-21	Kaletpani Village	103	61	31	16.40	25.93	Mining Activities	About 2500m
07-Jul-21	North West of Working Face (Tumulia)	98	60	31	10.28	22.34	Mining Activities	About 1000m
08-Jul-21	North West of Working Face (Tumulia)	98	54	23	12.72	22.04	Mining Activities	About 1000m
08-Jul-21	Kaletpani Village	119	73	35	12.53	23.12	Mining Activities	About 2500m
14-Jul-21	Kaletpani Village	107	60	23	10.51	29.44	Mining Activities	About 2500m
14-Jul-21	North West of Working Face (Tumulia)	110	67	30	10.63	22.87	Mining Activities	About 1000m
15-Jul-21	North West of Working Face (Tumulia)	104	57	25	11.12	28.65	Mining Activities	About 1000m
15-Jul-21	Kaletpani Village	126	68	27	11.05	23.37	Mining Activities	About 2500m
21-Jul-21	Kaletpani Village	131	77	37	17.80	29.67	Mining Activities	About 2500m
21-Jul-21	North West of Working Face (Tumulia)	143	81	32	9.05	23.45	Mining Activities	About 1000m
22-Jul-21	North West of Working Face (Tumulia)	131	75	34	10.51	20.02	Mining Activities	About 1000m
22-Jul-21	Kaletpani Village	124	83	40	12.20	24.57	Mining Activities	About 2500m
28-Jul-21	North West of Working Face (Tumulia)	127	78	26	9.18	22.17	Mining Activities	About 1000m
28-Jul-21	Kaletpani Village	117	72	33	9.81	31.16	Mining Activities	About 2500m
29-Jul-21	Kaletpani Village	115	67	29	12.00	28.18	Mining Activities	About 2500m
29-Jul-21	North West of Working Face (Tumulia)	120	72	35	8.73	25.86	Mining Activities	About 1000m

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Kulda OCP				
Monitoring Station	North of CHP				
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)
05-Jul-2021	<20.0	4.26	<0.1	<1.0	<1.0
06-Jul-2021	<20.0	3.77	<0.1	<1.0	<1.0
12-Jul-2021	<20.0	4.02	<0.1	<1.0	<1.0
13-Jul-2021	<20.0	5.22	<0.1	<1.0	<1.0
19-Jul-2021	<20.0	3.70	<0.1	<1.0	<1.0
20-Jul-2021	<20.0	3.55	<0.1	<1.0	<1.0
26-Jul-2021	<20.0	3.74	<0.1	<1.0	<1.0
27-Jul-2021	<20.0	5.20	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Kulda OCP				
Monitoring Station	West of Working Face				
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)
05-Jul-2021	<20.0	2.98	<0.1	<1.0	<1.0
06-Jul-2021	<20.0	3.56	<0.1	<1.0	<1.0
12-Jul-2021	<20.0	4.22	<0.1	<1.0	<1.0
13-Jul-2021	<20.0	3.86	<0.1	<1.0	<1.0
19-Jul-2021	<20.0	6.01	<0.1	<1.0	<1.0
20-Jul-2021	<20.0	5.72	<0.1	<1.0	<1.0
26-Jul-2021	<20.0	3.96	<0.1	<1.0	<1.0
27-Jul-2021	<20.0	6.04	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Kulda OCP				
Monitoring Station	South of Working Face				
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)
05-Jul-2021	<20.0	2.90	<0.1	<1.0	<1.0
06-Jul-2021	<20.0	4.20	<0.1	<1.0	<1.0
12-Jul-2021	<20.0	5.22	<0.1	<1.0	<1.0
13-Jul-2021	<20.0	3.61	<0.1	<1.0	<1.0
19-Jul-2021	<20.0	5.33	<0.1	<1.0	<1.0
20-Jul-2021	<20.0	4.46	<0.1	<1.0	<1.0
26-Jul-2021	<20.0	3.86	<0.1	<1.0	<1.0
27-Jul-2021	<20.0	4.21	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Garjanbahal OCP				
Monitoring Station	Kaletpani Village				
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)
07-Jul-2021	<20.0	4.82	<0.1	<1.0	<1.0
08-Jul-2021	<20.0	5.80	<0.1	<1.0	<1.0
14-Jul-2021	<20.0	6.02	<0.1	<1.0	<1.0
15-Jul-2021	<20.0	5.81	<0.1	<1.0	<1.0
21-Jul-2021	<20.0	4.92	<0.1	<1.0	<1.0
22-Jul-2021	<20.0	6.8	<0.1	<1.0	<1.0
28-Jul-2021	<20.0	5.22	<0.1	<1.0	<1.0
29-Jul-2021	<20.0	4.71	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Garjanbahal OCP				
Monitoring Station	North West of Working Face (Tumulia)				
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)
07-Jul-2021	<20.0	6.82	<0.1	<1.0	<1.0
08-Jul-2021	<20.0	3.72	<0.1	<1.0	<1.0
14-Jul-2021	<20.0	4.71	<0.1	<1.0	<1.0
15-Jul-2021	<20.0	4.22	<0.1	<1.0	<1.0
21-Jul-2021	<20.0	6.03	<0.1	<1.0	<1.0
22-Jul-2021	<20.0	4.78	<0.1	<1.0	<1.0
28-Jul-2021	<20.0	3.77	<0.1	<1.0	<1.0
29-Jul-2021	<20.0	3.76	<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 :

Basundhara

PROJECT :

Garjanbahal OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
10-Jul-21	220 KV Substation	67.6	63.2
10-Jul-21	South-West of Coal Face	64.3	60.8
24-Jul-21	220 KV Substation	66.8	64.3
24-Jul-21	South-West of Coal Face	63.6	57.5

PROJECT :

Kulda OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
10-Jul-21	North of CHP	66.3	57.8
10-Jul-21	External CT Road	64.3	56.4
24-Jul-21	North of CHP	63.7	59.2
24-Jul-21	External CT Road	61.6	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 :

Basundhara

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

Project :

Garjanbahal OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
14-Jul-21	Outlet of Settling Tank (Kanika Siding)	7.37	<4.0	68	72				
14-Jul-21	Mine Sump Water	8.12	<4.0	30	20				
24-Jul-21	Mine Sump Water	8.23	<4.0	46	56				
24-Jul-21	Outlet of Settling Tank (Kanika Siding)	7.65	<4.0	78	88				

Project :

Kulda OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
14-Jul-21	Mine Sump Water Near Kulda Nursery	8.01	<4.0	22	12				
14-Jul-21	Final Outlet Of ETP	8.18	<4.0	18	16		320	6.6	
14-Jul-21	Inlet of ETP	7.76	<4.0	30	24		324	6.1	
24-Jul-21	Mine Sump Water Near Kulda Nursery	8.23	<4.0	40	28				
24-Jul-21	Final Outlet Of ETP	8.05	<4.0	28	20		240	6.9	
24-Jul-21	Inlet of ETP	7.98	<4.0	38	28		246	6.4	

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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 Basundhara Area

Project / OCP	Garjanbahal OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Basundhara Colony Tap Water (Reported)	Acceptable	Permissible
Date of Sampling	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	2	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	5
pH	6.93	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	24	200	600
Total Hardness (Ca CO ₃)(mg/L)	176	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	9.93	250	1000
Total Dissolve Solid(mg/L)	276	500	2000
Calcium(mg/L)	38.48	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	138.68	200	400
Nitrate(mg/L)	2.49	45	No relaxation
Fluoride(mg/L)	0.90	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)	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

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Drinking Water Quality Data Basundhara Area

Project / OCP	Garjanbahal OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Basundhara Colony Tap Water (Reported)		
Date of Sampling	12-Jul-2021	Acceptable	Permissible
MPN (Index/100 ml)	6	–	–
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0

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Surface Water Quality Data Basundhara Area

Project/OCP	Kulda OCP		IS:2296-1982 Tolerance for inland Surface water (Class C)
	Basundhara River Near Bankibahal Bridge as u/s Water	Basundhara River Near Barpali Village as d/s Water	
NAME OF STATIONS			
Date of sampling	24-Jul-2021	24-Jul-2021	
pH	6.85	6.88	6.5-8.5
Dissolved Oxygen(mg/L)	7.0	6.7	4
BOD (3 days 27oc(mg/L)	<2.0	<2.0	3
Color (Hazen unit)	3	3	300
Total dissolved solids (mg/L)	56	62	1500
TSS(mg/L)	62	74	-
Total Hardness(mg/L)	20	24	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	<0.1	<0.1	50
Chlorides(mg/L)	3.97	5.96	600
Sulphate(mg/L)	24.12	22.21	400
Nitrate(mg/L)	6.85	6.56	50
Fluoride(mg/L)	<0.30	<0.30	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)	0.04	0.04	15
Oil & Grease(mg/L)	<4.0	<4.0	0.1

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Surface Water Quality Data Basundhara Area

Project/OCP	Garjanbahal		IS:2296-1982 Tolerance for Inland Surface Water (Class C)
NAME OF STATIONS	Basundhara River Near Bankibahal Bridge as u/s Water (Reported Only)	Basundhara River Near Barpali Village as d/s Water (Reported Only)	
Date of sampling	24-Jul-2021	24-Jul-2021	
pH	6.85	6.88	6.5-8.5
Dissolved Oxygen(mg/L)	7.0	6.7	4
BOD (3 days 27oc)(mg/L)	<2.0	<2.0	3
Color (Hazen unit)	3	3	300
Total dissolved solids (mg/L)	56	62	1500
TSS(mg/L)	62	74	-
Total Hardness(mg/L)	20	24	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	<0.1	<0.1	50
Chlorides(mg/L)	3.97	5.96	600
Sulphate(mg/L)	24.12	22.21	400
Nitrate(mg/L)	6.85	6.56	50
Fluoride(mg/L)	<0.30	<0.30	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)	0.04	0.04	15
Oil & Grease (mg/L)	<4.0	<4.0	0.1

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Garjhanbahal Air Stations

Garjhanbahal Air monitoring stations

Kaletpani village

Gopalpur

Siarmal

Barpali

North-west of working face (Tumulia)

Tumulia

220 KV substation

South-west of coal face

Google Earth

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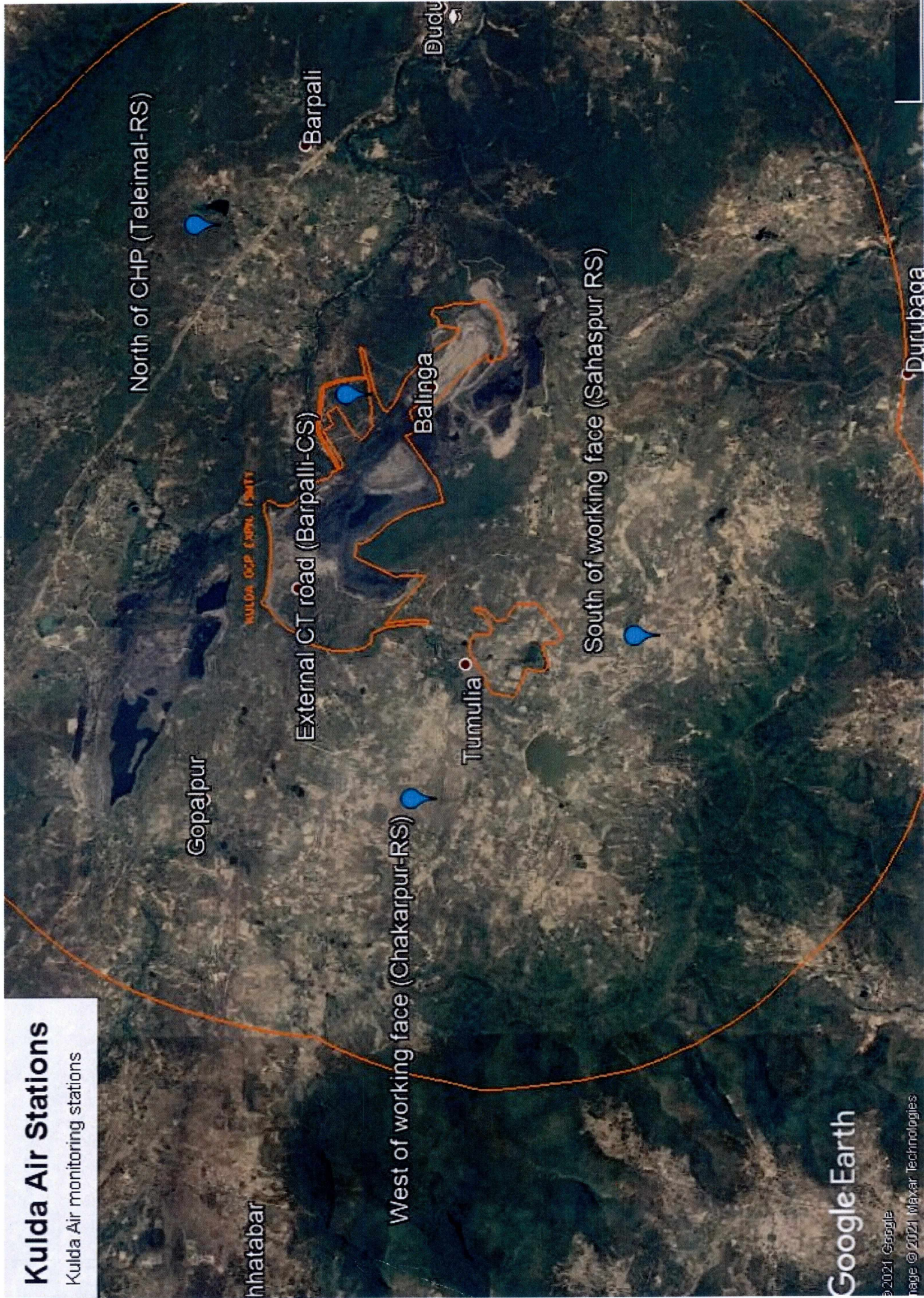
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Kulda Air Stations

Kulda Air monitoring stations



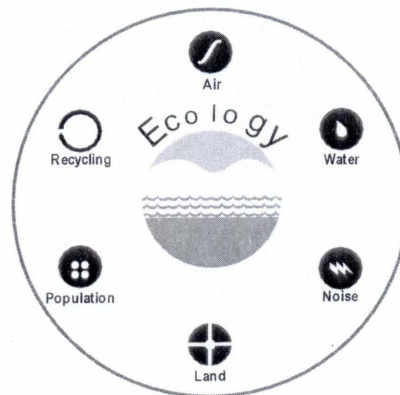
Job No.750001

**Environmental Monitoring Report
Of
Orient Area
For
July- 2021**

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 :

Orient

(Compliance Station)

Project :

Orient Mine No.1 & 2

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
12-Jul-21	Orient Mine No.2	189	132	39	13.02	24.89	Coal Stock Yard, Surface Bunker, Coal Transport	About 250m
29-Jul-21	Orient Mine No.2	256	149	45	14.18	29.15	Coal Stock Yard, Surface Bunker, Coal Transport	About 250m

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MoEF Standards Notification dated 25th
September, 2000

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120



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AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Orient Mine No. 3

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
12-Jul-21	Orient Mine No. 3	210	133	42	16.99	22.65	Coal Stockyard, Surface Bunker, Coal Transport	About 200m
30-Jul-21	Orient Mine No. 3	244	151	47	15.48	21.50	Coal Stockyard, Surface Bunker, Coal Transport	About 200m

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AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Orient Mine No. 4

(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
13-Jul-21	Orient Mine No. 4	218	120	36	14.90	18.12	Coal Transportation Road	About 300m
30-Jul-21	Orient Mine No. 4	251	143	44	16.44	20.76	Coal Transportation Road	About 300m

Tattanaik
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MoEF Standards Notification dated 25th September, 2000	500	250		120	120
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AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Hirakand Bundia Mine (HBM)

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
14-Jul-21	Rampur Officers Guest House	151	98	30	14.96	21.36	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
14-Jul-21	HBI Mine	238	129	43	12.27	15.98	Coal Stockyard, Surface Bunker, Coal Transport	About 100m
14-Jul-21	Bundia Colony Pump House	175	106	31	11.85	26.34	Coal Stockyard, Surface Bunker, Coal Transport	About 150m
30-Jul-21	Rampur Officers Guest House	132	89	28	12.49	18.81	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
30-Jul-21	HBI Mine	269	158	49	16.21	22.19	Coal Stockyard, Surface Bunker, Coal Transport	About 100m
30-Jul-21	Bundia Colony Pump House	193	127	36	10.62	25.88	Coal Stockyard, Surface Bunker, Coal Transport	About 150m

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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 :

Orient

(Reference Station)

Project :

Orient Mine No.1 & 2

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
07-Jul-21	VIP Guest House IB Valley	94	59	28	14.65	17.09	Coal Stock Yard, Surface Bunker, Coal Transportation	About 800m
08-Jul-21	VIP Guest House IB Valley	108	76	30	13.81	20.45	Coal Stock Yard, Surface Bunker, Coal Transportation	About 800m
14-Jul-21	VIP Guest House IB Valley	93	52	25	11.37	17.12	Coal Stock Yard, Surface Bunker, Coal Transportation	About 800m
15-Jul-21	VIP Guest House IB Valley	87	59	27	14.45	21.55	Coal Stock Yard, Surface Bunker, Coal Transportation	About 800m
21-Jul-21	VIP Guest House IB Valley	108	66	29	16.31	19.63	Coal Stock Yard, Surface Bunker, Coal Transportation	About 800m
22-Jul-21	VIP Guest House IB Valley	111	60	25	16.74	26.16	Coal Stock Yard, Surface Bunker, Coal Transportation	About 800m
28-Jul-21	VIP Guest House IB Valley	128	75	31	14.19	22.77	Coal Stock Yard, Surface Bunker, Coal Transportation	About 800m
29-Jul-21	VIP Guest House IB Valley	111	63	27	14.36	22.52	Coal Stock Yard, Surface Bunker, Coal Transportation	About 800m

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*NAAQS,2009

100	60	80	80
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A Mini Ratna Company

Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Reference Station)

Project :

Hirakand Bundia Mine (HBM)

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
01-Jul-21	Rampur Sub Area	153	81	46	10.26	13.44	Coal Stock And CT Road	About 900m
02-Jul-21	Rampur Sub Area	144	76	41	11.97	17.96	Coal Stock And CT Road	About 900m
09-Jul-21	Rampur Sub Area	121	70	37	10.90	20.44	Coal Stock And CT Road	About 900m
10-Jul-21	Rampur Sub Area	107	66	30	9.42	14.72	Coal Stock And CT Road	About 900m
16-Jul-21	Rampur Sub Area	115	62	34	8.84	23.87	Coal Stock And CT Road	About 900m
17-Jul-21	Rampur Sub Area	102	53	30	12.05	16.31	Coal Stock And CT Road	About 900m
23-Jul-21	Rampur Sub Area	108	70	33	8.99	18.74	Coal Stock And CT Road	About 900m
24-Jul-21	Rampur Sub Area	114	66	29	10.29	17.46	Coal Stock And CT Road	About 900m

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*NAAQS,2009

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

Area: Orient

Project	Orient Mine No. 1 & 2				
Monitoring Station	VIP Guest House, IB Valley				
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)
07-Jul-2021	<20.0	4.26	<0.1	<1.0	<1.0
08-Jul-2021	<20.0	6.03	<0.1	<1.0	<1.0
14-Jul-2021	<20.0	4.82	<0.1	<1.0	<1.0
15-Jul-2021	<20.0	5.23	<0.1	<1.0	<1.0
21-Jul-2021	<20.0	6.21	<0.1	<1.0	<1.0
22-Jul-2021	<20.0	3.72	<0.1	<1.0	<1.0
28-Jul-2021	<20.0	3.76	<0.1	<1.0	<1.0
29-Jul-2021	<20.0	4.78	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Orient

Project	HBI Mine				
Monitoring Station	Rampur Sub Area				
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-Jul-2021	<20.0	5.32	<0.1	<1.0	<1.0
02-Jul-2021	<20.0	4.99	<0.1	<1.0	<1.0
09-Jul-2021	<20.0	3.89	<0.1	<1.0	<1.0
10-Jul-2021	<20.0	4.01	<0.1	<1.0	<1.0
16-Jul-2021	<20.0	4.73	<0.1	<1.0	<1.0
17-Jul-2021	<20.0	5.26	<0.1	<1.0	<1.0
23-Jul-2021	<20.0	5.16	<0.1	<1.0	<1.0
24-Jul-2021	<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 :

Orient

PROJECT :

Orient Mine No. 1 & 2

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
08-Jul-21	Orient Mine No. 1 & 2	64.6	63.2
08-Jul-21	VIP Guest House, IB Valley	66.7	64.8
22-Jul-21	VIP Guest House, IB Valley	63.8	60.2
22-Jul-21	Orient Mine No. 1 & 2	65.3	64.7

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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--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No.3

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
08-Jul-21	Orient Mine No.3	63.3	59.6
22-Jul-21	Orient Mine No.3	62.5	56.7

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

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No.4

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
08-Jul-21	Orient Mine No.4	63.7	58.5
22-Jul-21	Orient Mine No.4	66.3	61.5

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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--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

HBI Mine

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
08-Jul-21	HBI Mine	64.6	58.3
08-Jul-21	Rampur Officer's Guest House	64.6	57.6
08-Jul-21	Bundia Colony Pump House	65.7	61.6
22-Jul-21	Bundia Colony Pump House	65.3	63.6
22-Jul-21	Rampur Officer's Guest House	64.8	62.1
22-Jul-21	HBI Mine	66.4	62.7

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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 :

Orient

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

Project :

Orient Mine No. 1 & 2

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
12-Jul-21	Mine Sump of Mine No. 2	7.80	<4.0	24	16		
22-Jul-21	Mine Sump of Mine No. 2	8.13	<4.0	40	24		

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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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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

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

Project :

Orient Mine No. 3

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
12-Jul-21	Mine Sump of Mine No. 3	7.55	<4.0	26	16		
22-Jul-21	Mine Sump of Mine No. 3	8.11	<4.0	44	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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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

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

Project :

Orient Mine No. 4

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
12-Jul-21	Mine Sump of Mine No. 4	7.75	<4.0	24	16		
22-Jul-21	Mine Sump of Mine No. 4	7.88	<4.0	26	16		

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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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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

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

Project :

HBI Mine

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	Remarks
12-Jul-21	Mine Sump of HBM	7.51	<4.0	30	20		
22-Jul-21	Mine Sump of HBM	7.90	<4.0	30	20		

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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 Orient Area

Project / OCP	Orient Mine No. 1 & 2		Indian Drinking Standards (IS-10500):2012	
	Tap Water at Budhijaam Colony	Mine no 1 & 2 Filter Plant	Acceptable	Permissible
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	2	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	3	1	5
pH	6.81	7.08	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	76	108	200	600
Total Hardness (Ca CO ₃)(mg/L)	84	88	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	17.87	27.8	250	1000
Total Dissolve Solid(mg/L)	166	194	500	2000
Calcium(mg/L)	22.44	16.03	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)	28.38	13.38	200	400
Nitrate(mg/L)	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.79	<0.80	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.07	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.10	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

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Drinking Water Quality Data Orient Area

Project / OCP	Orient Mine No. 1 & 2		Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Tap Water at Budhijaam Colony	Mine no 1 & 2 Filter Plant	Acceptable	Permissible
Date of Sampling	12-Jul-2021	12-Jul-2021		
MPN (Index/100 ml)	4	2	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0

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Drinking Water Quality Data Orient Area

Project / OCP	Orient Mine No. 3	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Mine no 3 Filter Plant	Acceptable	Permissible
Date of Sampling	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	1	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	5
pH	6.58	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	72	200	600
Total Hardness (Ca CO ₃)(mg/L)	88	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	19.86	250	1000
Total Dissolve Solid(mg/L)	176	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)	38.97	200	400
Nitrate(mg/L)	<0.5	45	No relaxation
Fluoride(mg/L)	0.67	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)	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation

K. Pattnaik

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Drinking Water Quality Data Orient Area

Project / OCP	Orient Mine No. 3	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Mine no 3 Filter Plant	Acceptable	Permissible
Date of Sampling	12-Jul-2021		
MPN (Index/100 ml)	<1.8		
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0

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Drinking Water Quality Data Orient Area

Project / OCP	HBI Mine		Indian Drinking Standards (IS-10500):2012	
	Tap Water at Rampur Colony	HBI Water Filter Plant		
Monitoring Station				
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
Colour(Hazen)	2	1	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	1	1	5
pH	7.26	6.64	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	128	128	200	600
Total Hardness (Ca CO₃)(mg/L)	96	88	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	27.8	25.81	250	1000
Total Dissolve Solid(mg/L)	212	208	500	2000
Calcium(mg/L)	20.84	19.24	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)	10.15	11.03	200	400
Nitrate(mg/L)	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.54	0.47	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
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	0.05	No relaxation
Boron(mg/L)	<0.10	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

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Drinking Water Quality Data Orient Area

Project / OCP	HBI Mine		Indian Drinking Standards (IS-10500):2012	
	Tap Water at Rampur Colony	HBI Water Filter Plant		
Monitoring Station				
Date of Sampling	12-Jul-2021	12-Jul-2021	Acceptable	Permissible
MPN (Index/100 ml)	41	<1.8	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0

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Surface Water Quality Data Orient Area

Project/OCP	Orient Mine No. 3	IS:2296-1982 Tolerance for inland Surface water (Class C)
NAME OF STATIONS	Pond Water at Budhijam Village	
Date of sampling	22-Jul-2021	
pH	6.87	6.5-8.5
Dissolved Oxygen(mg/L)	6.6	4
BOD (3 days 27oc(mg/L)	<2.0	3
Color (Hazen unit)	2	300
Total dissolved solids (mg/L)	174	1500
TSS(mg/L)	46	-
Total Hardness(mg/L)	56	-
Copper(mg/L)	<0.03	1.5
Iron(mg/L)	<0.1	50
Chlorides(mg/L)	25.81	600
Sulphate(mg/L)	12.06	400
Nitrate(mg/L)	1.32	50
Fluoride(mg/L)	0.49	1.5
Cadmium(mg/L)	<0.001	0.01
Arsenic(mg/L)	<0.005	0.2
Lead(mg/L)	<0.005	0.1
Zinc(mg/L)	0.04	15
Oil & Grease (mg / L)	<4.0	0.1

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Surface Water Quality Data Orient Area

Project/OCP	Orient Mine No. 4		IS:2296-1982 Tolerance for inland Surface water (Class C)
NAME OF STATIONS	IB River Near Charbhati Village as u/s Water for IB Valley Coalfield	IB River Bridge of NH200 at Gondghora Village as u/s of Orient Area	
Date of sampling	22-Jul-2021	22-Jul-2021	
pH	7.15	7.18	6.5-8.5
Dissolved Oxygen(mg/L)	6.9	6.8	4
BOD (3 days 27oc(mg/L)	<2.0	<2.0	3
Color (Hazen unit)	2	1	300
Total dissolved solids (mg/L)	100	104	1500
TSS(mg/L)	68	76	-
Total Hardness(mg/L)	40	44	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	<0.1	<0.1	50
Chlorides(mg/L)	7.94	5.96	600
Sulphate(mg/L)	31.32	33.24	400
Nitrate(mg/L)	6.64	6.85	50
Fluoride(mg/L)	0.37	<0.30	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)	0.04	0.04	15
Oil & Grease (mg/L)	<4.0	<4.0	0.1

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Surface Water Quality Data Orient Area

Project/OCP	HBI	IS:2296-1982 Tolerance for inland Surface water (Class C)
NAME OF STATIONS	IB River Near Kutabaga Village at Bridge Point	
Date of sampling	22-Jul-2021	
pH	7.18	6.5-8.5
Dissolved Oxygen(mg/L)	6.8	4
BOD (3 days 27oc)(mg/L)	<2.0	3
Color (Hazen unit)	1	300
Total dissolved solids (mg/L)	104	1500
TSS(mg/L)	56	-
Total Hardness(mg/L)	48	-
Copper(mg/L)	<0.03	1.5
Iron(mg/L)	<0.1	50
Chlorides(mg/L)	5.96	600
Sulphate(mg/L)	10.59	400
Nitrate(mg/L)	2.01	50
Fluoride(mg/L)	0.56	1.5
Cadmium(mg/L)	<0.001	0.01
Arsenic(mg/L)	<0.005	0.2
Lead(mg/L)	<0.005	0.1
Zinc(mg/L)	0.04	15
Oil & Grease (mg/L)	<4.0	0.1

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Orient UG Mines Air Stations

Orient UG Mines Air monitoring stations

Chaurimahul

Belpahar

Brajrajnagar

Kudaloi

Orient Mine no.4

Orient Mine no.3

VIP Guest house

Orient Mine no. 1&2

Rampur officers guest house

Bundia colony pump house

Ramapur HBI mine

Google Earth

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Patrapali



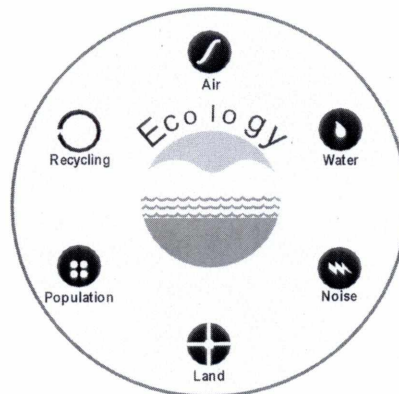
Job No.750001

**Environmental Monitoring Report
Of
MCL HQ
For
July- 2021**

IB Valley Coalfield



Mahanadi Coalfields Limited



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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Drinking Water Quality Data MCL (HQ)

Project / OCP	MCL(HQ)		Indian Drinking Standards (IS-10500):2012	
	Monitoring Station	Tap water at DAV School (Anand vihar)		
Date of Sampling	15-Jul-2021	15-Jul-2021	Acceptable	Permissible
Colour(Hazen)	2	1	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	2	1	5
pH	7.57	7.86	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	84	100	200	600
Total Hardness (Ca CO ₃)(mg/L)	84	112	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	15.89	15.89	250	1000
Total Dissolve Solid(mg/L)	152	164	500	2000
Calcium(mg/L)	27.25	28.86	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)	22.50	20.00	200	400
Nitrate(mg/L)	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.65	0.62	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
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	0.05	No relaxation
Boron(mg/L)	<0.10	<0.10	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

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Drinking Water Quality Data MCL (HQ)

Project / OCP	MCL(HQ)		Indian Drinking Standards (IS-10500):2012	
	Tap water at DAV School (Anand vihar)	Tap Water at Corporate Office (Jagriti Vihar)		
Monitoring Station				
Date of Sampling	15-Jul-2021	15-Jul-2021	Acceptable	Permissible
MPN (Index/100 ml)	<1.8	<1.8	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0

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