ENVIRONMENTAL STATEMENT
IN
FORM-V

(Under Rule-14, Environmental (Protection) Rules, 1986)

(2021-2022)

FOR
CLUSTER NO. – 9

(GROUP OF MINES**)**

Kunustoria, Satgram and Sripur Area

Eastern Coalfields Limited

Prepared at

Regional Institute – I

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

ISO 9001:2015 Company

ENVIRONMENTAL STATEMENT FOR CLUSTER NO. – 9 (GROUP OF MINES) FOR THE YEAR: 2021-2022

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CHAPTER – I

INTRODUCTION

1.1 GENESIS:

The Gazette Notification vide G.S.R No. 329 (E) dated13th March, 1992 and subsequently renamed to 'Environmental Statement' vide Ministry of Environment & Forests (MOEF), Govt. of India gazette notification No. G.S.R No. 386 (E) Dtd.22nd April'93 reads as follows.

"Every person carrying on an industry, operation or process requiring consent under section 25 of the Water Act, 1974 or under section 21 of the Air Act, 1981 or both or authorisation under the Hazardous Waste Rules, 1989 issued under the Environmental Protection Act, 1986 shall submit an Environmental Audit Report for the year ending 31st March in Form V to the concerned State Pollution Control Board on or before the 30th day of September every year."

In compliance with the above, the work of Environmental Statement for Cluster No. 9 was entrusted to CMPDI by GM (Environment and Forest), Eastern Coalfields Limited.

1.2 PROJECT DESCRIPTION:

Prior to 2014 – 15, a large number of taken over mines from pre – nationalization period, mostly underground mines, in the old coalfields of Raniganj and Jharia did not have environmental clearance from the MoEF&CC and were operating on the basis of 'Consents' received from the respective PCBs. It was felt that if these mines could be brought under the ambit of EC, several measures for environmental protection and pollution control could be put in place. However, the work of obtaining EC for such mines, individually, would have taken a lot of time. To circumvent the problem, it was mooted that since the environmental problems being faced were of regional nature and not confined to individual mines alone, cluster/groups of such mines could be identified for preparing cluster-wise integrated EIA & EMPs, addressing such environmental concerns comprehensively and ensuring effective co-ordination of environmental control measures within each cluster. 13 such clusters were identified in the Raniganj Coalfield of ECL and EC has been obtained on the cluster approach for 12 such clusters.

Cluster of Mines No. 9 is one of the clusters for which EC has been granted vide letter no. J-11015/38/2011-IA-II.(M) dated 23rd January, 2015 for a combined peak capacity of 8.0 MTY and within a ML area of 7145.40 Ha.

In the meanwhile, a re-assessment of mine capacities has been carried out for the cluster while keeping the overall cluster capacity and area unchanged. This re-assessment / rationalization has been done based on present condition and capability of the mines for achieving optimum production levels. The re-organization of UG and OC mining has been planned with due regard to environment. Hence, the amended EC was awarded vide letter no. J-11015/38/2011-IA-II.(M) dated 23rd March, 2017.

In view of the production target set by CIL, a re-assessment of mine capacities has again been carried out for the cluster while keeping the overall cluster capacity and area unchanged. This re-assessment / rationalization has been done based on present condition and capability of the mines for achieving optimum production levels. The proposed changes are in line with the supplementary note to mining plan for the cluster, duly approved by the Board of Directors of ECL on 10.01.2018. EC Amendment was granted vide even letter no. dated 30.05.2018.

Cluster No. 9 is located in the south-central part of Raniganj Coalfield in the Burdwan district of West Bengal between latitudes 23^0, 34′, 55″ N & 23^0, 34′, 55″ N and longitudes 86^0, 59′, 05″ E & 87^0, 07′, 50″ E. The mines within the cluster are situated towards east of Asansol Township. Eastern Railway grand chord line traverses the cluster from east to west and G.T.Road runs along the cluster boundary on the north side. Damodar River forms the boundary of the cluster on the south. The mines are administratively under Satgram, Sripur and Kunustoria Areas of ECL.

Location of Cluster No. 9 is shown in plate no. – 1.

The composition of the cluster is tabulated as under:

Sl No.	Name of the Mine	Lease Area (Ha)	Peak Production Capacity (MTY)	Mine Life (Years)	Production during 2021-22 (MT)
1	Ratibati UG	249.0	0.04	> 40	0.0
2	Chapuikhas UG & OC	412.0	0.06	> 50	0.02
3	Amritnagar UG	279.0	0.60	> 50	0.09
4	Tirat & Kuardih UG & OC	829.50	0.15	> 10	0.0
5	Nimcha UG & Amkola/Nimcha OC Patch	890.20	1.43	> 40	0.34
6	Ghusick-Muslia UG & OC	1548.0	1.93	> 25	0.0
7	Kalipahari UG & OC	299.50	0.40	> 50	0.08
8	Jemehari UG	118.0	0.04	> 10	0.0
9	J K Nagar UG & OC	1237.0	0.42	> 50	0.20
10	Damra UG	249.0	0.05	> 10	0.0
11	Mahabir UG & Egara OC	241.20	0.38	> 25	0.0
12	Narainkuri OCP	793.0	2.50	> 25	0.0
		7145.40	**8.00**		**0.73**

1. Ratibati UG

There was no production from the mine during 2021-22.

2. Chapuikhas UG & OC

At present (R-VI) Seam is being worked in the mine. The seam is being developed by manual Bord & Pillar method of mining. It is proposed to deploy SDLs in the near future. An opencast patch measuring 7 Ha is also proposed to be worked within the mine leasehold to prevent illegal mining.

The proposed OC patch will deploy shovel-dumper combination for coal and OB.

3. Amritnagar UG

At present, Bogra (R-VI) seam is being worked in the mine. The method of mining adopted is Bord & Pillar. Mine is presently under development phase wherein coal is loaded into mine tubs by SDLs. Depillaring in conjunction with hydraulic stowing would be taken up in future subject to permission from DGMS for the purpose.

4. Tirat & Kuardih UG and OC

At present, there is no production from the mine.

The proposed OC patch will deploy shovel-dumper combination for coal and OB.

5. Nimcha UG and Amkola/Nimcha OC Patch

Nimcha Colliery consists of two units- (i) Nimcha 3 & 4 pit, (ii) Amkola 7 & 8 pit. Gradient of the seams varies from 1 in 25 to 1 in 27. Coal seams are of Degree-II gassiness.

At Nimcha unit, R-IX seam is split into R-IX Top and R-IX bottom seam. R-IX top is burnt. R-IX bottom is virgin. Present working seam of Nimcha unit is R-VIII. Bogra (R-VI) and Satgram (R-V) seams are virgin in this unit. At Amkola unit, R-IX combined is virgin. Present working seams are R-VIII and R-VII.

Amkola/Nimcha OC patch has deployed shovel-dumper combination for coal extraction and OB removal.

6. Ghusick-Muslia UG & OC

At present, there is no production from the mine.

7. Kalipahari UG & OC

At present Kushadanga and Nega (Top) seams are being depillared in the mine in conjunction with hydraulic sand stowing. Coal is loaded into mine tubs manually.

The OC patches have deployed shovel-dumper combination for coal extraction and OB removal. There was zero production from the mine during 2021-22.

8. Jemehari UG

Bogra (R-VI) seam is being worked in the mine. The seam was being developed by manual Bord& Pillar method of mining. Due to some project specific problems, there has been a slump in production since 2009-10. However, it is proposed to deploy SDLs in the near future to ensure higher productivity. There was no production from the mine during 2021-22.

9. J K Nagar UG & OC

At present two seams are being worked in the mine, namely R-VI and R-V seams. The method of mining adopted is Bord & Pillar development with SDL and LHD. Seam R – VII is being worked at Pure Searsole by manual Bord & Pillar method.

The OC patch will deploy shovel-dumper combination for coal and OB.

10. Damra UG

There was no production in the mine during 2021-22.

11. Mahabir UG & Egara OC

There was no production of coal from the mine during 2021-22.

Shovel dumper combination is used for coal extraction and OB removal in Egara OC Patch.

12. Narainkuri OC

At present, mine is producing coal by opencast method in a small patch. The larger mine is yet to start production.

1.3 ENVIRONMENTAL SCENARIO:

CMPDI has been engaged to carry out routine Environmental monitoring of the clusters. The monitoring is carried out every fortnight by collecting 24 – hour samples for ambient air at 4 Nos. all - weather stations, 3 pre-monsoon stations and 3 post-monsoon stations (based on local meteorology) and compared with the standards for quality. The details of the sampling locations are given below:

Cluster No. 9			
Station Code	**Type of Station**	**Name of Station**	**Station Category**
9A1	Permanent Air Station	Lamp Cabin, New Ghusick Colliery	Industrial
9A2	Permanent Air Station	J K Nagar Project	Industrial
9A3	Permanent Air Station	Agent Office, Amritnagar Colliery	Industrial
9A4	Permanent Air Station	Raniganj Mining College	Residential
9A5	Post monsoon Air Station	ECL Colony, Kalidaspur Project	Residential
9A6	Post monsoon Air Station	Kalikapur Village	Residential
9A7	Post monsoon Air Station	BDO Office, Mejia	Residential
9A8	Pre monsoon Air Station	CMPF Office, Asansol	Residential
9A9	Pre monsoon Air Station	Transit House, Satgram Area	Residential
9A10	Pre monsoon Air Station	Survey Office, Mithapur Colliery	Industrial

9 nos. of samples of mine water are also collected and analysed every fortnight and compared with the MoEF Schedule – VI for discharge of effluents into land / streams. A complete analysis of the mine discharge samples which includes heavy metals and salts is carried out twice in a year. Day time workplace noise level is recorded at 13 locations from the mine pit top (in case of UG mine) and workshops (in case of OC mine) present within the cluster. Groundwater level in the cluster area is monitored by taking measurements at 6 earmarked dugwells in the months of January, May, August and November every year. Samples of groundwater from these wells, which are also utilized by the local population for drinking and other domestic purposes, are analysed once in a year during May and compared with the IS 10500:2012 standards for drinking water quality.

2 nos. of piezometers have been constructed to measure the ground water level at Amritnagar UG, Kunustoria Area and Mining Training Institute, Ratibati OCP, Satgram Area of Cluster No. 9.

Drinking water from 5 nos. of filter plants falling within the cluster are analysed quarterly.

Location of the monitoring stations of air, noise & water are shown in Plate- II.

The environmental monitoring results for 24 fortnights ending 31st March, 2022 are appended as Annexures – I, II, III & IV. The environmental monitoring results for the year 2021-22 are summarized below:

AMBIENT AIR QUALITY

The PM_{10} concentration at industrial locations was found in the range of 20.9 to 392.5 µg/m^3 and has exceeded the limits on 4 occasions out of 84 samples analysed during the year as prescribed in GSR 742 (E) dated 25.09.2000 standards while the PM_{10} concentration at residential locations was found in the range of 28.9 to 315.2 µg/m^3 and exceeded the limits on 17 occasions out of 84 samples analysed during the year as prescribed in NAAQS, 2009 standards.

The $PM_{2.5}$ concentration was found in the range of 8.0 to 240.5 µg/m^3. No limit is defined as per GSR 742 (E) dated 25.09.2000 for $PM_{2.5}$. However, when compared with NAAQS, 2009,

the concentration levels have exceeded the limit on 28 occasions out of 168 samples analysed during the year. The SO_2 concentration remained below 10.0 µg/m^3 and NO_X concentration was in the range of 11.4 to 22.6 µg/m^3 and was well within the limits as per the standards.

ENVIRONMENTAL STANDARDS:

Environmental Standards for Ambient Air Quality (AAQ):

Station Category	*Environmental standard for Raniganj Coalfield vide MOEF, Govt. of India, Gazette Notification No. GSR 742 (E) dated 25.09.2000 for 24 hourly samples at 500 meters from dust generating point*			*National Ambient Air Quality Standards (NAAQS), 2009 for industrial, residential and rural areas for 24 hours samples*
	Pollutant Concentration (µg/m^3)			
	PM_{10}	**SO_2**	**NO_x**	**$PM_{2.5}$**
Industrial	300.0	120.0	120.0	60.0
Residential	100.00	80.0	80.0	

WATER QUALITY

Ground water percolates into working area from the surrounding aquifers which have been exposed due to opencast mining. The mine is dewatered regularly to maintain dry working conditions. This mine discharge water is partly utilized for dust suppression by sprinkling at coal faces and on haul roads and the remainder is discharged onto adjoining cultivable lands for irrigation purposes. Part-B of the Environmental Statement proforma contains the detailed break-up of water consumption.

The analysis results for the mine discharge water reveal that most of the parameters are within permissible limits prescribed by MoEF&CC as General Standards Schedule – VI for Class-'A' effluent (Effluent discharged into inland surface water) and IS 10500:2012 for groundwater standards.

In order to assess the impact of mining on the groundwater level, a network of 6 dugwells has been identified for monitoring of groundwater level in the months of January, May, August and November every year. Samples from these wells are collected and analysed during twice in a year and compared with IS 10500:2012 standards for drinking water.

Mine water and ground water analysis results are given in Annexure-III.

Well water level results are given in Annexure – IV.

NOISE LEVEL

The day time and night time workplace noise level was found in the range of 53.74 to 86.33 dB(A) and 34.26 to 78.71 dB(A) respectively. The noise level recorded were within the permissible limit prescribed by MoEF&CC barring few occasions.

Noise Level Standard as per Noise Pollution (Regulation and Control) Rules, 2000 for different station categories is given below:

Station Category	**Limits for noise (Leq dB (A))**	
	Day Time (6am-10pm)	Night Time (10pm-6am)
Industrial	75.0	70.0
Commercial	65.0	55.0
Residential	55.0	45.0

CHAPTER - II
ENVIRONMENTAL STATEMENT FORM– V

Environmental statement for the financial year ending March, 2022

PART – A

SL. NO.	HEADING	PARTICULARS
(I)	**NAME AND ADDRESS OF THE PROJECT**	CLUSTER NO. – 9 (GROUP OF MINES)
i	Ratibati UG	Ratibati Colliery, Satgram Area, PO – Kalipahari, Burdwan, West Bengal
ii	Chapuikhas UG & OC	Chapuikhas Colliery, Satgram Area, PO – Kalipahari, Burdwan, West Bengal
iii	Amritnagar UG	Amritnagar Colliery, Kunustoria Area, PO – Raniganj, Burdwan, West Bengal
iv	Tirat UG	Tirat Colliery, Satgram Area, PO – Kalipahari, Burdwan, West Bengal
v	Kuardih UG & OC	Kuardih Colliery, Satgram Area, PO – Kalipahari, Burdwan, West Bengal
vi	Nimcha UG & OC	Nimcha Colliery, Satgram Area, PO – Raniganj, Burdwan, West Bengal
vii	Ghusick UG	Ghusick Colliery, Sripur Area, PO – Kalipahari, Burdwan, West Bengal
viii	Kalipahari UG & OC	Kalipahari Colliery, Sripur Area, PO – Kalipahari, Burdwan, West Bengal
ix	Muslia UG & OC	Muslia Colliery, Sripur Area, PO – Damra, Burdwan, West Bengal
x	New Ghusick UG	New Ghusick Colliery, Sripur Area, PO – Kalipahari, Burdwan, West Bengal
xi	Jemehari UG	Jemehari Colliery, Satgram Area, PO – Satgram, Burdwan, West Bengal
xii	J K Nagar UG & OC	J K Nagar Colliery, Satgram Area, PO – Bidhan Nagar, Burdwan, West Bengal
xiii	Damra UG	Damra Colliery, Sripur Area, PO – Kalipahari, Burdwan, West Bengal
xiv	Mahabir UG & OC	Mahabir Colliery, Kunustoria Area, PO – Raniganj, Burdwan, West Bengal
xv	Narainkuri UG	Narainkuri Colliery, Kunustoria Area, PO – Raniganj, Burdwan, West Bengal
(II)	**INDUSTRY CATEGORY**	All mines in the cluster falls in red category
(III)	**PRODUCTION CAPACITY**	8.0 MTY
(IV)	**YEAR OF ESTABLISHMENT**	Most of the mines within the cluster are taken over mines from pre-nationalisation period. Narainkuri UG is a proposed project.
(V)	**DATE OF THE LAST ENVIRONMENTAL STATEMENT SUBMITTED**	28.09.2021

PART – B
WATER AND RAW MATERIAL CONSUMPTION

(I) WATER CONSUMPTION (Cu.m/day)

1. Chapuikhas UG & OC

#	Particulars	2020-21	2021-22
A.	**MINING** (Dust suppression, Firefighting, Others)	80.0	80.0
B.	**COOLING** (in radiators of trucks/HEMM/workshop)	-	0.0
C.	**DOMESTIC** (Mine Water)	2100.25	1755.0
TOTAL		**2180.25**	**1835.0**

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2020-21	**2021-22**
Coal	4.59	3.92

2. Amritnagar UG

#	Particulars	2020-21	2021-22
A.	**MINING** (Dust suppression, Firefighting, Others)	70.0	70.0
B.	**COOLING** (in radiators of trucks/HEMM/workshop)	-	0.0
C.	**DOMESTIC** (Mine Water)	1134.55	502.0
TOTAL		**1204.55**	**572.0**

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2020-21	**2021-22**
Coal	0.77	0.78

3. Nimcha UG & Amkola/Nimcha OC Patch

#	Particulars	2020-21	2021-22
A.	**MINING** (Dust suppression, Firefighting, Others)	160	160.0
B.	**COOLING** (in radiators of trucks/HEMM/workshop)	-	0.0
C.	**DOMESTIC** (Mine Water)	2730.32	1755.0
TOTAL		**2890.32**	**1915.0**

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2020-21	**2021-22**
Coal	0.40	0.47

4. Kalipahari UG & OC

#	Particulars	2020-21	2021-22
A.	**MINING** (Dust suppression, Firefighting, Others)	140.0	34.0
B.	**COOLING** (in radiators of trucks/HEMM/workshop)	-	0.0
C.	**DOMESTIC** (Mine Water and PHED supply)	1712.79	1432.0
TOTAL		**1852.79**	**1466.0**

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2020-21	**2021-22**
Coal	-	0.43

5. J K Nagar UG & OC

#	Particulars	2020-21	2021-22
A.	**MINING** (Dust suppression, Firefighting, Others)	80.0	80.0
B.	**COOLING** (in radiators of trucks/HEMM/workshop)	-	0.0
C.	**DOMESTIC** (Mine Water and PHED supply)	1042.34	435.50
TOTAL		**1122.34**	**515.50**

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2020-21	**2021-22**
Coal	0.39	0.40

(II) RAW MATERIAL CONSUMPTION :

1. Chapuikhas UG & OC

Name of raw material	Name of products	Consumption of raw material per unit of output	
		During previous financial year (2020-21)	During current financial year (2021-22)
1. Explosive	Coal	4.07 kg/te	0.50 kg/te
2. Diesel		3.56 l/te	3.03 l/te
3. Lubricants		-	-

2. Amritnagar UG

Name of raw material	Name of products	Consumption of raw material per unit of output	
		During previous financial year (2020-21)	During current financial year (2021-22)
1. Explosive	Coal	0.58 kg/te	0.48 kg/te
2. Diesel		0.15 l/te	0.09 l/te
3. Lubricants		0.11 l/te	0.06 l/te

3. Nimcha UG

Name of raw material	Name of products	Consumption of raw material per unit of output	
		During previous financial year (2020-21)	During current financial year (2021-22)
1. Explosive	Coal	0.35 kg/te	0.37 kg/te
2. Diesel		0.160 l/te	0.19 l/te
3. Lubricants		-	-

Amkola/Nimcha OC Patch

Name of raw material	Name of products	Consumption of raw material per unit of output	
		During previous financial year (2020-21)	During current financial year (2021-22)
1. Explosive	Coal	6.27 kg/te	2.82 kg/te
2. Diesel		0.04 l/te	0.10 l/te
3. Lubricants		180 litres*	0.05 l/te

*Consumption for whole year is given

4. Kalipahari UG & OC

Name of raw material	Name of products	Consumption of raw material per unit of output	
		During previous financial year (2020-21)	During current financial year (2021-22)
1. Explosive	Coal	-	0.02 kg/te
2. Diesel		-	-
3. Lubricants		-	-

5. J K Nagar UG & OC

Name of raw material	Name of products	Consumption of raw material per unit of output	
		During previous financial year (2020-21)	During current financial year (2021-22)
1. Explosive	Coal	0.16 kg/te	0.34 kg/te
2. Diesel		0.13 l/te	0.13 l/te
3. Lubricants		-	-

PART – C
POLLUTION GENERATED

Mine	Pollution	Quantity of pollutants discharged (mass/day)	Concentrations of Pollutants in discharges (mass/volume)	Percentage variation from prescribed standards with reasons
Chapuikhas UG & OC	WATER*	Average concentration of 17.9 mg/l. Mine water discharged is 544.32 KL/day. Hence, total load is 9.74 kg/day.	1. Mine water discharge Analysis results are given in Annexure-III. 2. The main air pollutant is suspended PM_{10} and $PM_{2.5}$. The air quality results are appended as Annexure-I.	1. The analysis results reveal that most of the parameters are below permissible limits prescribed by MOEF as General Standards for class 'A' effluent (Effluent discharged into inland surface water.) 2. Ambient air quality results show that the values of PM_{10}, $PM_{2.5}$, SO_2 and NO_x are within the prescribed standards as per GSR 742 (E) dated 25.09.2000 and NAAQS, 2009 barring few occasions as explained earlier.
	AIR**	Total pollutant load of PM_{10} is 0.86 kg/day while it is 0.19 kg/day for $PM_{2.5}$.		
Amritnagar UG	WATER*	-		
	AIR**	Total pollutant load of PM_{10} is 8.24 kg/day while it is 1.25 kg/day for $PM_{2.5}$.		
Nimcha UG & OC	WATER*	Average concentration of 15.3 mg/l. Mine water discharged is 544.32 KL/day. Hence, total load is 8.33 kg/day.		
	AIR**	Total pollutant load of PM_{10} is 235.07 kg/day while it is 81.19 kg/day for $PM_{2.5}$.		
Kalipahari UG & OC Patches	WATER*	-		
	AIR**	Total pollutant load of PM_{10} is 248.77 kg/day while it is 76.64 kg/day for $PM_{2.5}$.		
J K Nagar UG & OC Patches	WATER*	-		
	AIR**	Total pollutant load of PM_{10} is 8.48 kg/day while it is 0.31 kg/day for $PM_{2.5}$.		

*Water discharged from the mine contains pollutants in the form of suspended solids (mostly fine coal dust).

**PM_{10} and $PM_{2.5}$ estimation has been done using empirical formula by using Emission Factors derived from S&T studies done by CMPDI.

PART – D
HAZARDOUS WASTE
(As specified under Hazardous Waste (Management and Handling) Rules, 1989)

1. Chapuikhas UG & OC

Hazardous waste	Total quantity		Disposal method
	During previous financial year (2020-21)	During current financial year (2021-22)	
A) From process			Dealt in Part – F
i)Used oil	500 litres	500 litres	
ii)Lead-Acid Batteries			
a. Automobile batteries	Nil	Nil	
b. Cap-lamp batteries	300 nos.	300 nos.	
iii) Used Cotton waste	50 kg	50 kg	
iv) Metal Scrap	-	-	

2. Amritnagar UG

Hazardous waste	Total quantity		Disposal method
	During previous financial year (2020-21)	During current financial year (2021-22)	
A) From process			Dealt in Part – F
i)Used oil	14106 litres	8280 litres	
ii)Lead-Acid Batteries			
a. Automobile batteries	Nil	Nil	
b. Cap-lamp batteries	720 nos.	Nil	
iii) Used Cotton waste	Nil	Nil	
iv) Metal Scrap	-	-	

3. Nimcha UG & Amkola/Nimcha OC Patch

Hazardous waste	Total quantity		Disposal method
	During previous financial year (2020-21)	During current financial year (2021-22)	
A) From process			Dealt in Part – F
i)Used oil	554 litres	554 litres	
ii)Lead-Acid Batteries			
a. Automobile batteries	Nil	Nil	
b. Cap-lamp batteries	100 nos.	50 nos.	
iii) Used Cotton waste	150 kg	150 kg	
iv) Metal Scrap	-	-	

4. Kalipahari UG & OC

Hazardous waste	Total quantity		Disposal method
	During previous financial year (2020-21)	During current financial year (2021-22)	
A) From process			Dealt in Part – F
i)Used oil	-	-	
ii)Lead-Acid Batteries			
a. Automobile batteries	-	-	
b. Cap-lamp batteries	-	-	
iii) Used Cotton waste	-	-	
iv) Metal Scrap	-	-	

5. J K Nagar UG & OC

Hazardous waste	Total quantity		Disposal method
	During previous financial year (2020-21)	During current financial year (2021-22)	
A) From process			Dealt in Part – F
i)Used oil	400 litres	400 litres	
ii)Lead-Acid Batteries			
a. Automobile batteries	Nil	Nil	
b. Cap-lamp batteries	Nil	Nil	
iii) Used Cotton waste	50 kg	50 kg	
iv) Metal Scrap	-	-	

Approximate values may be given where actual values are not available.

Note: a) The detail of used oil is to be given to concerned Pollution Control Board in Form-13 as per time mentioned in HW (M & H), Amendment Rules, 2003.

b) The detail of disposal of Lead Acid batteries is to be given to concerned State Pollution Control Board in Form-VIII as per time mentioned in Batteries (M&H) Rules, 2001.

PART – E
SOLID WASTE

Particulars	Name of Mine/OC Patch	Total quantity (In Million Cu.m)	
		During previous financial year (2020-21)	During current financial year (2021-22)
a) From process (Mining)	Nimcha/Amkola	0.20	0.20
	Kalipahari	0.21	0.29
	Egara	-	-
	Narainkuri	-	-
b) From pollution control facilities		-	
c) Quantity recycled or reutilized back filled	Nimcha/Amkola	0.66	0.66
	Kalipahari	-	0.66
	Egara	-	-
	Narainkuri	-	-

PART – F

PLEASE SPECIFY THE CHARACTERISTICS (IN TERMS OF CONCENTRATION AND QUANTUM) OF HAZARDOUS AS WELL AS SOLID WASTE AND INDICATE THE DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTE.

Hazardous waste generated is given in the table PART-D which has been deposited at area store disposal stock yard.

Used oil is stored in HDPE container and reused as lubricant. Cap lamp batteries, HEMM batteries and metal scrap are stored at area store and auctioned to Authorized Recyclers for reuse.

Metal scraps are declared and report is sent to HQ. The scraps are then auctioned and sold through HQ.

Cotton waste generated is burned under control environment and/or dumped with overburden.

PART – G

IMPACT OF POLLUTION CONTROL MEASURES ON CONSERVATION OF NATURAL RESOURCES AND CONSEQUENTLY ON COST OF PRODUCTION.

In order to carry out mining in an eco-friendly manner following pollution control measures have been implemented.

1. AIR POLLUTION CONTROL MEASURES:

a) Mobile water tankers are used for water spraying in mine periphery. Mine water is used for this purpose.
b) Wet coal transport, road maintenance is being done.
c) Trucks carrying coal to the railway sidings are covered with tarpaulin to avoid spillage.
d) Regular sprinkling of water at coal loading & discharge points with the help of stand post at Railway siding.
e) Plantation has been carried out at subsided lands and other ML places within the cluster.
f) Plantation will also be carried out as per proposed plan in future.

2. WATER POLLUTION CONTROL MEASURES:

a) Filtration of mine water is done and the filtered water is being supplied to colonies in Nimcha Colliery, Jemehari Colliery, J K Nagar Colliery and Amritnagar Colliery.
b) Sedimentation tank has been provided at Nimcha colliery, Amritnagar colliery, Jemehari colliery and J K Nagar colliery which is used for sedimentation of water before being discharged to local nallahs and ponds, if required.

3. NOISE POLLUTION CONTROL MEASURES:

a) Regular maintenance of machines and other equipment at Bunker and workshop including mine fan.
b) Providing green belt around core activity area, along road side in colony and in other vacant space.
c) Non-electric delay detonators are used in place of detonating fuse to eliminate noise pollution during blasting.
d) All HEMM & light vehicle are provided with silencers.
e) Noise monitoring is being carried out regularly.

4. LAND RESOURCE MANAGEMENT:

a) Around 0.49 Mm^3 of OB was generated during 2021-22 from different opencast projects of the cluster and around 1.32 Mm^3 OB have been rehandled and backfilled in the quarried

area. After technical reclamation, biological reclamation will be followed as per the proposed plan.

PART – H

ADDITIONAL INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION.

a) Plantation will be carried out as per proposed plan in future.
b) The Environmental monitoring of the cluster will be continued fortnightly as per the guidelines of Ministry of Environment, Forests & Climate Change (MoEF & CC).
c) Different activities have been done under CSR for the benefit of local communities.

PART – I

ANY OTHER PARTICULAR IN RESPECTOF ENVIRONMENTAL PROTECTION AND ABATMENT OF POLLUTION.

The Environmental Monitoring is carried out fortnightly for the project by CMPDI, RI-I as per the guideline of Ministry of Environment and Forest (MOEF) and based on the result thereof; colliery takes necessary action if needed.

Annexure – I

AMBIENT AIR QUALITY

Station Code	Station Name	Date of Sampling	PM_{10}	$PM_{2.5}$	SO_2	NO_X
9A1	Lamp Cabin, New Ghusick Colliery	12-Apr-21	276.5	44.0	<10.0	18.3
9A1	Lamp Cabin, New Ghusick Colliery	16-Apr-21	274.3	52.0	<10.0	19.5
9A1	Lamp Cabin, New Ghusick Colliery	10-May-21	142.7	32.7	<10.0	17.4
9A1	Lamp Cabin, New Ghusick Colliery	22-May-21	132.6	33.4	<10.0	17.2
9A1	Lamp Cabin, New Ghusick Colliery	7-Jun-21	48.4	15.7	BDL	15.7
9A1	Lamp Cabin, New Ghusick Colliery	21-Jun-21	61.5	13.8	BDL	15.7
9A1	Lamp Cabin, New Ghusick Colliery	15-Jul-21	22.4	30.0	BDL	14.2
9A1	Lamp Cabin, New Ghusick Colliery	21-Jul-21	53.7	34.6	BDL	15.8
9A1	Lamp Cabin, New Ghusick Colliery	10-Aug-21	76.2	33.7	BDL	16.8
9A1	Lamp Cabin, New Ghusick Colliery	23-Aug-21	68.9	40.0	BDL	17.1
9A1	Lamp Cabin, New Ghusick Colliery	14-Sep-21	44.2	9.2	BDL	14.6
9A1	Lamp Cabin, New Ghusick Colliery	17-Sep-21	167.7	65.1	BDL	15.2
9A1	Lamp Cabin, New Ghusick Colliery	7-Oct-21	20.9	13.4	BDL	14.7
9A1	Lamp Cabin, New Ghusick Colliery	21-Oct-21	85.0	38.7	BDL	14.2
9A1	Lamp Cabin, New Ghusick Colliery	10-Nov-21	133.7	173.7	BDL	15.4
9A1	Lamp Cabin, New Ghusick Colliery	16-Nov-21	164.7	55.5	BDL	18.7
9A1	Lamp Cabin, New Ghusick Colliery	14-Dec-21	326.2	74.3	BDL	20.7
9A1	Lamp Cabin, New Ghusick Colliery	22-Dec-21	258.7	58.9	BDL	18.3
9A1	Lamp Cabin, New Ghusick Colliery	10-Jan-22	199.1	93.1	BDL	19.7
9A1	Lamp Cabin, New Ghusick Colliery	24-Jan-22	185.8	75.9	BDL	19.2
9A1	Lamp Cabin, New Ghusick Colliery	7-Feb-22	216.9	129.3	BDL	15.8
9A1	Lamp Cabin, New Ghusick Colliery	25-Feb-22	149.0	74.6	BDL	16.8
9A1	Lamp Cabin, New Ghusick Colliery	11-Mar-22	133.0	75.1	BDL	18.7
9A1	Lamp Cabin, New Ghusick Colliery	30-Mar-22	218.3	53.4	BDL	22.4
9A10	Survey Office, Mithapur Colliery	12-Apr-21	223.0	47.0	<10.0	14.6
9A10	Survey Office, Mithapur Colliery	20-Apr-21	98.4	37.0	<10.0	13.8
9A10	Survey Office, Mithapur Colliery	3-May-21	155.8	31.4	<10.0	12.6
9A10	Survey Office, Mithapur Colliery	31-May-21	70.6	26.1	<10.0	13.7
9A10	Survey Office, Mithapur Colliery	8-Jun-21	89.8	29.2	BDL	12.3
9A10	Survey Office, Mithapur Colliery	23-Jun-21	67.2	8.0	BDL	13.1
9A10	Survey Office, Mithapur Colliery	15-Jul-21	72.3	38.9	BDL	12.6
9A10	Survey Office, Mithapur Colliery	28-Jul-21	38.7	12.6	BDL	13.2
9A10	Survey Office, Mithapur Colliery	11-Aug-21	57.6	45.0	BDL	12.1
9A10	Survey Office, Mithapur Colliery	24-Aug-21	49.8	44.0	BDL	12.8
9A10	Survey Office, Mithapur Colliery	9-Sep-21	72.5	19.6	BDL	13.8
9A10	Survey Office, Mithapur Colliery	21-Sep-21	81.4	22.3	BDL	13.6
9A2	J K Nagar Project	1-Apr-21	392.5	69.0	<10.0	20.6
9A2	J K Nagar Project	16-Apr-21	266.7	49.0	<10.0	17.6
9A2	J K Nagar Project	11-May-21	69.4	27.6	<10.0	15.3
9A2	J K Nagar Project	22-May-21	89.7	28.6	<10.0	15.8
9A2	J K Nagar Project	15-Jun-21	130.5	29.4	BDL	14.2
9A2	J K Nagar Project	25-Jun-21	46.2	16.0	BDL	13.8
9A2	J K Nagar Project	14-Jul-21	48.6	20.0	BDL	13.8
9A2	J K Nagar Project	21-Jul-21	64.8	41.6	BDL	14.6
9A2	J K Nagar Project	11-Aug-21	47.5	29.0	BDL	17.4
9A2	J K Nagar Project	27-Aug-21	63.6	68.0	BDL	16.2
9A2	J K Nagar Project	1-Sep-21	71.3	26.3	BDL	16.8
9A2	J K Nagar Project	16-Sep-21	113.2	57.6	BDL	14.7
9A2	J K Nagar Project	6-Oct-21	88.3	60.4	BDL	15.2
9A2	J K Nagar Project	20-Oct-21	84.4	19.3	BDL	17.3

Station Code	Station Name	Date of Sampling	PM_{10}	$PM_{2.5}$	SO_2	NO_X
9A2	J K Nagar Project	10-Nov-21	81.6	34.6	BDL	19.3
9A2	J K Nagar Project	16-Nov-21	175.8	86.9	BDL	19.5
9A2	J K Nagar Project	2-Dec-21	183.1	19.9	BDL	22.6
9A2	J K Nagar Project	20-Dec-21	189.6	55.8	BDL	19.8
9A2	J K Nagar Project	8-Jan-22	178.3	46.3	BDL	20.4
9A2	J K Nagar Project	24-Jan-22	242.3	84.9	BDL	20.5
9A2	J K Nagar Project	9-Feb-22	213.6	25.7	BDL	20.6
9A2	J K Nagar Project	25-Feb-22	238.2	36.7	BDL	21.7
9A2	J K Nagar Project	8-Mar-22	181.2	51.3	BDL	20.5
9A2	J K Nagar Project	29-Mar-22	244.9	74.7	BDL	18.7
9A3	Agent Office, Amritnagar Colliery	1-Apr-21	384.9	44.0	<10.0	19.7
9A3	Agent Office, Amritnagar Colliery	21-Apr-21	148.9	43.0	<10.0	18.3
9A3	Agent Office, Amritnagar Colliery	10-May-21	182.3	33.4	<10.0	17.8
9A3	Agent Office, Amritnagar Colliery	21-May-21	114.7	30.9	<10.0	16.7
9A3	Agent Office, Amritnagar Colliery	7-Jun-21	124.3	40.4	BDL	15.3
9A3	Agent Office, Amritnagar Colliery	24-Jun-21	60.8	13.7	BDL	14.9
9A3	Agent Office, Amritnagar Colliery	13-Jul-21	40.8	25.0	BDL	15.4
9A3	Agent Office, Amritnagar Colliery	21-Jul-21	72.6	28.6	BDL	17.9
9A3	Agent Office, Amritnagar Colliery	10-Aug-21	48.2	37.0	BDL	16.2
9A3	Agent Office, Amritnagar Colliery	31-Aug-21	41.7	12.0	BDL	16.8
9A3	Agent Office, Amritnagar Colliery	15-Sep-21	75.0	39.0	BDL	12.8
9A3	Agent Office, Amritnagar Colliery	28-Sep-21	35.8	15.3	BDL	16.2
9A3	Agent Office, Amritnagar Colliery	7-Oct-21	70.7	16.5	BDL	13.4
9A3	Agent Office, Amritnagar Colliery	22-Oct-21	109.0	95.3	BDL	13.6
9A3	Agent Office, Amritnagar Colliery	11-Nov-21	144.0	123.4	BDL	17.1
9A3	Agent Office, Amritnagar Colliery	23-Nov-21	160.0	102.3	BDL	17.6
9A3	Agent Office, Amritnagar Colliery	6-Dec-21	152.9	10.7	BDL	21.8
9A3	Agent Office, Amritnagar Colliery	21-Dec-21	216.5	68.4	BDL	20.5
9A3	Agent Office, Amritnagar Colliery	12-Jan-22	136.5	39.4	BDL	20.7
9A3	Agent Office, Amritnagar Colliery	28-Jan-22	221.6	179.8	BDL	21.4
9A3	Agent Office, Amritnagar Colliery	7-Feb-22	202.4	9.0	BDL	19.4
9A3	Agent Office, Amritnagar Colliery	23-Feb-22	190.3	55.4	BDL	19.3
9A3	Agent Office, Amritnagar Colliery	15-Mar-22	343.9	121.6	BDL	19.6
9A3	Agent Office, Amritnagar Colliery	29-Mar-22	245.2	103.5	BDL	19.3
9A4	Raniganj Mining College	13-Apr-21	89.4	28.0	<10.0	15.4
9A4	Raniganj Mining College	21-Apr-21	91.1	31.0	<10.0	17.6
9A4	Raniganj Mining College	9-Sep-21	75.2	36.8	BDL	13.8
9A4	Raniganj Mining College	30-Sep-21	71.4	12.4	BDL	14.6
9A4	Raniganj Mining College	6-Oct-21	61.9	18.3	BDL	14.2
9A4	Raniganj Mining College	20-Oct-21	86.1	24.6	BDL	15.2
9A4	Raniganj Mining College	2-Nov-21	168.2	57.4	BDL	12.7
9A4	Raniganj Mining College	25-Nov-21	315.2	240.5	BDL	12.4
9A4	Raniganj Mining College	7-Dec-21	135.5	124.4	BDL	14.6
9A4	Raniganj Mining College	21-Dec-21	174.6	160.1	BDL	13.7
9A4	Raniganj Mining College	12-Jan-22	102.4	28.5	BDL	14.7
9A4	Raniganj Mining College	24-Jan-22	185.5	115.6	BDL	14.3
9A4	Raniganj Mining College	14-Feb-22	94.4	41.0	BDL	14.3
9A4	Raniganj Mining College	23-Feb-22	160.3	129.9	BDL	14.6
9A4	Raniganj Mining College	1-Mar-22	217.2	93.4	BDL	14.3
9A4	Raniganj Mining College	28-Mar-22	229.4	85.4	BDL	14.3
9A4	Raniganj Mining College	10-May-21	76.9	27.4	<10.0	13.2
9A4	Raniganj Mining College	21-May-21	76.3	26.8	<10.0	13.8

Station Code	Station Name	Date of Sampling	PM_{10}	$PM_{2.5}$	SO_2	NO_X
9A4	Raniganj Mining College	9-Jun-21	106.4	34.6	BDL	12.1
9A4	Raniganj Mining College	23-Jun-21	94.6	54.0	BDL	12.4
9A4	Raniganj Mining College	13-Jul-21	28.9	26.0	BDL	12.8
9A4	Raniganj Mining College	27-Jul-21	88.4	14.9	BDL	12.6
9A4	Raniganj Mining College	10-Aug-21	89.5	41.0	BDL	12.8
9A4	Raniganj Mining College	31-Aug-21	58.8	26.0	BDL	13.4
9A5	ECL Colony, Kalidaspur Project	8-Oct-21	64.3	16.2	BDL	16.7
9A5	ECL Colony, Kalidaspur Project	18-Oct-21	46.8	15.8	BDL	14.2
9A5	ECL Colony, Kalidaspur Project	10-Nov-21	73.6	18.7	BDL	16.5
9A5	ECL Colony, Kalidaspur Project	16-Nov-21	76.4	19.4	BDL	14.3
9A5	ECL Colony, Kalidaspur Project	14-Dec-21	107.9	38.5	BDL	15.6
9A5	ECL Colony, Kalidaspur Project	23-Dec-21	92.5	32.4	BDL	16.2
9A5	ECL Colony, Kalidaspur Project	7-Jan-22	83.6	34.7	BDL	14.3
9A5	ECL Colony, Kalidaspur Project	21-Jan-22	94.2	33.3	BDL	15.3
9A5	ECL Colony, Kalidaspur Project	8-Feb-22	107.5	31.5	BDL	15.7
9A5	ECL Colony, Kalidaspur Project	23-Feb-22	117.8	48.7	BDL	12.7
9A5	ECL Colony, Kalidaspur Project	14-Mar-22	98.7	31.6	BDL	11.6
9A5	ECL Colony, Kalidaspur Project	28-Mar-22	89.3	28.8	BDL	11.8
9A6	Kalikapur Village	8-Oct-21	56.7	18.3	BDL	17.2
9A6	Kalikapur Village	18-Oct-21	71.9	29.4	BDL	17.2
9A6	Kalikapur Village	10-Nov-21	63.8	22.9	BDL	14.2
9A6	Kalikapur Village	16-Nov-21	84.3	32.8	BDL	13.6
9A6	Kalikapur Village	14-Dec-21	91.5	27.4	BDL	13.4
9A6	Kalikapur Village	23-Dec-21	84.4	28.4	BDL	14.2
9A6	Kalikapur Village	7-Jan-22	91.6	29.6	BDL	13.3
9A6	Kalikapur Village	21-Jan-22	78.4	26.3	BDL	12.4
9A6	Kalikapur Village	8-Feb-22	89.7	42.4	BDL	16.2
9A6	Kalikapur Village	21-Feb-22	89.5	33.3	BDL	15.6
9A6	Kalikapur Village	14-Mar-22	79.4	29.7	BDL	12.8
9A6	Kalikapur Village	29-Mar-22	79.3	27.1	BDL	13.6
9A7	BDO Office, Mejia	8-Oct-21	62.3	16.2	BDL	15.8
9A7	BDO Office, Mejia	20-Oct-21	64.8	34.6	BDL	14.3
9A7	BDO Office, Mejia	10-Nov-21	68.9	31.3	BDL	13.7
9A7	BDO Office, Mejia	16-Nov-21	79.2	28.6	BDL	15.2
9A7	BDO Office, Mejia	15-Dec-21	116.4	41.3	BDL	14.7
9A7	BDO Office, Mejia	23-Dec-21	93.6	31.9	BDL	13.7
9A7	BDO Office, Mejia	8-Jan-22	78.1	34.6	BDL	15.3
9A7	BDO Office, Mejia	20-Jan-22	94.3	41.3	BDL	16.1
9A7	BDO Office, Mejia	9-Feb-22	117.4	29.7	BDL	12.7
9A7	BDO Office, Mejia	21-Feb-22	102.4	28.4	BDL	11.7
9A7	BDO Office, Mejia	15-Mar-22	83.6	26.6	BDL	13.7
9A7	BDO Office, Mejia	29-Mar-22	91.8	31.5	BDL	14.1
9A8	CMPF Office, Asansol	12-Apr-21	96.7	30.0	<10.0	12.3
9A8	CMPF Office, Asansol	21-Apr-21	97.8	37.0	<10.0	13.4
9A8	CMPF Office, Asansol	10-May-21	88.3	26.8	<10.0	12.8
9A8	CMPF Office, Asansol	21-May-21	84.0	28.3	<10.0	11.6
9A8	CMPF Office, Asansol	9-Jun-21	88.6	28.8	BDL	13.4
9A8	CMPF Office, Asansol	22-Jun-21	50.9	60.0	BDL	12.8
9A8	CMPF Office, Asansol	13-Jul-21	52.7	32.6	BDL	13.7
9A8	CMPF Office, Asansol	29-Jul-21	47.2	32.7	BDL	12.8
9A8	CMPF Office, Asansol	10-Aug-21	63.8	28.6	BDL	11.6
9A8	CMPF Office, Asansol	27-Aug-21	61.8	26.0	BDL	12.2

Station Code	Station Name	Date of Sampling	PM_{10}	$PM_{2.5}$	SO_2	NO_X
9A8	CMPF Office, Asansol	7-Sep-21	68.9	19.5	BDL	14.6
9A8	CMPF Office, Asansol	23-Sep-21	69.8	20.5	BDL	12.8
9A9	Transit House, Satgram Area	12-Apr-21	91.2	29.0	<10.0	13.8
9A9	Transit House, Satgram Area	19-Apr-21	83.6	43.0	<10.0	14.6
9A9	Transit House, Satgram Area	11-May-21	98.8	27.5	<10.0	14.6
9A9	Transit House, Satgram Area	20-May-21	69.3	23.7	<10.0	12.3
9A9	Transit House, Satgram Area	7-Jun-21	145.9	32.8	BDL	11.7
9A9	Transit House, Satgram Area	22-Jun-21	73.8	49.0	BDL	11.6
9A9	Transit House, Satgram Area	15-Jul-21	54.8	30.0	BDL	11.4
9A9	Transit House, Satgram Area	28-Jul-21	50.0	26.4	BDL	11.4
9A9	Transit House, Satgram Area	11-Aug-21	70.0	30.0	BDL	13.4
9A9	Transit House, Satgram Area	23-Aug-21	54.9	31.0	BDL	13.6
9A9	Transit House, Satgram Area	9-Sep-21	86.3	21.3	BDL	15.2
9A9	Transit House, Satgram Area	23-Sep-21	78.3	16.7	BDL	15.4

AIR QUALITY METAL ANALYSIS

Station No.	Station Name	Date of Sampling	Arsenic (ng/m^3)	Cadmium ($\mu g/m^3$)	Chromium ($\mu g/m^3$)	Mercury ($\mu g/m^3$)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)
Method of Detection			**Atomic Absorption Spectrophotometric (AAS)**					
Detection Limit			**1.0**	**0.001**	**0.01**	**0.001**	**0.10**	**0.005**
9A1	Lamp cabin, New Ghusik colliery	14-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
9A2	J K Nagar project	1-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
9A3	Agent office, Amrit Nagar colliery	15-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
9A4	Raniganj mining college	9-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
9A8	CMPF office, Asansol	7-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
9A9	Transit House, Satgram Area	9-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
9A10	Survey office, Mithapur colliery	9-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
9A1	Ghusik Colliery	30-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
9A2	Satgram Railway siding	29-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
9A3	Amritnagar Colliery	29-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
9A4	Raniganj Polytechnic	28-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
9A5	Bakulia village	28-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
9A6	Kalikapur village	29-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
9A7	Mejia village	29-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL

Environmental standards:

National Ambient Air Quality Standards (NAAQS), 2009 for residential, industrial and rural areas for 24 hourly/yearly samples:

Heavy Metal	Arsenic (As) (ng/m^3)	Cadmium (Cd) ($\mu g/m^3$)	Chromium (Cr) ($\mu g/m^3$)	Mercury (Hg) ($\mu g/m^3$)	Nickel (Ni) (ng/m^3)	Lead (Pb) ($\mu g/m^3$)
Concentration	6	Not specified	Not specified	Not specified	20	0.5

Annexure – II

NOISE LEVEL

Station Code	Name of Station (Workplace)	Date of Sampling	Time (Hours)	Leq (Day)	Leq (Night)	Leq (Day-Night)
9N1	Ratibati Workshop (Eng)	27-May-21	15.00 to 15.00	69.78	34.72	68.02
9N1	Ratibati Workshop (Eng)	8-Jul-21	16.00 to 16.00	70.70	69.89	70.45
9N1	Ratibati Workshop (Engg.)	29-Nov-21	14.51 to 13.35	86.33	55.79	84.11
9N1	Ratibati Workshop (Eng)	9-Feb-22	15.46 to 15.03	68.74	61.58	67.23
9N10	Jamehari UG	21-May-21	16.30 to 14.30	68.76	38.34	66.80
9N10	Jamehari UG	27-Aug-21	16.30 to 16.30	64.26	51.34	62.61
9N10	Jamehari UG Pit Top	7-Dec-21	14.44 to 12.35	56.22	55.02	55.78
9N10	Jamehari UG	21-Mar-22	17.24 to 15.22	69.24	44.26	67.28
9N11	Pure Searsole UG	23-Jun-21	15.00 to 13.00	66.24	34.69	64.28
9N11	Pure Searsole UG	3-Sep-21	16.00 to 16.00	67.26	43.78	65.51
9N11	Pure Searsole UG Pit Top	6-Dec-21	12.15 to 12.06	67.3	64.38	66.35
9N11	Pure Searsole UG	22-Mar-22	17.47 to 15.58	63.18	51.43	61.38
9N12	Egra OCP Patch	12-Apr-21	16.00 to 16.00	57.38	39.25	55.65
9N12	Egra OCP Patch	6-Sep-21	14.30 to 14.30	64.14	37.43	62.38
9N12	Egra OCP Patch	8-Dec-21	16.41 to 16.34	74.39	74.22	74.32
9N12	Egra OCP Patch	22-Mar-22	16.43 to 15.19	53.74	38.74	51.85
9N13	Naryankuri OCP	20-May-21	17.00 to 17.00	63.51	40.78	61.76
9N13	Naryankuri OCP	9-Sep-21	14.00 to 14.00	61.42	34.26	59.66
9N13	Naryankuri OCP	8-Dec-21	18.19 to 10.46	70.58	60.55	68.64
9N13	Naryankuri OCP	21-Mar-22	15.22 to 15.04	79.34	60.74	77.41
9N2	Chapuikhas UG	27-Jun-21	15.30 to13.30	58.34	36.84	56.39
9N2	Chapuikhas UG	8-Jul-21	15.30 to 15.30	65.74	61.35	64.71
9N2	Chapuikhas UG Pit Top	2-Dec-21	17.01 to 16.38	58.8	49.7	56.92
9N2	Chapuikhas UG	9-Feb-22	16.42 to 15.38	74.36	54.31	72.42
9N3	Amritnagar UG	4-Jun-21	16.00 to 14.00	62.79	44.32	60.86
9N3	Amritnagar UG	18-Aug-21	15.00 to 15.00	70.37	58.97	68.76
9N3	Amritnagar UG Pit Top	1-Dec-21	16.25 to 13.45	58.08	49.7	56.26
9N3	Amritnagar UG	10-Jan-22	17.38 to 15.41	69.46	58.34	67.68
9N4	Kuardih / Tirat UG	5-May-21	14.30 to 12.30	55.84	39.64	53.94
9N4	Kuardih / Tirat UG	26-Aug-21	16.00 to 16.00	70.37	59.58	68.79
9N4	Kuardih / Tirat UG Pit Top	3-Dec-21	17.41 to 15.30	59.67	44.12	57.53
9N4	Kuardih / Tirat UG	11-Jan-22	16.24 to 15.38	68.39	51.34	66.48
9N5	Nimcha UG	4-Jun-21	15.00 to 15.00	71.38	43.82	69.62
9N5	Nimcha UG	18-Aug-21	15.30 to 15.30	69.46	61.34	68.02
9N5	Nimcha UG Pit Top	9-Dec-21	17.39 to 16.25	81.52	78.71	80.6
9N5	Nimcha UG	11-Jan-22	16.34 to 15.43	58.74	43.78	56.86
9N6	Kalipahari UG	12-Jun-21	14.30 to 14.30	69.32	46.77	67.57
9N6	Kalipahari UG	17-Aug-21	14.30 to 14.30	73.54	63.86	72.01
9N6	Kalipahari UG Pit Top	1-Dec-21	16.22 to 14.12	65.41	53.24	63.36
9N6	Kalipahari UG	10-Jan-22	16.24 to 15.42	76.38	37.43	74.42
9N7	Kalipahari OCP	13-Jun-21	15.30 to 15.30	66.48	39.76	64.72
9N7	Kalipahari OCP	17-Aug-21	16.30 to 16.30	67.38	61.58	66.16
9N7	Kalipahari OCP	2-Dec-21	15.35 to 10.05	74.94	69.18	73.43
9N7	Kalipahari OCP	10-Jan-22	15.42 to 15.21	71.42	34.26	69.46
9N8	Amkola / Nimcha OCP	3-May-21	16.00 to 16.00	58.74	42.82	57.03
9N8	Amkola / Nimcha OCP	19-Aug-21	17.00 to 16.00	69.28	54.31	67.59
9N8	Amkola / Nimcha OCP	3-Dec-21	13.00 to 9.48	63.06	62.53	62.86
9N8	Amkola / Nimcha OCP	23-Feb-22	16.27 to 15.34	64.72	52.34	62.90
9N9	J K Nagar UG	3-Jun-21	17.00 to 15.00	61.94	46.71	60.05
9N9	J K Nagar UG	6-Jul-21	15.30 to 15.30	79.28	58.34	77.54

Station Code	Name of Station (Workplace)	Date of Sampling	Time (Hours)	Leq (Day)	Leq (Night)	Leq (Day-Night)
9N9	J K Nagar UG Pit Top	20-Dec-21	10.08 to 6.45	63.58	50.75	61.51
9N9	J K Nagar UG	23-Feb-22	15.37 to 14.56	71.30	46.24	69.34

Annexure – III

EFFLUENT WATER QUALITY (5 PARAMETERS)

Station Code	Station Name	Date of Sampling	pH	TSS	TDS	O&G	COD
9MW1	Ratibati UG	6-Apr-21	7.57	16.9	687	BDL	20
9MW1	Ratibati UG	17-Apr-21	7.58	15.4	672	BDL	24
9MW1	Ratibati UG	5-May-21	7.38	17.6	674	BDL	20
9MW1	Ratibati UG	26-May-21	7.43	17.2	668	BDL	24
9MW1	Ratibati UG	12-Jun-21	7.50	16.2	647	BDL	28
9MW1	Ratibati UG	23-Jun-21	6.83	15.2	658	BDL	32
9MW1	Ratibati UG	15-Jul-21	7.36	16.4	672	BDL	36
9MW1	Ratibati UG	26-Jul-21	6.66	16.2	655	BDL	32
9MW1	Ratibati UG	10-Aug-21	7.40	13.56	665	BDL	28
9MW1	Ratibati UG	24-Aug-21	6.86	11.64	551	BDL	32
9MW1	Ratibati UG	10-Aug-21	7.40	13.56	665	BDL	28
9MW1	Ratibati UG	8-Oct-21	7.12	BDL	493	BDL	12
9MW1	Ratibati UG	23-Oct-21	7.71	BDL	541	BDL	36
9MW1	Ratibati UG	10-Dec-21	7.39	BDL	502	BDL	12
9MW1	Ratibati UG	30-Dec-21	7.65	BDL	516	BDL	12
9MW1	Ratibati UG	6-Jan-22	8.20	BDL	531	BDL	16
9MW1	Ratibati UG	28-Jan-22	7.45	BDL	549	BDL	12
9MW1	Ratibati UG	3-Feb-22	7.8	BDL	526	BDL	4
9MW1	Ratibati UG	22-Feb-22	7.7	BDL	531	BDL	4
9MW1	Ratibati UG	17-Mar-22	7.43	BDL	519	BDL	28
9MW2	Chapuikhas UG	6-Apr-21	7.36	18.4	775	BDL	36
9MW2	Chapuikhas UG	17-Apr-21	7.62	16.2	764	BDL	32
9MW2	Chapuikhas UG	5-May-21	7.21	16.3	753	BDL	24
9MW2	Chapuikhas UG	26-May-21	7.53	16.0	747	BDL	20
9MW2	Chapuikhas UG	12-Jun-21	7.36	17.4	738	BDL	24
9MW2	Chapuikhas UG	23-Jun-21	7.38	16.8	744	BDL	28
9MW2	Chapuikhas UG	15-Jul-21	7.37	17.8	756	BDL	32
9MW2	Chapuikhas UG	24-Jul-21	7.05	17.4	738	BDL	28
9MW2	Chapuikhas UG	10-Aug-21	7.18	20.24	734	BDL	32
9MW2	Chapuikhas UG	24-Aug-21	6.64	19.80	610	BDL	40
9MW2	Chapuikhas UG	10-Aug-21	7.18	20.24	734	BDL	32
9MW2	Chapuikhas UG	8-Oct-21	7.1	BDL	491	BDL	16
9MW2	Chapuikhas UG	23-Oct-21	7.36	BDL	513	BDL	32
9MW2	Chapuikhas UG	10-Dec-21	7.62	BDL	536	BDL	4
9MW2	Chapuikhas UG	30-Dec-21	8.45	BDL	568	BDL	8
9MW2	Chapuikhas UG	6-Jan-22	7.21	BDL	514	BDL	12
9MW2	Chapuikhas UG	28-Jan-22	6.76	BDL	510	BDL	12
9MW2	Chapuikhas UG	3-Feb-22	7.78	BDL	515	BDL	4
9MW2	Chapuikhas UG	22-Feb-22	8.19	BDL	519	BDL	8
9MW2	Chapuikhas UG	17-Mar-22	7.34	BDL	542	BDL	12
9MW3	Amritnagar UG	6-Apr-21	7.42	20.1	660	BDL	24
9MW3	Amritnagar UG	27-Apr-21	7.26	17.2	652	BDL	28
9MW3	Amritnagar UG	5-May-21	7.80	16.4	641	BDL	32
9MW3	Amritnagar UG	26-May-21	7.37	16.2	632	BDL	28
9MW3	Amritnagar UG	15-Jun-21	7.39	16.6	662	BDL	32
9MW3	Amritnagar UG	23-Jun-21	7.02	16.4	652	BDL	36
9MW3	Amritnagar UG	15-Jul-21	7.29	16.0	673	BDL	32
9MW3	Amritnagar UG	27-Jul-21	7.05	16.4	621	BDL	36
9MW3	Amritnagar UG	10-Aug-21	7.09	BDL	628	BDL	12
9MW3	Amritnagar UG	17-Aug-21	7.05	BDL	592	BDL	16

Station Code	Station Name	Date of Sampling	pH	TSS	TDS	O&G	COD
9MW3	Amritnagar UG	10-Aug-21	7.09	BDL	628	BDL	12
9MW3	Amritnagar UG	9-Oct-21	7.47	BDL	534	BDL	20
9MW3	Amritnagar UG	23-Oct-21	7.62	BDL	593	BDL	28
9MW3	Amritnagar UG	10-Dec-21	7.48	BDL	641	BDL	8
9MW3	Amritnagar UG	17-Dec-21	7.34	BDL	628	BDL	8
9MW3	Amritnagar UG	12-Jan-22	7.35	BDL	661	BDL	16
9MW3	Amritnagar UG	28-Jan-22	7.71	BDL	653	BDL	16
9MW3	Amritnagar UG	9-Feb-22	8.23	11.24	648	BDL	16
9MW3	Amritnagar UG	24-Feb-22	7.6	BDL	657	BDL	4
9MW3	Amritnagar UG	19-Mar-22	6.86	BDL	663	BDL	8
9MW4	Kuardih UG	6-Apr-21	8.20	14.0	633	BDL	40
9MW4	Kuardih UG	27-Apr-21	7.72	13.2	624	BDL	36
9MW4	Kuardih UG	5-May-21	8.13	18.0	624	BDL	28
9MW4	Kuardih UG	26-May-21	7.54	16.9	654	BDL	24
9MW4	Kuardih UG	15-Jun-21	8.06	18.4	635	BDL	32
9MW4	Kuardih UG	23-Jun-21	7.48	18.2	617	BDL	40
9MW4	Kuardih UG	15-Jul-21	8.01	18.0	630	BDL	36
9MW4	Kuardih UG	27-Jul-21	7.38	17.2	642	BDL	40
9MW4	Kuardih UG	10-Aug-21	7.65	BDL	654	BDL	24
9MW4	Kuardih UG	24-Aug-21	7.25	BDL	709	BDL	36
9MW4	Kuardih UG	10-Aug-21	7.65	BDL	654	BDL	24
9MW4	Kuardih UG	9-Oct-21	7.69	BDL	686	BDL	16
9MW4	Kuardih UG	23-Oct-21	7.57	BDL	623	BDL	20
9MW4	Kuardih UG	10-Dec-21	7.82	BDL	721	BDL	12
9MW4	Kuardih UG	25-Dec-21	7.78	BDL	747	BDL	12
9MW4	Kuardih UG	12-Jan-22	7.17	BDL	713	BDL	12
9MW4	Kuardih UG	28-Jan-22	7.23	BDL	725	BDL	8
9MW4	Kuardih UG	9-Feb-22	7.29	BDL	728	BDL	4
9MW4	Kuardih UG	24-Feb-22	7.38	BDL	735	BDL	8
9MW4	Kuardih UG	31-Mar-22	7.38	BDL	721	BDL	16
9MW5	Nimcha UG	9-Apr-21	7.63	16.4	547	BDL	32
9MW5	Nimcha UG	27-Apr-21	7.36	16.2	538	BDL	28
9MW5	Nimcha UG	5-May-21	7.57	14.8	538	BDL	32
9MW5	Nimcha UG	26-May-21	7.28	13.6	547	BDL	28
9MW5	Nimcha UG	15-Jun-21	7.63	15.4	571	BDL	28
9MW5	Nimcha UG	23-Jun-21	6.94	15.1	545	BDL	32
9MW5	Nimcha UG	15-Jul-21	7.33	15.8	554	BDL	40
9MW5	Nimcha UG	27-Jul-21	7.29	15.2	570	BDL	28
9MW5	Nimcha UG	10-Aug-21	7.34	BDL	582	BDL	16
9MW5	Nimcha UG	17-Aug-21	6.67	BDL	455	BDL	12
9MW5	Nimcha UG	10-Aug-21	7.34	BDL	582	BDL	16
9MW5	Nimcha UG	9-Oct-21	7.32	BDL	493	BDL	12
9MW5	Nimcha UG	23-Oct-21	7.72	BDL	461	BDL	44
9MW5	Nimcha UG	10-Dec-21	7.35	BDL	453	BDL	8
9MW5	Nimcha UG	17-Dec-21	7.42	BDL	472	BDL	16
9MW5	Nimcha UG	12-Jan-22	7.33	BDL	503	BDL	12
9MW5	Nimcha UG	28-Jan-22	6.88	BDL	488	BDL	16
9MW5	Nimcha UG	15-Feb-22	7.74	BDL	480	BDL	8
9MW5	Nimcha UG	28-Feb-22	7.52	BDL	473	BDL	12
9MW5	Nimcha UG	19-Mar-22	7.56	BDL	493	3.82	8
9MW6	Kalipahari UG	9-Apr-21	7.51	17.0	542	BDL	24
9MW6	Kalipahari UG	27-Apr-21	7.56	17.4	531	BDL	28

Station Code	Station Name	Date of Sampling	pH	TSS	TDS	O&G	COD
9MW6	Kalipahari UG	5-May-21	7.39	17.4	556	BDL	20
9MW6	Kalipahari UG	26-May-21	7.65	14.9	563	BDL	16
9MW6	Kalipahari UG	15-Jun-21	7.29	16.6	540	BDL	20
9MW6	Kalipahari UG	23-Jun-21	7.52	17.8	528	BDL	24
9MW6	Kalipahari UG	15-Jul-21	7.17	17.2	548	BDL	28
9MW6	Kalipahari UG	27-Jul-21	7.41	16.6	564	BDL	32
9MW6	Kalipahari UG	5-Aug-21	7.28	BDL	526	BDL	20
9MW6	Kalipahari UG	17-Aug-21	7.20	BDL	551	BDL	16
9MW6	Kalipahari UG	5-Aug-21	7.28	BDL	526	BDL	20
9MW6	Kalipahari UG	9-Oct-21	7.04	BDL	446	BDL	16
9MW6	Kalipahari UG	23-Oct-21	7.07	BDL	510	BDL	20
9MW6	Kalipahari UG	10-Dec-21	7.42	BDL	510	BDL	4
9MW6	Kalipahari UG	17-Dec-21	7.32	BDL	532	BDL	8
9MW6	Kalipahari UG	12-Jan-22	7.31	BDL	498	BDL	8
9MW6	Kalipahari UG	28-Jan-22	7.12	BDL	520	BDL	12
9MW6	Kalipahari UG	15-Feb-22	7.25	BDL	535	BDL	4
9MW6	Kalipahari UG	28-Feb-22	7.61	BDL	527	BDL	4
9MW6	Kalipahari UG	31-Mar-22	6.91	BDL	518	BDL	12
9MW7	Muslia UG	9-Apr-21	7.52	18.1	473	BDL	12
9MW7	Muslia UG	27-Apr-21	7.40	16.4	462	BDL	20
9MW7	Muslia UG	5-May-21	7.41	17.4	452	BDL	24
9MW7	Muslia UG	26-May-21	7.32	16.9	447	BDL	20
9MW7	Muslia UG	12-Jun-21	7.32	18.2	476	BDL	24
9MW7	Muslia UG	22-Jun-21	7.25	16.2	451	BDL	28
9MW7	Muslia UG	14-Jul-21	7.22	17.4	462	BDL	32
9MW7	Muslia UG	27-Jul-21	7.28	16.2	454	BDL	36
9MW7	Muslia UG	5-Aug-21	7.02	BDL	451	BDL	12
9MW7	Muslia UG	17-Aug-21	7.08	BDL	482	BDL	16
9MW7	Muslia UG	5-Aug-21	7.02	BDL	451	BDL	12
9MW7	Muslia UG	11-Oct-21	7.17	BDL	414	BDL	20
9MW7	Muslia UG	22-Oct-21	7.19	BDL	472	BDL	20
9MW7	Muslia UG	2-Dec-21	7.41	BDL	407	BDL	8
9MW7	Muslia UG	17-Dec-21	7.29	BDL	627	BDL	4
9MW7	Muslia UG	6-Jan-22	7.47	BDL	423	BDL	16
9MW7	Muslia UG	27-Jan-22	7.29	BDL	618	BDL	8
9MW7	Muslia UG	4-Feb-22	7.32	BDL	418	BDL	8
9MW7	Muslia UG	24-Feb-22	7.43	BDL	426	BDL	4
9MW7	Muslia UG	31-Mar-22	7.67	BDL	402	BDL	24
9MW8	New Ghusick UG	9-Apr-21	7.63	15.2	544	BDL	24
9MW8	New Ghusick UG	27-Apr-21	7.70	14.8	536	BDL	28
9MW8	New Ghusick UG	5-May-21	7.56	20.1	537	BDL	32
9MW8	New Ghusick UG	26-May-21	7.64	18.2	551	BDL	28
9MW8	New Ghusick UG	12-Jun-21	7.61	19.4	559	BDL	32
9MW8	New Ghusick UG	22-Jun-21	7.73	18.4	562	BDL	36
9MW8	New Ghusick UG	14-Jul-21	7.32	18.0	576	BDL	40
9MW8	New Ghusick UG	27-Jul-21	7.62	17.2	561	BDL	44
9MW8	New Ghusick UG	5-Aug-21	7.33	BDL	539	BDL	20
9MW8	New Ghusick UG	17-Aug-21	7.12	BDL	535	BDL	12
9MW8	New Ghusick UG	5-Aug-21	7.33	BDL	539	BDL	20
9MW8	New Ghusick UG	11-Oct-21	7.6	BDL	596	BDL	36
9MW8	New Ghusick UG	22-Oct-21	7.49	BDL	608	BDL	36
9MW8	New Ghusick UG	2-Dec-21	7.28	BDL	582	BDL	28

Station Code	Station Name	Date of Sampling	pH	TSS	TDS	O&G	COD
9MW8	New Ghusick UG	17-Dec-21	7.32	BDL	519	BDL	12
9MW8	New Ghusick UG	6-Jan-22	7.39	BDL	571	BDL	12
9MW8	New Ghusick UG	27-Jan-22	7.31	BDL	502	BDL	16
9MW8	New Ghusick UG	4-Feb-22	7.76	BDL	615	BDL	8
9MW8	New Ghusick UG	24-Feb-22	7.79	BDL	627	BDL	8
9MW8	New Ghusick UG	31-Mar-22	8.43	BDL	612	BDL	20
9MW9	J K Nagar UG	6-Apr-21	8.06	14.4	220	BDL	20
9MW9	J K Nagar UG	27-Apr-21	8.32	14.0	232	BDL	16
9MW9	J K Nagar UG	5-May-21	8.26	16.0	264	BDL	20
9MW9	J K Nagar UG	26-May-21	7.18	15.8	240	BDL	24
9MW9	J K Nagar UG	12-Jun-21	7.08	16.5	283	BDL	28
9MW9	J K Nagar UG	23-Jun-21	6.74	16.2	270	BDL	32
9MW9	J K Nagar UG	15-Jul-21	7.93	18.6	293	BDL	36
9MW9	J K Nagar UG	27-Jul-21	7.77	18.0	278	BDL	40
9MW9	J K Nagar UG	5-Aug-21	7.89	BDL	264	BDL	36
9MW9	J K Nagar UG	17-Aug-21	7.45	BDL	521	BDL	32
9MW9	J K Nagar UG	5-Aug-21	7.89	BDL	264	BDL	36
9MW9	J K Nagar UG	11-Oct-21	7.98	BDL	278	BDL	16
9MW9	J K Nagar UG	23-Oct-21	7.4	BDL	520	2.36	28
9MW9	J K Nagar UG	2-Dec-21	7.61	BDL	527	BDL	20
9MW9	J K Nagar UG	17-Dec-21	7.26	10.56	542	BDL	8
9MW9	J K Nagar UG	6-Jan-22	8.18	16.16	513	BDL	12
9MW9	J K Nagar UG	27-Jan-22	8.17	15.72	525	BDL	16
9MW9	J K Nagar UG	4-Feb-22	7.77	BDL	511	BDL	4
9MW9	J K Nagar UG	24-Feb-22	8.66	BDL	515	BDL	8
9MW9	J K Nagar UG	19-Mar-22	8.14	BDL	548	BDL	20

Note: All parameters in mg/l unless otherwise specified

Effluent Water Quality Standards (MoEF Schedule – VI Standards)

EFFLUENT QUALITY (29 PARAMETERS) September, 2021

Sl. No.	Parameters	Analytical Results									General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Station Code	9MW1	9MW2	9MW3	9MW4	9MW5	9MW6	9MW7	9MW8	9MW9			
	Date of Sampling	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21			
1	Colour	2	4	3	3	4	3	2	4	2	Unobjectionable	IS 3025 (Part 6): 2018	1.0
2	Odour	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Unobjectionable	IS 3025 (Part 6): 2018	-
3	TSS	BDL	BDL	BDL	BDL	22.3	BDL	25	17.9	BDL	100	IS 3025 (Part 17): 1984	10
4	pH	7.39	7.95	7.46	7.25	7.25	6.71	6.95	6.74	7.49	5.5-9.0	IS 3025 (Part 11): 1983	0.01
5	Temperature (^{0}C)	27.1	27.1	27.4	27.2	27.4	27.4	27.1	27.3	27.2	Shall not exceed 5 ^{0}C above the receiving water temperature	IS 3025 (Part 9): 1984	0.1
6	Oil & Grease	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	IS 3025 (Part 39): 1991	2.0
7	Total Residual Chlorine	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.0	APHA 4500G DPD Colorimetric	0.02
8	Ammonical Nitrogen	0.68	0.54	0.89	0.42	0.58	0.54	0.62	0.72	0.84	50	IS 3025 (Part 34): 1988	0.01
9	Total Kjeldahi Nitrogen	1.54	1.68	1.72	1.54	1.64	1.58	1.72	1.79	1.72	100	IS 3025 (Part 34): 1988	1.0
10	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5.0	IS 3025 (Part 34): 1988	0.02
11	BOD	9	11	9	6	7	8	7	7	8	30	IS 3025 (Part 44): 1993	2.0
12	COD	36	32	40	28	20	20	24	28	12	250	APHA 5220C Closed Reflux	4.0
13	Arsenic	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2	APHA 3112B AAS VGA	0.002
14	Lead	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	APHA 3113B AAS GTA	0.005
15	Hexavalent Chromium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	APHA 3500B Colorimetric	0.01
16	Total Chromium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.0	APHA 3111B AAS Flame	0.04

Sl. No.	Parameters	Analytical Results									General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Station Code	9MW1	9MW2	9MW3	9MW4	9MW5	9MW6	9MW7	9MW8	9MW9			
	Date of Sampling	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21	28-Sep-21			
17	Copper	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.03
18	Zinc	0.01	0.02	0.02	0.03	0.01	0.01	0.02	0.01	BDL	5.0	APHA 3111B AAS Flame	0.01
19	Selenium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.05	APHA 3111B AAS Flame	0.002
20	Nickel	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.01
21	Fluoride	0.36	0.40	0.34	0.38	0.36	0.44	0.38	0.34	0.40	2.0	APHA 4500D SPANDS	0.02
22	Dissolved Phosphate	1.78	1.52	1.28	1.38	1.40	1.46	1.39	1.72	1.22	5.0	APHA 4500C Vanadomolybdo phosphoric acid	0.30
23	Sulphide	0.008	0.009	0.010	0.010	0.006	0.008	0.010	0.008	0.008	2.0	APHA 4500 D Methylene Blue	0.005
24	Phenolics	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.0	IS 3025 (Part 43): 1992	0.001
25	Manganese	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.0	APHA 3111B AAS Flame	0.02
26	Iron	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.06
27	Nitrate Nitrogen	4.2	4.0	3.8	3.8	4.2	4.0	3.4	3.6	4.4	10	IS 3025 (Part 34): 1988	0.5
28	Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.0	APHA 3113B AAS GTA	0.0005
29	Total Dissolved Solids	562	499	586	712	507	498	499	557	292	Not Specified	IS 3025 (Part 16): 1984	25.0

Note: All parameters in mg/l unless otherwise specified

EFFLUENT QUALITY (29 PARAMETERS) March, 2022

Sl. No.	Parameters	Analytical Results									General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Station Code	9MW1	9MW2	9MW3	9MW4	9MW5	9MW6	9MW7	9MW8	9MW9			
	Date of Sampling	11-Mar-22	11-Mar-22	14-Mar-22	14-Mar-22	10-Mar-22	10-Mar-22	10-Mar-22	10-Mar-22	10-Mar-22			
1	Colour	3	2	1	2	3	2	1	3	2	Unobjectionable	IS 3025 (Part 6): 2018	1.0
2	Odour	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Unobjectionable	IS 3025 (Part 6): 2018	-
3	TSS	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	100	IS 3025 (Part 17): 1984	10
4	pH	7.57	7.54	7.43	7.44	7.43	6.83	7.87	8.60	8.66	5.5-9.0	IS 3025 (Part 11): 1983	0.01
5	Temperature (^{0}C)	26.4	26.3	25.9	26.0	25.0	25.2	25.1	25.4	25.0	Shall not exceed 5 ^{0}C above the receiving water temperature	IS 3025 (Part 9): 1984	0.1
6	Oil & Grease	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	IS 3025 (Part 39): 1991	2.0
7	Total Residual Chlorine	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.0	APHA 4500G DPD Colorimetric	0.02
8	Ammonical Nitrogen	0.84	0.89	0.52	0.54	0.64	0.89	0.72	0.64	0.59	50	IS 3025 (Part 34): 1988	0.01
9	Total Kjeldahi Nitrogen	1.72	1.94	1.84	1.62	1.52	1.72	1.54	1.69	1.82	100	IS 3025 (Part 34): 1988	1.0
10	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5.0	IS 3025 (Part 34): 1988	0.02
11	BOD	3.45	4.90	4.84	BDL	4.56	4.61	4.80	2.57	3.38	30	IS 3025 (Part 44): 1993	2.0
12	COD	12	8	20	24	20	24	12	8	12	250	APHA 5220C Closed Reflux	4.0
13	Arsenic	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2	APHA 3112B AAS VGA	0.002
14	Lead	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	APHA 3113B AAS GTA	0.005
15	Hexavalent Chromium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	APHA 3500B Colorimetric	0.01
16	Total Chromium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.0	APHA 3111B AAS Flame	0.04

Sl. No.	Parameters	Analytical Results									General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Station Code	9MW1	9MW2	9MW3	9MW4	9MW5	9MW6	9MW7	9MW8	9MW9			
	Date of Sampling	11-Mar-22	11-Mar-22	14-Mar-22	14-Mar-22	10-Mar-22	10-Mar-22	10-Mar-22	10-Mar-22	10-Mar-22			
17	Copper	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.03
18	Zinc	0.01	0.02	0.03	0.02	0.02	0.01	0.02	0.02	0.02	5.0	APHA 3111B AAS Flame	0.01
19	Selenium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.05	APHA 3111B AAS Flame	0.002
20	Nickel	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.01
21	Fluoride	0.26	0.25	0.28	0.23	0.28	0.27	0.24	0.21	0.32	2.0	APHA 4500D SPANDS	0.02
22	Dissolved Phosphate	1.68	1.56	1.36	1.74	1.69	1.58	1.62	1.54	1.32	5.0	APHA 4500C Vanadomolybdo phosphoric acid	0.30
23	Sulphide	0.010	0.011	0.009	0.008	0.010	0.011	0.007	0.010	0.011	2.0	APHA 4500 D Methylene Blue	0.005
24	Phenolics	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.0	IS 3025 (Part 43): 1992	0.001
25	Manganese	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.0	APHA 3111B AAS Flame	0.02
26	Iron	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.06
27	Nitrate Nitrogen	3.6	3.5	3.2	3.6	3.5	3.4	3.9	3.2	3.8	10	IS 3025 (Part 34): 1988	0.5
28	Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.0	APHA 3113B AAS GTA	0.0005
29	Total Dissolved Solids	526	535	651	701	484	542	426	629	531	Not Specified	IS 3025 (Part 16): 1984	25.0

Note: All parameters in mg/l unless otherwise specified

Annexure – III

GROUNDWATER QUALITY

Sl. No.	Parameters	Analytical Results						Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	9GW1	9GW2	9GW3	9GW4	9GW5	9GW6				
	Sampling Date	27-May-21	27-May-21	27-May-21	27-May-21	3-May-21	27-May-21	Acceptable Limit	Permissible Limit		
1	Colour, Hazen	2	3	3	3	4	3	5.0	15.0	APHA, 2120 C	1.0 Hazen
2	Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable		IS 3025 Part 5: 2018	-
3	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		IS 3025 (Part 7):1984	-
4	Turbidity, NTU	6.4	1.5	2	1.5	2.1	1.4	1	5	IS 3025 (Part 10):1984	1.0 NTU
5	pH value	6.84	5.91	7.18	7.68	7.38	7.01	6.5-8.5	No relaxation	IS 3025 Part 11: 2017	0.01
6	Total Hardness	279	105	376	456	465	287	300	600	IS 3025 Part 21: 2019	4.0
7	Iron	BDL	BDL	BDL	BDL	BDL	BDL	0.3	No relaxation	IS 3025 Part 53: 2019	0.06
8	Chlorides	26	32	55	138	50	46	250	1000	IS 3025 Part 32: 2019	2.0
9	Res Free Chlorine	BDL	BDL	BDL	BDL	BDL	BDL	0.2	1	APHA, 4500-Cl F	0.02
10	Dissolved Solids	838	172	782	1020	864	576	500	2000	IS 3025 Part 16: 2017	10.0
11	Calcium	82	32	100	111	102	59	75	200	IS 3025 Part 40: 2019	1.60
12	Copper	BDL	BDL	BDL	BDL	BDL	BDL	0.05	1.5	IS 3025 Part 42: 2019	0.03
13	Manganese	BDL	BDL	BDL	BDL	BDL	BDL	0.1	0.3	IS 3025 Part 59: 2017	0.02
14	Sulphate	58	24	128	76	98	38	200	400	APHA, 4500-SO_4^{2-} E	2.0
15	Nitrate	8.78	8.32	7.14	8.46	5.30	13.88	45	No relaxation	APHA, 4500-NO_3^- B	0.5
16	Fluoride	0.44	0.12	0.82	0.20	0.22	0.46	1	1.5	APHA, 4500-F^- D	0.02
17	Selenium	BDL	BDL	BDL	BDL	BDL	BDL	0.01	No relaxation	IS 3025 (Part 56):2003	0.002
18	Arsenic	BDL	BDL	BDL	BDL	BDL	BDL	0.01	0.05	IS 3025 (Part 37):1988	0.002
19	Lead	BDL	BDL	BDL	BDL	BDL	BDL	0.01	No relaxation	APHA, 3113 B	0.005
20	Zinc	BDL	BDL	BDL	0.017	BDL	0.019	5	15	AAS Flame	0.01
21	Hex Chromium	BDL	BDL	BDL	BDL	BDL	BDL	0.05	0.05	APHA, 3500-Cr B	0.01
22	Boron	BDL	BDL	BDL	BDL	BDL	BDL	0.5	1	IS 3025 (Part 57):2005	0.20

Sl. No.	Parameters	Analytical Results						Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	9GW1	9GW2	9GW3	9GW4	9GW5	9GW6				
	Sampling Date	27-May-21	27-May-21	27-May-21	27-May-21	3-May-21	27-May-21	Acceptable Limit	Permissible Limit		
23	Coliforms (MPN)	NIL	NIL	NIL	NIL	NIL	NIL	Not Specified		Chloroform Extraction	APHA, 9221 B
24	Phenolics	BDL	BDL	BDL	BDL	BDL	BDL	0.001	0.002	IS 3025 (Part 43):1992	0.001
25	Alkalinity	236	36	296	376	336	280	200	600	IS 3025 Part 23: 2019	4.0
26	Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	0.003	No relaxation	APHA, 3111 B	0.0005

Note: All parameters in mg/l unless otherwise specified

Annexure – III

DRINKING WATER QUALITY FOR Q/E JUNE'21

Sl. No.	Parameters	Analytical Results			Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	9FDW3	9FDW4	9FDW6				
	Sampling Date	30-Jun-21	30-Jun-21	26-Jun-21	Acceptable Limit	Permissible Limit		
1	Colour, Hazen	2	3	3	5.0	15.0	APHA, 2120 C	1.0 Hazen
2	Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable		IS 3025 Part 5: 2018	-
3	Taste	Agreeable	Agreeable	Agreeable	Agreeable		IS 3025 (Part 7):1984	-
4	Turbidity, NTU	0	0	0	1	5	IS 3025 (Part 10):1984	1.0 NTU
5	pH value	7.26	7.45	7.34	6.5-8.5	No relaxation	IS 3025 Part 11: 2017	0.01
6	Total Hardness	190	221	325	300	600	IS 3025 Part 21: 2019	4.0
7	Iron	BDL	BDL	BDL	0.3	No relaxation	IS 3025 Part 53: 2019	0.06
8	Chlorides	20.89	35.82	43.78	250	1000	IS 3025 Part 32: 2019	2.0
9	Res Free Chlorine	BDL	BDL	BDL	0.2	1	APHA, 4500-Cl F	0.02
10	Dissolved Solids	235	352	473	500	2000	IS 3025 Part 16: 2017	10.0
11	Calcium	37	30	57	75	200	IS 3025 Part 40: 2019	1.60
12	Copper	BDL	BDL	BDL	0.05	1.5	IS 3025 Part 42: 2019	0.03
13	Manganese	BDL	BDL	BDL	0.1	0.3	IS 3025 Part 59: 2017	0.02
14	Sulphate	27.38	11.39	63.41	200	400	APHA, 4500-SO_4^{2-} E	2.0
15	Nitrate	17.25	24.54	18.36	45	No relaxation	APHA, 4500-NO_3^- B	0.5
16	Fluoride	0.21	0.39	0.27	1	1.5	APHA, 4500-F^- D	0.02
17	Selenium	BDL	BDL	BDL	0.01	No relaxation	IS 3025 (Part 56):2003	0.002
18	Arsenic	BDL	BDL	BDL	0.01	0.05	IS 3025 (Part 37):1988	0.002
19	Lead	BDL	BDL	BDL	0.01	No relaxation	APHA, 3113 B	0.005
20	Zinc	0.03	BDL	BDL	5	15	AAS Flame	0.01
21	Hex Chromium	BDL	BDL	BDL	0.05	0.05	APHA, 3500-Cr B	0.01
22	Boron	BDL	BDL	BDL	0.5	1	IS 3025 (Part 57):2005	0.20
23	Coliforms (MPN)	NIL	NIL	NIL	Not Specified		APHA, 9221 B	1.0
24	Phenolics	BDL	BDL	BDL	0.001	0.002	IS 3025 (Part 43):1992	0.001
25	Alkalinity	296	344	324	200	600	IS 3025 Part 23: 2019	4.0
26	Cadmium	BDL	BDL	BDL	0.003	No relaxation	APHA, 3111 B	0.0005

Note: All units in mg/l unless otherwise specified

DRINKING WATER QUALITY FOR Q/E SEPTEMBER'21

Sl. No.	Parameters	Analytical Results			Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	9FDW03	9FDW04	9FDW07				
	Sampling Date	6-Sep-21	6-Sep-21	8-Sep-21	Acceptable Limit	Permissible Limit		
1	Colour, Hazen	3	4	2	5.0	15.0	APHA, 2120 C	1.0 Hazen
2	Odour	Un-objectionable	Un-objectionable	Un-objectionable	Unobjectionable		IS 3025 Part 5: 2018	-
3	Taste	Agreeable	Agreeable	Agreeable	Agreeable		IS 3025 (Part 7):1984	-
4	Turbidity, NTU	BDL	BDL	BDL	1	5	IS 3025 (Part 10):1984	1.0 NTU
5	pH value	7.77	7.96	6.38	6.5-8.5	No relaxation	IS 3025 Part 11: 2017	0.01
6	Total Hardness	153	128	357	300	600	IS 3025 Part 21: 2019	4.0
7	Iron	BDL	BDL	BDL	0.3	No relaxation	IS 3025 Part 53: 2019	0.06
8	Chlorides	38.27	27.19	31.22	250	1000	IS 3025 Part 32: 2019	2.0
9	Res Free Chlorine	BDL	BDL	BDL	0.2	1	APHA, 4500-Cl F	0.02
10	Dissolved Solids	331	399	602	500	2000	IS 3025 Part 16: 2017	10.0
11	Calcium	18	22	38	75	200	IS 3025 Part 40: 2019	1.60
12	Copper	BDL	BDL	BDL	0.05	1.5	IS 3025 Part 42: 2019	0.03
13	Manganese	BDL	BDL	BDL	0.1	0.3	IS 3025 Part 59: 2017	0.02
14	Sulphate	21.05	30.01	11.23	200	400	APHA, 4500-SO_4^{2-} E	2.0
15	Nitrate	16.42	22.62	18.42	45	No relaxation	APHA, 4500-NO_3^- B	0.5
16	Fluoride	0.16	0.24	0.36	1	1.5	APHA, 4500-F^- D	0.02
17	Selenium	BDL	BDL	BDL	0.01	No relaxation	IS 3025 (Part 56):2003	0.002
18	Arsenic	BDL	BDL	BDL	0.01	0.05	IS 3025 (Part 37):1988	0.002
19	Lead	BDL	BDL	BDL	0.01	No relaxation	APHA, 3113 B	0.005
20	Zinc	BDL	0.07	0.02	5	15	AAS Flame	0.01
21	Hex Chromium	BDL	BDL	BDL	0.05	0.05	APHA, 3500-Cr B	0.01
22	Boron	BDL	BDL	BDL	0.5	1	IS 3025 (Part 57):2005	0.20
23	Coliforms (MPN)	NIL	NIL	NIL	Not Specified		APHA, 9221 B	1.0
24	Phenolics	BDL	BDL	BDL	0.001	0.002	IS 3025 (Part 43):1992	0.001
25	Alkalinity	292	228	272	200	600	IS 3025 Part 23: 2019	4.0
26	Cadmium	BDL	BDL	BDL	0.003	No relaxation	APHA, 3111 B	0.0005

Note: All units in mg/l unless otherwise specified

DRINKING WATER QUALITY FOR Q/E DECEMBER'21

Sl. No.	Parameters	Analytical Results		Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	9FDW4	9FDW6				
	Sampling Date	3-Dec-21	23-Dec-21	Acceptable Limit	Permissible Limit		
1	Colour, Hazen	2	2	5.0	15.0	APHA, 2120 C	1.0 Hazen
2	Odour	Agreeable	Agreeable	Unobjectionable		IS 3025 Part 5: 2018	-
3	Taste	Un-Objectionable	Un-Objectionable	Agreeable		IS 3025 (Part 7):1984	-
4	Turbidity, NTU	5.37	5.37	1	5	IS 3025 (Part 10):1984	1.0 NTU
5	pH value	8.06	8.06	6.5-8.5	No relaxation	IS 3025 Part 11: 2017	0.01
6	Total Hardness	284	284	300	600	IS 3025 Part 21: 2019	4.0
7	Iron	BDL	BDL	0.3	No relaxation	IS 3025 Part 53: 2019	0.06
8	Chlorides	42.29	42.29	250	1000	IS 3025 Part 32: 2019	2.0
9	Res Free Chlorine	BDL	BDL	0.2	1	APHA, 4500-Cl F	0.02
10	Dissolved Solids	592	592	500	2000	IS 3025 Part 16: 2017	10.0
11	Calcium	51	51	75	200	IS 3025 Part 40: 2019	1.60
12	Copper	BDL	BDL	0.05	1.5	IS 3025 Part 42: 2019	0.03
13	Manganese	0.04	0.04	0.1	0.3	IS 3025 Part 59: 2017	0.02
14	Sulphate	62.75	62.75	200	400	APHA, 4500-SO_4^{2-} E	2.0
15	Nitrate	5.27	5.27	45	No relaxation	APHA, 4500-NO_3^- B	0.5
16	Fluoride	0.27	0.27	1	1.5	APHA, 4500-F^- D	0.02
17	Selenium	0.04	0.04	0.01	No relaxation	IS 3025 (Part 56):2003	0.002
18	Arsenic	0.04	0.04	0.01	0.05	IS 3025 (Part 37):1988	0.002
19	Lead	0.04	0.04	0.01	No relaxation	APHA, 3113 B	0.005
20	Zinc	0.04	0.04	5	15	AAS Flame	0.01
21	Hex Chromium	0.04	0.04	0.05	0.05	APHA, 3500-Cr B	0.01
22	Boron	0.04	0.04	0.5	1	IS 3025 (Part 57):2005	0.20
23	Coliforms (MPN)	NIL	NIL	Not Specified		APHA, 9221 B	1.0
24	Phenolics	0.04	0.04	0.001	0.002	IS 3025 (Part 43):1992	0.001
25	Alkalinity	332	332	200	600	IS 3025 Part 23: 2019	4.0
26	Cadmium	0.04	0.04	0.003	No relaxation	APHA, 3111 B	0.0005

Note: All units in mg/l unless otherwise specified

DRINKING WATER QUALITY FOR Q/E DECEMBER'21

Sl. No.	Parameters	Analytical Results					Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	9FDW3	9FDW4	9FDW5	9FDW6	9FDW7				
	Sampling Date	4-Mar-22	4-Mar-22	30-Mar-22	4-Mar-22	3-Mar-22	Acceptable Limit	Permissible Limit		
1	Colour, Hazen	2	2	3	3	2	5.0	15.0	APHA, 2120 C	1.0 Hazen
2	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Unobjectionable		IS 3025 Part 5: 2018	-
3	Taste	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Un-Objectionable	Agreeable		IS 3025 (Part 7):1984	-
4	Turbidity, NTU	0.84	1.18	0	0.46	0	1	5	IS 3025 (Part 10):1984	1.0 NTU
5	pH value	7.67	7.76	7.41	7.56	7.31	6.5-8.5	No relaxation	IS 3025 Part 11: 2017	0.01
6	Total Hardness	211.76	211.76	208.74	125.48	489.79	300	600	IS 3025 Part 21: 2019	4.0
7	Iron	BDL	BDL	BDL	BDL	BDL	0.3	No relaxation	IS 3025 Part 53: 2019	0.06
8	Chlorides	42	43	32	24	40	250	1000	IS 3025 Part 32: 2019	2.0
9	Res Free Chlorine	BDL	BDL	BDL	BDL	BDL	0.2	1	APHA, 4500-Cl F	0.02
10	Dissolved Solids	369	361	338	567	591	500	2000	IS 3025 Part 16: 2017	10.0
11	Calcium	37.57	40.70	38.61	28.17	73.57	75	200	IS 3025 Part 40: 2019	1.60
12	Copper	BDL	BDL	BDL	BDL	BDL	0.05	1.5	IS 3025 Part 42: 2019	0.03
13	Manganese	BDL	BDL	BDL	BDL	BDL	0.1	0.3	IS 3025 Part 59: 2017	0.02
14	Sulphate	31.26	39.42	32.63	71.32	10.43	200	400	APHA, 4500-SO_4^{2-} E	2.0
15	Nitrate	4.34	5.16	9.38	6.12	9.38	45	No relaxation	APHA, 4500-NO_3^- B	0.5
16	Fluoride	0.14	0.24	0.32	0.28	0.16	1	1.5	APHA, 4500-F^- D	0.02
17	Selenium	BDL	BDL	BDL	BDL	BDL	0.01	No relaxation	IS 3025 (Part 56):2003	0.002
18	Arsenic	BDL	BDL	BDL	BDL	BDL	0.01	0.05	IS 3025 (Part 37):1988	0.002
19	Lead	BDL	BDL	BDL	BDL	BDL	0.01	No relaxation	APHA, 3113 B	0.005
20	Zinc	BDL	BDL	BDL	BDL	BDL	5	15	AAS Flame	0.01

Sl. No.	Parameters	Analytical Results					Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	9FDW3	9FDW4	9FDW5	9FDW6	9FDW7				
	Sampling Date	4-Mar-22	4-Mar-22	30-Mar-22	4-Mar-22	3-Mar-22	Acceptable Limit	Permissible Limit		
21	Hex Chromium	BDL	BDL	BDL	BDL	BDL	0.05	0.05	APHA, 3500-Cr B	0.01
22	Boron	BDL	BDL	BDL	BDL	BDL	0.5	1	IS 3025 (Part 57):2005	0.20
23	Coliforms (MPN)	NIL	NIL	NIL	NIL	NIL	Not Specified		APHA, 9221 B	1.0
24	Phenolics	BDL	BDL	BDL	BDL	BDL	0.001	0.002	IS 3025 (Part 43):1992	0.001
25	Alkalinity	316	316	180	116	320	200	600	IS 3025 Part 23: 2019	4.0
26	Cadmium	BDL	BDL	BDL	BDL	BDL	0.003	No relaxation	APHA, 3111 B	0.0005

Note: All units in mg/l unless otherwise specified

Annexure – IV

GROUNDWATER LEVEL

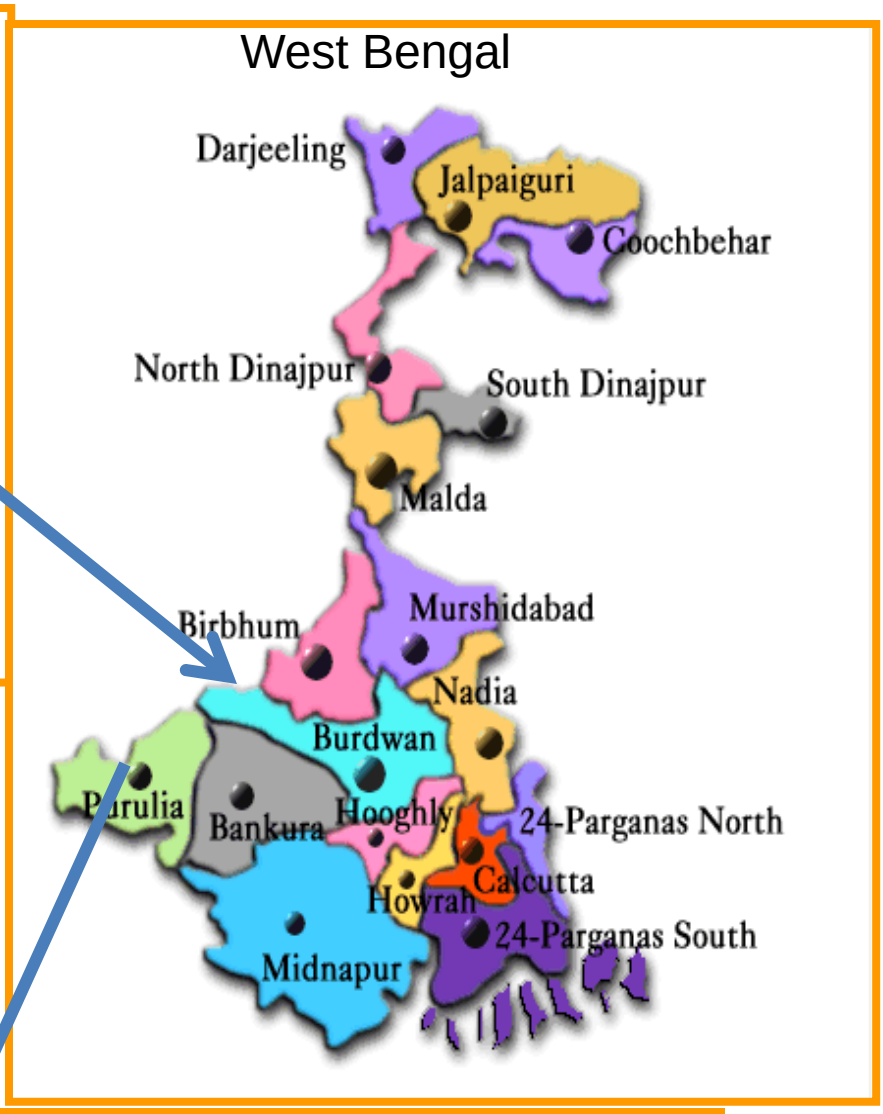
Code	Station Name	Date	Water Level (m)
9GWL1	Bakulia High School	28-May-21	5.60
9GWL1	Bakulia High School	31-Aug-21	0.80
9GWL1	Bakulia High School	29-Nov-21	3.10
9GWL1	Bakulia High School	24-Jan-22	6.40
9GWL2	Perabad Kalikapur village	29-May-21	3.70
9GWL2	Perabad Kalikapur village	31-Aug-21	1.65
9GWL2	Perabad Kalikapur village	29-Nov-21	2.20
9GWL2	Perabad Kalikapur village	24-Jan-22	2.60
9GWL3	Manager's Bungalow of Amritnagar UGP	15-May-21	0.75
9GWL3	Manager's Bungalow of Amritnagar UGP	31-Aug-21	2.00
9GWL3	Manager's Bungalow of Amritnagar UGP	19-Nov-21	2.80
9GWL3	Manager's Bungalow of Amritnagar UGP	14-Jan-22	3.15
9GWL4	Nrthside of Institute of Mining Raniganj	28-May-21	4.40
9GWL4	Nrthside of Institute of Mining Raniganj	7-Aug-21	1.40
9GWL4	Nrthside of Institute of Mining Raniganj	19-Nov-21	2.50
9GWL4	Nrthside of Institute of Mining Raniganj	14-Jan-22	3.65
9GWL5	NHS Qtrs backside Nageswar Manager office, Mithapur village	15-May-21	7.40
9GWL5	NHS Qtrs backside Nageswar Manager office, Mithapur village	7-Aug-21	1.00
9GWL5	NHS Qtrs backside Nageswar Manager office, Mithapur village	29-Nov-21	3.60
9GWL5	NHS Qtrs backside Nageswar Manager office, Mithapur village	14-Jan-22	5.75
9GWL6	Backside of Ghusik colliery Mandir	20-May-21	4.00
9GWL6	Backside of Ghusik colliery Mandir	6-Aug-21	1.75
9GWL6	Backside of Ghusik colliery Mandir	26-Nov-21	1.80
9GWL6	Backside of Ghusik colliery Mandir	24-Jan-22	1.90

Piezometer water level

Station Code	Location of Piezometer/Dugwell	Date of measurement	Water level (in Meters) Below Ground Level
9/KN/AP-01	Kunustoria (Amritnagar UG)	15-May-21	52.20
9/ST/RP-03	Satgram (Mining Training Institute, Ratibati OCP)	27-May-21	18.60
9/KN/AP-01	Kunustoria (Amritnagar UG)	19-Aug-21	49.87
9/ST/RP-03	Satgram (Mining Training Institute,Ratibati OCP)	16-Aug-21	13.35
9/KN/AP-01	Kunustoria (Amritnagar UG)	22-Nov-21	49.90
9/ST/RP-03	Satgram (Mining Training Institute,Ratibati OCP)	25-Nov-21	14.15
9/KN/AP-01	Kunustoria (Amritnagar UG)	14-Jan-22	49.45
9/ST/RP-03	Satgram (Mining Training Institute,Ratibati OCP)	14-Jan-22	16.80

Plate – 1 Location Plan Cluster No. 9

Job No. 111763



GROUND WATER LEVEL

Station Code	Location of Dug Well
9GWL1	Dugwell at Bakulia High school
9GWL2	Dugwell at Perabad Kalikapur village
9GWL3	Dugwell near Manager's bunglow of Amritnagar UG
9GWL4	Dugwell at north side of Institute of Mining Raniganj
9GWL5	Dugwell at NHS qrs.backside Nageswar Manager office, Mithapur village
9GWL6	Dugwell at backside of Ghusick colly. Mandir

AIR QUALITY MONITORING STATIONS

Station Code	Type of Station	Name of Station
9A1	Permanent Air Station	Lamp Cabin, New Ghusick Colliery
9A2	Permanent Air Station	J K Nagar Project
9A3	Permanent Air Station	Agent Office, Amritnagar Colliery
9A4	Permanent Air Station	Raniganj Mining College
9A5	Post monsoon Air Station	ECL Colony, Kalidaspur Project
9A6	Post monsoon Air Station	Kalikapur Village
9A7	Post monsoon Air Station	BDO Office, Mejia
9A8	Pre monsoon Air Station	CMPF Office, Asansol
9A9	Pre monsoon Air Station	Transit House, Satgram Area
9A10	Pre monsoon Air Station	Survey Office, Mithapur Colliery

NOISE SAMPLING STATIONS

Station Code	Name of Station (Workplace)
9N1	Ratibati UG
9N2	Chapuikhas UG
9N3	Amritnagar UG
9N4	Kuardih UG
9N5	Nimcha UG
9N6	Kalipahari UG
9N7	Muslia UG
9N8	New Ghusick UG
9N9	J.K.Nagar UG

MINE/ EFFLUENT WATER STATIONS

Station Code	Mine/Effluent Water Station
9MW1	Ratibati UG
9MW2	Chapuikhas UG
9MW3	Amritnagar UG
9MW4	Kuardih UG
9MW5	Nimcha UG
9MW6	Kalipahari UG
9MW7	Muslia UG
9MW8	New Ghusick UG
9MW9	J.K.Nagar UG

Predominant Wind Direction
during October - March (Post - Monsoon)

Predominant Wind Direction
during April - September
(Pre - Monsoon & Monsoon Period)

	Kachcha Road
	Road (ECL/NH)
	Water Bodies (River, Nala, Dam)
	Protected Forest
	Reserved Forest
	Sand Dunes
	Built Up
	Quarry
	Permanent Air Station
	Pre - monsoon
	Post - monsoon

2 KMS

PLATE -2

JOB NO 111763

EASTERN COALFIELDS LIMITED

ENVIRONMENTAL STATEMENT FOR CLUSTER NO. 9

LOCATION OF MONITORING STATIONS FOR CLUSTER NO. 9

CMPDI
ISO 9001 Company

Sheet 1 OF 1