The Singareni Collieries Company Limited
(A Government Company)
Environment Department
Adriyala Project Area.

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Ref.No.APA/ENV/37/2024/81

Dt:25.09.2024

To
The Member Secretary,
T.S.Pollution Control Board,
Paryavarana Bhavan,
A-3, Industrial Estate,
Sanathnagar,
Hyderabad-500018.

Dear Sir,

Sub:Environmental Statement Form-V pertaining to Adriyala Shaft Underground Coal Mining Expansion Project of SCCL for the year 2023-24-Reg.
Ref.No: CONSENT ORDER NO:220523683174, Dt:04.08.2022.

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With reference to the above cited subject, please find enclosed herewith the Environmental Statement pertaining to Adriyala Shaft underground Coal Mining Expansion Project of SCCL for the year 2023-24.

Thanking you,

Yours faithfully,

General Manager,
Adriyala project Area.

Encl: As above
Cc: EE, TSPCB, RO-RGM.
GM (Env), KGM.
PO, ALP.

Environmental statement of Ramagundam Adriyala Shaft under ground Coal Mining expansion Project of SCCL for the year 2023-24

Introduction:-

Singareni Collieries Company Limited (SCCL) the only coal production company in South India is a joint undertaking of Government of Andhra Pradesh and Government of India, with the equity capital shares of in the ratio 51:49, SCCL produces about 10% of countries coal production and 80% of this production is supplies to Thermal Power Plants in Telangana A.P., Maharashtra and Karnataka states. The remaining part of SCCL coal production is supplied to cement companies and other industries. There are 37 underground mines and 13 opencast mines in operation.

About the Project:-

In order to meet the coal demand, SCCL has proposed an underground mine namely Adriyala shaft project covering an area of 9.6SQ.KM near Adriyala village falling under Manthani Mandal of Karimnagar District in Telangana.

The distance along strike and along dip is 2.75 kms and 1.25 kms respectively. The mine take area of the project is a part of Pandulapalli mining lease. The lease is for a period of 50 years expiring by 18.07.2041. It is bounded by Northern Latitudes of 18°39'03" to 18 °40' 34" and East Longitude of 79°34'28" to 79°35'55" covered in Survey of India Topo Sheet No.56N/10

Climatology:-

A typical tropical climate prevails in this area with hot summer, cold winters and good rainfall. Average maximum and minimum temperatures recorded are 30 – 46^0 C in summer and 15^0 – 29^{0}c in winter season. The Total rainfall in the area is 2757 mm (2023-2024).

During post monsoon and winter season i.e. from October to December wind blow from East or Northwest. In summer wind blows from Southwest and west. During monsoons wind blow from Southwest and Northwest directions. The average annual wind speed was found to be 6.1KMPH.

Industrial activities within 10KM radius this project:-

1) SCCL mines, GDK-10A, GDK-10, RG OCP-1, GDK 8 INC, GDK 8A, GDK 11A.
2) Rice mills and brick kilns of private parties.
3) SMS plant of SCCL.

FORM-V

(RULE NO.14 OF EPA 1986)

PART-I

Adriyala Shaft Under Ground Coal Mining Expansion Project

A. Salient features of the project:

1	Name of the Project		:	**ADRIYALA SHAFT UNDER GROUND COAL MINING EXPANSION PROJECT**
2	Organization		:	Singareni Collieries Company Limited
3	Coalfield		:	Godavari Valley Coal Field
4	Type of Mine		:	Under Ground mine
5	Technology		:	MECHANISED LONGWALL
6	Environmental Clearance		:	
	A	Letter No & date	:	i)J-11015/24/2004-IA-II(M) DT.30 th January ,2015
	B	Sanction capacity	:	3.14 MTPA
	C	Mining Lease Area	:	964.12Ha
	D	Date of Public Hearing	:	20-11-2003
7	Location of the Project			
	A	Village	:	Adriyala Village
	B	Tehasil	:	Manthani Mandal
	C	District	:	Peddapalli Dist.
	D	State	:	Telangana State 505212
	E	Latitude	:	N 18^0 39' 03" to 18^0 41' 34"
	F	Longitude	:	E-79^0 34' 28" to 79^0 35' 55"
	G	Topo Sheet	:	NO.56N/10
	H	Nearest railway station	:	Ramagundam Railway Station
	I	Nearest Airport	:	Hyderabad
	J	Nearest town	:	Ramagundam
8	Address for Correspondence		:	
	A	Name	:	Sri K.Nageswara Rao
	B	Designation	:	Deputy General Manager (PO)
	C	Address		Adriyala Shaft, Ramagiri (M), Peddapalli Dt.Telangana State.505212
	D	Pin Code	:	505212
	F	E-mail ID	:	po_alp_rg3 @scclmines.com
	G	Telephone No.	:	08728-201320
	H	Fax No.	:	08728-259843
9	Life of the Project		:	
	A	Date of Opening		April,2008
	B	Total Life of the project as per EMP	:	42yrs(From 2015-2016)
	C	Balance Life	:	33 yrs
10	Seams		:	
	A	Total Seams Present	:	4 seams –1,2,3 (Top & Bottom), 4
	B	Seams being worked	:	1,2 & 3 Seams
11	Depth			
	A	Minimum Depth (m)		294M(1seam),319.7M(2seam) 394.2M(3seam),406.2(4 seam).
	B	Maximum Depth (m)		740M(1seam),766M(2seam), 836M(3seam),845M(4 seam).
	C	Present working depth (m)		620M -1 Seam

12	Reserves			
	A	Total Geological Reserves	:	350.95 MT
	B	Total Extractable Reserves	:	122.33MT
	C	Reserves already Extracted	:	13.054MT
	D	Balance Reserves	:	109.276 MT
	E	Coal production during last year	:	0.994 MT
13	Land Requirement			
	A	Total Requirement (Mine Take Area)	:	964.12 Ha
	B	Forest land Involved	:	29.66 Ha
	C	Non-forest land	:	487.79 ha
		Agricultural land	:	446.67 ha
	D	Land acquired so far (Surface rights)		640.36 Ha
14	Statutory Clearances		:	
	A	Ground Water Clearance		Lr.No.2805/Hq/.III(1)/2004,dt.29-03-2005
	B	Consent for Establishment	:	Vide Lr.No. 77/TSPCB/CFE/RO-RGM/HO/2015/682, Dt.04.11.2015.
	C	Consent for Operation	:	Consent Order No.220523683174,Dt.04.08.2022, Valid up to 31.03.2027.
	D	Forest Clearance	:	Vide Lr.No.F.NO.8-109/2005-FC Dt: 02.05.2008
	E	Mining Lease	:	Pandulapalli Mining Lease, Valid from 26.05.2022 to 18.07.2041, GOMS No.12, Dt: 26.05.2022
	F	Others (Specify)	:	-
15	R&R Involved		:	Not involved

POLLUTION GENERATED

1. AIR POLLUTION SOURCES:

The activities contributing to the air pollution will be mine exhaust air, transportation of coal, and material coal handling operations like screening, crushing etc. The major pollutants expected are suspended particulate matter and oxides of nitrogen.

Air Pollution Control Measures:

a. Water spraying arrangements are being maintained
   i. At loading & un loading points ,at conveyor transfer points in Under Ground, and along the belt conveyor from mine to CHP.
b. Restricted open burning of coal near mine and mine premises.
c. Regular cleaning of coal dust heaps on surface
d. Black topping of all the approach routes to the mine was done.
e. Watering of connected roads and nearby the bunker at regular intervals to arrest the air borne dust.
f. Plantation was done within the mine premises and approach roads to the mine .
g. Periodic maintenance of vehicles etc.
h. The underground working of the mine is well ventilated by Mechanical Ventilator and arranged air-conditioning also.

2. Water pollution Sources:

Normally the mine discharge water pumped out from the mine is re-utilized for industrial purposes plantation and drinking water supply at the project. Balance water, if any, discharged after necessary treatment into the nearby natural streams i.e Bokkala Vagu.

Water pollution control measures.

1. The mine discharge water that which may contain coal fines, needs sedimentation, before discharge into the natural water course/open land. The treatment facilities such as sedimentation, filtration and chlorination are provided for mine discharge. So as to conform to the effluent standards as prescribed by MoEF.
2. The service building effluents are collected by a sewage system and treatment by means of septic tanks and soak pits there is no appreciable impact when the same is discharged after treatment.
3. The domestic effluents from the existing townships are already treated in septic tanks followed by soak pits be treated effluents form the septic tank/soak pit is being let out into the natural oxidation pond. The quality of the treated effluent from the oxidation pond is regularly monitored, which is finally joins the Bokkala vagu flowing adjacent to it. However, regular maintenance of the septic tanks/soak pits and periodical cleaning of sludge from the natural oxidation pond will be taken up for effective functioning of the same.

3. Sources of noise

i. Exhaust fan (mine ventilation fans)
ii. Pit-head coal handling arrangements
iii. Vehicular movement.

The back ground noise levels would increase slightly due to the above noise generating sources. The mitigation measures proposed are aimed at basically in ensuring that the exposure of human working in different environment is within the acceptable limits.

Noise control measures.

1. The main mechanical ventilator (MV fan) is provided with evasive which dampens the noise.
2. In the high noise intensity working areas/zones earmuffs or earplugs or any other suitable personal protective equipment would be provided.
3. Regular noise level monitoring would be done periodically for taking corrective action, wherever required.
4. Management of manpower working in high noise level areas such that the assignment is distributed amongst more persons thereby reducing individual exposure to high noise level to few hours in a shift and maintaining equivalent noise level exposure a shift to acceptable limit.
5. Extensive plantation of green belt and vegetation along the roads and around the offices to create a barrier or screen between the source and the receiver so that the noise is absorbed and the exposure level is minimized.

Note: There is no direct process involved in the extraction of coal, coal reserves hidden under the earth crust are extracted by making an entry from surface through over lying strata. Hence there is no justification in comparing the raw material consumption with coal output, Raw material consumption varies from mine to mine depends upon the geological conditions, depth, extent of mine workings method of working etc, Explosives are used for blasting the coal, Different types of machinery is used for drilling, coal transportation, ventilation and water pumping .

Timber is used for supporting the roof strata. Girders, roof bolts, channels are used for supporting the roof and sides, rails and dog nails are used for track lying. Tubs are used for carrying the coal, cement, sand, masonry stone and bricks are used for construction of ventilation and fire stopping. Diesel oil is used for conveyance vehicles on surface, petrol, is used for conveyance vehicles on surface. Lubricating oils, gear oil, grease, engine oil and transforms oil is used for the maintenance of machinery in underground and surface.

PART -II

1. Plantation:

1	No of plants planted during last year	150
	Area was planted during the last year	0.2 Ha
2	Total area brought under plantation so far.	30.2 Ha
	Avenue plantation from Vakilpalli Road to OC-II Bokkalavagu	12.00 Kms
3	Total no. of plants planted so far since inception	109388
4	Species of plants planted	Bamboo, Kanuga, ficus, tamarind, misc.

2. Water Balance Statement:

Sl	Description	Quantity in KLD
1	Average quantity of water pumped out of the mine	3700 KLD
2	Water used for Dust suppression, AC Chilling Plant &	300 KLD

	Fire fighting	
3	Water used for long wall operations.	1050 KLD
4	Water used for plantation	100 KLD
5	Water supplied for domestic purpose	50 KLD
6	Excess water let out	2200 KLD
7	Point of discharge (as per CFO)	Bokkalavagu
8	Discharge Consent from TSPCB	13000 KLD

3. SUBSIDENCE MANAGEMENT DETAILS:

Total seam wise area developed (including Depillaring area) so far: 300 Ha

(a) Subsidence Management

a. Total area effected due to depillared	197.71 Ha
b.Max crack width observed so far	30mm
c. max subsidence occurred so far	2.10 m on dump yard and 1.50 m on original ground
d. whether the vegetation effected if any	NIL
g.If affected, give details	NIL
h. Total man shifts worked in subsidence area for crack filling and dozing	NIL
i. Total dozer shifts worked for subsidence reclamation	NIL
j. Area filled up with OB/ subsoil material in ha	NIL
k. Quantity of OB/ Subsoil dumped: in L.cu.m.	NIL
l. Maximum height of dump:in m	90.00
m. Total Subsidence area planted so far in ha.	NIL
n. Total expenditure incurred so far on subsidence area treatment so far	NIL

4. <u>Energy and Resource conservation measures</u>

- Underground pumping reorganization done and No of pumps reduced.
- Full Load utilization for Conveyer belts.

5. <u>Steps taken to conserve oil and grease:</u>

- Use of specially designed trolley for Oil barrels form surface to underground.
- Use of specially designed canister for grease transport.
- Issue of only required quantity of oil and grease.
- Ensuring the non spillage of oil.

6. Major Raw materials Consumed during the year: 2023-24

Sl. No	Material	Unit	Consumption During The Year
1	Tub Lubricant oils	Ltrs	-
2	Gear oils & other lubricant oils.	Ltrs.	18270
3	Hydraulic oils	Ltrs.	79910
4	Transformer oils	Ltrs	-
5	H.S.D. Oil	Ltrs.	237860
6	Petrol	Ltrs.	540
7	Engine oil	Ltrs.	
8	Cement	Bags	2820
9	Paint Enamel	Ltrs.	161.5
10	Paint red oxide	Ltrs.	50
11	Grease 218-561	Kgs	5642
12	Tub paints	Ltrs	-
13	Iron & Steel	M.T	17.97
14	Girders	M.T	273.09
15	Rails	M.T	-
16	Roof bolts and nuts	Nos.	16491
17	Channels 8-5	M.T	18.944
18	Dog nails	Kgs	784.5
19	Tub pedestals	Nos	-
20	Flat Iron sheets	M.T	10.950
21	G.I Pipes	mtrs	8036
22	M.S Pipes	mtrs	5426
23	Drill rods	Nos	874
24	Drill bits	Nos	7868
25	Coal baskets	Nos	20
26	Cap lamp batteries	Nos	360

7. Shale generated and its management during last year :

Total shale generated during the year	Nil
Where this shale is dumped	Nil
Whether these shale dumps are covered with top soil or not	Nil
Expenditure incurred on shale dumping and on reclamation of shale dump	Nil

8. **Waste materials generated and returned to area stores during the year**

Sl. No	Waste material	Quantity generated/ stock as on 01.04.2023	Quantity used at mine	Quantity return to area stores (T)	Stock as on 31.03.2024
1	Scrap iron in M.T.	-	-	260.56T	-
2	Drill bits in nos.			6200Nos	
3	Drill rods in nos.			695Nos	
4	Cap lamp batteries in nos.	-	-	-	-
5	Waste oils in liters	-	-	-	-
6	Old conveyor belt in meters	-	-	67.48T	-
7	Old oil barrels in nos	-	-	-	-

PART – III

REJECTS (STONE, SHALE AND CLAY)

Rejected separated from coal consists of stone pieces, carbonaceous shale and clay material. These rejects are picked out from the coal manually when coal is passing on slow moving conveyor belts. These rejects are loaded into trucks and dumped over low-lying areas and in ditches in the townships.

OLD IRON SCRAP AND OTHER WASTE

The scrap iron material generated at workshops and stores consists of steel scrap of various types. Many of these old materials are used at unit level for some other appropriate use. For example old haulage wire ropes are used for roof stitching in underground mines and for fencing on surface, worn out old conveyor belts are reused for coursing of air in underground workings , for making washers and wipers and cushioning over the chute plates at conveyor transfer points. Flat iron scrap is used for making washers; liners etc., some of the scrap iron materials such as tub pedestals couplings are melted in the cupola furnace and re casted into different items. The old iron scrap that cannot be used at unit level/workshops is sent to area stores from where it is disposed of by selling.

PART-IV

CHARACTERISATION OF SOLID WASTE AND DISPOSAL PRACTICE

Solid wastes generated at coal screening plants are stones, carbonaceous shale and clay. These waste materials are picked out from coal when passing on slow moving belts by manual. These rejects are loaded into trucks and dumps at low-lying areas and ditches in the townships.

The iron scrap of various types generated at mine, workshops are collected and sent to Area Stores.

PART-V

IMPACTS OF POLLUTION CONTROL MEASEURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION

1. About 13% of total mine discharge water is used for drinking, washing, dust suppression, plantation after treatment at mine filter beds. The excess water let out on surface is used for irrigation by the villagers nearby directly or indirectly through irrigation tanks. Thus the entire quantity of water pumped out from the mine is utilized either directly or indirectly. Approximately an amount of Rs. 2.15 lakhs is spent for mine water treatment during the year.
2. As a result of water spraying being done at the working places coal transportation points, mine premises, coal loading points, along the conveyor belts, the dust is getting suppressed near the source and other by preventing it becoming air borne and spreading into the surrounding areas. An amount of about Rs. 4.50 lakhs is spent in the form of wages and other costs for water spraying purposes during the year.

PART –VI

The circulars and orders of DGMS including the rules under Mines ACT will be strictly adhered to in respect of occupational health and safety.

However some measures regarding occupational safety and health are given below:

a) Provision of water spraying
b) Provision of rest shelter for mine workers with amenities like drinking water, fans, toilets etc.
c) Periodical medical examination of work force.
d) Provision of personal protection equipment.
e) First Aid facilities in the mine.

PART-VII

ADDITIONAL MEASURES/INVESTMENT PROPOSALS FOR ENVIRONMENTAL PROTECTION AND OF POLLUTION.

1. Reimbursement of cost of one LPG gas cylinder (at IOC) rates per month to the employees using LPG gas to discourage use of coal for domestic use. All the employees are using LPG gas at present.
2. Development of green belt over vacant places in and around the mine.

PART-VIII

SOCIO-ECONOMIC MEASURES

1	Quarters are constructed on non coal bearing areas with facilities such as Hospitals, Schools, Market place, Post Office, Telegraph Office, Power Supply, Community Halls, Recreation Clubs, Play Grounds and protected water supply and well netted sewage and drainage line systems.
2	LPG gas is being supplied free of cost to the employees.
3	Free medical treatment is being given to workmen and their families, and all children of workmen are covered under immunization programme.
4	Incentive schemes for popularizing family planning is in vogue where by Rs.1000 paid for the persons undergoing vasectomy operation and Rs.800/- paid for spouse undergoing tubectomy operations in addition to the grant of 6 days special leave.
5	Two RO plants were provided in Ladnapur & Nagepalli Villages
6	Land given to JNTUH, Krushi vignan, Horticulture polytechnic
7	Bore wells are provided in colonies. The drinking water which is supplied to the colony is chlorinated to the prescribed standards.
8	Recreation clubs are provided with adequate facilities
9	Free medical camps are being conducting regularly to the surrounding villagers
10	Encouragement to sports and games is given by forming works people's sports and games association for conducting inter area meets etc.
11	Giving training to the unemployed youth in different types of self employment schemes through Singareni SEWA Samithi

Project Officer,
ALP-APA Area.
PO/ALP,APA.

ANNEXURE-I

ANALYSIS OF AIR QUALITY MOINITORING REPORTS OF ADRIYALA LONGWALL PROJECT FOR THE YEAR APRIL 2023 TO MARCH 2024

1. ADRIYALA SHAFT (CORE ZONE).

S.No	Location name & code date of sampling	parameter			
	Adriyala shaft (CA-8)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
	Coal mine standards, GSR 742(E),Dated 25.09.2000 & NAAQS, Dated 18.11.2009.	250	-	120	120
1	13.04.2023	184	52.3	12.1	20.7
2	28.04.2023	206	51.8	9.2	14.4
3	13.05.2023	188	53.1	12.0	16.3
4	27.05.2023	209	54.9	12.4	17.5
5	13.06.2023	204	53.9	12.9	19.4
6	23.06.2023	141	56.4	11.1	13.3
7	11.07.2023	84	40.7	11.7	15.7
8	25.07.2023	96	40.7	10.5	12.1
9	08.08.2023	91	38.6	10.1	13.2
10	24.08.2023	106	34.8	9.8	12.7
11	11.09.2023	107	52.6	9.6	13.1
12	25.09.2023	127	59.2	10.2	13.9
13	10.10.2023	164	76.1	10.7	14.1
14	25.10.2023	152	69.8	11.2	15.4
15	10.11.2023	142	57.8	10.7	17.9
16	25.11.2023	172	57.5	9.5	14.2
17	09.12.2023	128	40.6	8.5	15.5
18	26.12.2023	206	51.4	15.0	20.2
19	09.01.2024	164	53.9	9.8	15.5
20	24.01.2024	184	62.8	9.5	13.9
21	10.02.2024	163	53.7	13.6	19.3
22	26.02.2024	175	56.2	12.8	18.4
23	13.03.2024	191	54.6	14.5	20.1
24	27.03.2024	204	50.7	14.7	20.7
	Minimum	**84.0**	**34.8**	**8.5**	**12.1**
	Maximum	**209**	**76.1**	**15**	**20.7**
	Average	**157.8**	**53.1**	**11.3**	**16.1**
	98 percentile	**207.6**	**73.2**	**14.9**	**20.7**

9. PANNUR VILLAGE (BUFFER ZONE)

S.No	Location name & code date of sampling	Parameter			
	Pannur Village (BA-3)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
	Coal mine standards, GSR 742(E), Dated 25.09.2000 & NAAQS, Dated 18.11.2009.	100	60	80	80
1	14.04.2023	76	42.5	8.6	14.2
2	29.04.2023	78	36.4	9.7	14.2
3	14.05.2023	59	32.6	8.8	14.2
4	29.05.2023	81	38.5	11.6	16.2
5	14.06.2023	84	36.9	9.5	15.7
6	24.06.2023	68	36.2	9.0	13.2
7	11.07.2023	45	25.7	10.0	12.5
8	25.07.2023	42	22.5	8.6	13.0
9	08.08.2023	47	27.2	9.4	13.0
10	24.08.2023	49	29.5	8.8	12.1
11	11.09.2023	55	29.6	9.2	12.5
12	25.09.2023	55	29.2	9.0	12.7
13	10.10.2023	64	34.6	8.2	11.4
14	25.10.2023	86	47.2	10.9	13.8
15	10.11.2023	74	39.7	9.6	13.3
16	24.11.2023	72	38.2	9.2	13.1
17	09.12.2023	91	43.6	8.1	15.5
18	25.12.2023	81	35.5	8.3	14.3
19	09.01.2024	69	37.8	11.4	14.6
20	23.01.2024	65	39.6	8.1	11.4
21	09.02.2024	76	41.4	9.1	13.8
22	24.02.2024	71	36.2	9.7	13.9
23	14.03.2024	85	42.1	12.7	18.5
	24.03.2024	81	39.1	13.3	19.7
	Minimum	**42.0**	**22.5**	**8.1**	**11.4**
	Maximum	**91**	**47.2**	**13.3**	**19.7**
	Average	**68.9**	**35.9**	**9.6**	**14.0**
	98 percentile	**88.7**	**45.5**	**13.0**	**19.1**

3. LADNAPUR VILLAGE (BUFFER ZONE).

S. No	Location name & code date of sampling	Parameter			
	LADNAPUR VILLAGE (BA-5)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
	Coal mine standards, GSR 742(E), Dated 25.09.2000 & NAAQS, Dated 18.11.2009.	**100**	**60**	**80**	**80**
1	14.04.2023	63	38.4	9.4	17.1
2	29.04.2023	73	32.5	9.7	15.0
3	14.05.2023	68	40.5	10.9	18.2
4	29.05.2023	78	36.9	10.7	15.8
5	14.06.2023	76	32.7	8.4	14.3
6	24.06.2023	58	29.6	9.5	12.5
7	11.07.2023	50	26.4	10.3	14.7
8	25.07.2023	56	29.2	8.5	12.5
9	08.08.2023	57	28.4	9.5	12.8
10	24.08.2023	52	28.4	9.0	12.5
11	11.09.2023	63	33.4	8.8	12.8
12	25.09.2023	58	29.4	8.5	12.2
13	10.10.2023	79	39.9	9.7	12.4
14	25.10.2023	55	28.9	9.2	12.6
15	10.11.2023	69	36.8	9.3	12.7
16	24.11.2023	72	38.2	9.2	13.1
17	09.12.2023	78	39.8	8.8	13.4
18	25.12.2023	70	42.6	8.4	11.6
19	09.01.2024	82	44.9	10.0	13.9
20	23.01.2024	75	38.2	8.8	12.2
21	09.02.2024	84	46.8	9.5	12.4
22	24.02.2024	78	38.9	10.8	14.6
23	14.03.2024	81	36.6	13.6	19.2
24	24.03.2024	73	45.2	14.7	21.8
	Minimum	**50.0**	**26.4**	**8.4**	**11.6**
	Maximum	**84**	**46.8**	**14.7**	**21.8**
	Average	**68.7**	**35.9**	**9.8**	**14.2**
	98 percentile	**83.1**	**46.1**	**14.2**	**20.6**

4. NAGEPALLI VILLAGE (BUFFER ZONE)

S. No	Location name & code date of sampling	Parameter			
	NAGEPALLI Village (BA-9)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
	Coal mine standards, GSR 742(E), Dated 25.09.2000 & NAAQS, Dated 18.11.2009.	**100**	**60**	**80**	**80**
1	14.04.2023	63	38.4	9.4	17.1
2	29.04.2023	73	32.5	9.7	15.0
3	14.05.2023	68	40.5	10.9	18.2
4	29.05.2023	78	36.9	10.7	15.8
5	14.06.2023	76	32.7	8.4	14.3
6	24.06.2023	58	29.6	9.5	12.5
7	11.07.2023	50	26.4	10.3	14.7
8	25.07.2023	56	29.2	8.5	12.5
9	08.08.2023	57	28.4	9.5	12.8
10	24.08.2023	52	28.4	9.0	12.5
11	11.09.2023	63	33.4	8.8	12.8
12	25.09.2023	58	29.4	8.5	12.2
13	10.10.2023	79	39.9	9.7	12.4
14	25.10.2023	55	28.9	9.2	12.6
15	10.11.2023	69	36.8	9.3	12.7
16	24.11.2023	72	38.2	9.2	13.1
17	09.12.2023	78	39.8	8.8	13.4
18	25.12.2023	70	42.6	8.4	11.6
19	09.01.2024	82	44.9	10.0	13.9
20	23.01.2024	75	38.2	8.8	12.2
21	09.02.2024	84	46.8	9.5	12.4
22	24.02.2024	78	38.9	10.8	14.6
23	14.03.2024	81	36.6	13.6	19.2
24	24.03.2024	73	45.2	14.7	21.8
	Minimum	**50.0**	**26.4**	**8.4**	**11.6**
	Maximum	**84**	**46.8**	**14.7**	**21.8**
	Average	**68.7**	**35.9**	**9.8**	**14.2**
	98 percentile	**83.1**	**46.1**	**14.2**	**20.6**

3. LADNAPUR VILLAGE (BUFFER ZONE).

S. No	Location name & code date of sampling	Parameter			
	LADNAPUR VILLAGE (BA-5)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
	Coal mine standards, GSR 742(E), Dated 25.09.2000 & NAAQS, Dated 18.11.2009.	**100**	**60**	**80**	**80**
1	14.04.2023	63	38.4	9.4	17.1
2	29.04.2023	73	32.5	9.7	15.0
3	14.05.2023	68	40.5	10.9	18.2
4	29.05.2023	78	36.9	10.7	15.8
5	14.06.2023	76	32.7	8.4	14.3
6	24.06.2023	58	29.6	9.5	12.5
7	11.07.2023	50	26.4	10.3	14.7
8	25.07.2023	56	29.2	8.5	12.5
9	08.08.2023	57	28.4	9.5	12.8
10	24.08.2023	52	28.4	9.0	12.5
11	11.09.2023	63	33.4	8.8	12.8
12	25.09.2023	58	29.4	8.5	12.2
13	10.10.2023	79	39.9	9.7	12.4
14	25.10.2023	55	28.9	9.2	12.6
15	10.11.2023	69	36.8	9.3	12.7
16	24.11.2023	72	38.2	9.2	13.1
17	09.12.2023	78	39.8	8.8	13.4
18	25.12.2023	70	42.6	8.4	11.6
19	09.01.2024	82	44.9	10.0	13.9
20	23.01.2024	75	38.2	8.8	12.2
21	09.02.2024	84	46.8	9.5	12.4
22	24.02.2024	78	38.9	10.8	14.6
23	14.03.2024	81	36.6	13.6	19.2
24	24.03.2024	73	45.2	14.7	21.8
	Minimum	**50.0**	**26.4**	**8.4**	**11.6**
	Maximum	**84**	**46.8**	**14.7**	**21.8**
	Average	**68.7**	**35.9**	**9.8**	**14.2**
	98 percentile	**83.1**	**46.1**	**14.2**	**20.6**

5. NAGARAM VILLAGE (BUFFER ZONE)

S. No	Location name & code date of sampling	Parameter			
	Nagaram Village (BA-8)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
	Coal mine standards, GSR 742(E), Dated 25.09.2000 & NAAQS, Dated 18.11.2009.	**100**	**60**	**80**	**80**
1	15.04.2023	81	45.2	11.7	16.8
2	30.04.2023	82	41.9	8.0	11.2
3	15.05.2023	78	43.7	10.3	18.2
4	30.05.2023	88	42.5	12.1	18.1
5	15.06.2023	85	39.1	9.6	18.5
6	26.06.2023	73	38.6	8.2	13.2
7	12.07.2023	56	29.3	9.9	12.7
8	26.07.2023	49	27.7	9.0	12.5
9	09.08.2023	56	31.8	9.5	13.8
10	25.08.2023	63	31.6	9.3	13.9
11	12.09.2023	53	28.9	9.3	13.3
12	26.09.2023	68	34.2	8.8	11.5
13	11.10.2023	74	39.7	8.3	13.2
14	26.10.2023	75	39.5	9.2	12.5
15	11.11.2023	80	44.5	9.1	12.4
16	25.11.2023	79	42.8	8.5	13.3
17	11.12.2023	79	39.3	8.5	14.4
18	26.12.2023	62	36.2	7.9	10.3
19	10.01.2024	71	38.7	9.7	13.6
20	24.01.2024	86	47.4	8.8	11.4
21	10.02.2024	82	44.1	9.8	12.9
22	26.02.2024	74	37.8	8.4	12.6
23	14.03.2024	68	40.6	9.7	13.1
24	24.03.2024	64	43.1	11.8	16.0
	Minimum	**46.0**	**24.6**	**7.9**	**10.3**
	Maximum	**88**	**47.4**	**12.1**	**18.5**
	Average	**70.9**	**38.2**	**9.3**	**13.6**
	98 percentile	**87.1**	**46.4**	**12.0**	**18.4**

ANALYSIS OF WATER QUALITY MOINITORING REPORTS OF ADRIYALA LONGWALL PROJECT FOR THE YEAR APRIL 2023 TO MARCH 2024.

1. ALP MINE DISCHARGE.

S.No	Location name & code date of sampling	Parameters					
	ALP Mine Discharge. (EW-9)	pH (at 25^0 C)	Total Suspended Solids at 105^0 C	Total Dissolved Solids at 180^{0}C	Chemical Oxygen Demand	BOD	Oil& Grease
	Unit	--	mg/L	mg/L	mg/L	mg/l	mg/L
	Test Method	4500 - H+B	2540-D	2540-C	5220-D	IS 3025	5520-B
	MoEF GSR 742(E) and GSR 801(E) Effluent Standards for Coal mines.	5.5 to9.0	100	--	250	30	10
-1	15.04.2023	7.3	55	1026	40	8.3	1
2	24.04.2023	7.3	38	984	35	8.6	1.4
3	15.05.2023	7.7	49	992	40	13.2	1.2
4	24.05.2023	7.5	53	1028	39	12.2	1
5	07.06.2023	7.9	39	1466	36	5.1	1.2
6	30.06.2023	7.9	29	969	27	5.6	1
7	15.07.2023	7.8	34	810	31	6.6	1
8	31.07.2023	7.4	22	992	39	4.6	1.4
9	14.08.2023	8.1	46	1011	43	6.3	1.2
10	31.08.2023	7.9	38	856	36	5.2	1.6
11	15.09.2023	6.8	28	955	32	4.8	1
12	29.09.2023	7.2	32	1124	40	8.2	1.4
13	13.10.2023	7.7	40	1266	35	6.6	1.2
14	31.10.2023	7.3	36	810	19	3.1	1.8
15	15.11.2023	7.5	47	1025	39	6.4	1.2
16	30.11.2023	7.9	39	965	36	5.5	1
17	15.12.2023	7.4	49	896	32	4.4	1.4
18	30.12.2023	7.7	28	1192	27	5.1	1.2
19	13.01.2024	7.4	46	1366	40	5.1	1
20	30.01.2024	7.7	20	992	47	12.1	1.2
21	15.02.2024	7.8	26	1285	31	6.3	<1
22	28.02.2024	7.2	37	1158	36	7.3	<1
23	15.03.2024	7.6	21	1098	27	5.3	1.2
24	30.03.2024	7.9	36	1211	40	7.4	1
	Min	**6.8**	**20.0**	**810.0**	**19.0**	**3.1**	**1.0**
	Average	**7.6**	**37.0**	**1061.5**	**35.3**	**6.8**	**1.2**
	98per	**8.0**	**54.1**	**1420.0**	**45.2**	**12.7**	**1.7**
	Max	**8.1**	**55**	**1466**	**47**	**13.2**	**1.8**

ANNEXURE-III

Table 4.3 Physico-Chemical and Bacteriological Characteristics of Surface Water

Table 4.3.1 Physico-Chemical and Bacteriological Characteristics of Surface Water as per CPCB Water Quality Criteria

Sl.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria					RESULT		
				Class A	Class B	Class C	Class D	Class E	SW-1 Bokkalavagu upstream at Mulkalapalli Village	SW-2 Bokkalavagu downstream near Rachapalli Village	SW-3 Julapalli Village Tank
1	pH	-	4500-H⁺B	6.5-8.5	6.5-8.5	6.0 – 9.0	6.5-8.5	6.0-8.5	8.5	8.5	8.2
2	Electrical Conductivity	µmhos /cm	2510-B	-	-	-	-	2250 µmhos/cm	860	1675	1025
3	Dissolved Oxygen (DO)	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	4 mg/l or more	-	5.2	5.1	5.0
4	Bio chemical Oxygen Demand (3 days 27° C)	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	-	-	2.0	3.0	2.0
5	Total Coliforms	MPN/ 100mL	9221 B	50 or less	500 or less	5000 or less	-	-	220	540	240
6	Free Ammonia (as N)	mg/L	4500-NH_3-F	-	-	-	1.2 mg/L or less	-	BDL	BDL	BDL
7	Boron as B	mg/L	3120-B	-	-	-	-	Less than 2 mg/L	0.12	0.08	0.15
8	SAR	-	-	-	-	-	-	Less than 26	1.62	4.42	2.20

Table 4.3.2 Physico-Chemical Characteristics of Surface Water at Selected Locations in the Study Area

Sl.No	Parameters	Unit	Test Method	RESULT		
				SW-1 Bokkalavagu upstream at Mulkalapalli Village	SW-2 Bokkalavagu downstream near Rachapalli Village	SW-3 Julapalli Village Tank
1	Colour	Hazen	2120. B	5	5	10
2	Odour	TON	2150. B	No odour observed	No odour observed	No odour observed
3	Temperature	°C	2550. B	25.2	25.2	25.2
4	Turbidity	NTU	2130. B	4.2	11.4	6.3
5	Total Dissolved Solids at 180° C	mg/L	2540.C	346	620	485
6	Total Suspended Solids at 105° C	mg/L	2540. D	12	37	18
7	Chemical Oxygen Demand	mg/L	5220. D	16	20	24
8	Chlorides as Cl^-	mg/L	4500-Cl^-.B	55	98	87
9	Sulphates as SO_4^{2-}	mg/L	4500-SO_4^{2-}.E	32	67	56
10	Fluoride as F^-	mg/L	4500-F^-.C	0.32	0.48	0.38
11	Calcium as Ca	mg/L	3500-Ca.B	42	96	52
12	Magnesium as Mg	mg/L	3500-Mg.B	28	63	39
13	Sodium as Na	mg/L	3500-Na.B	42	50	41
14	Potassium as K	mg/L	3500-K.B	3.3	0.51	3.2
15	Nitrites as NO_2	mg/L	4500-NO_2^-.B	BDL	0.05	0.022
16	Nitrates as NO_3	mg/L	4500-NO_3^-.B	5.2	19.3	5.1
17	Total Phosphates	mg/L	4500-P-D	0.062	0.14	0.09
18	Ammonical Nitrogen as NH_3-N	mg/L	4500-NH_3-C	BDL	BDL	BDL
19	Phenolic compounds as C_6H_5OH	mg/L	5530-D	BDL	BDL	BDL
20	Oil & Grease	mg/L	5520. B	<1	<1	<1
21	Carbonates as CO_3	mg/L	2320. B	nil	nil	Nil
22	Bi-carbonates as HCO_3	mg/L	2320. B	215	358	320
23	Fecal Coliforms	MPN/100mL	9221 E	17	17	14
24	Zinc as Zn	mg/L	3120. B	0.13	0.09	0.07
25	Iron as Fe	mg/L	3120. B	0.42	0.51	0.22

Sl.No	Parameters	Unit	Test Method	RESULT		
				SW-1 Bokkalavagu upstream at Mulkalapalli Village	SW-2 Bokkalavagu downstream near Rachapalli Village	SW-3 Julapalli Village Tank
26	Arsenic as As	mg/L	3120. B	BDL	BDL	BDL
27	Lead as Pb	mg/L	3120. B	BDL	BDL	BDL
28	Cadmium as Cd	mg/L	3120. B	BDL	BDL	BDL
29	Total Chromium as Cr	mg/L	3120. B	BDL	BDL	BDL
30	Nickel as Ni	mg/L	3120. B	BDL	BDL	BDL
31	Copper as Cu	mg/L	3120-B	BDL	BDL	BDL
32	Selenium as Se	mg/L	3120-B	BDL	BDL	BDL

Table 4.3 Physico-Chemical, Bacteriological Characteristics of Groundwater Collected within the Study Area

Table 4.3.1 Organoleptic and Physical Parameters

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT	
						GW-2 Julapalli Village Hand Pump	GW-4 Hand Pump near Ramayyapalli Village
1.	Colour	Hazen	2120. B	5	15	5	5
2.	Odour	TON	2150. B	Agreeable	Agreeable	Agree.	Agree.
3.	pH	-	4500-H+B	6.5 to 8.5	No relaxation	8.4	8.5
4.	Taste	FTN	2160. B	Agreeable	Agreeable	Agree.	Agree.
5.	Turbidity	NTU	2130. B	1	5	0.36	0.88
6.	Total Dissolved Solids at 180° C	mg/L	2540.C	500	2000	615	1012

Table 4.3.2 General Parameters Concerning Substances Undesirable in Excessive Amounts

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT	
						GW-2 Julapalli Village Hand Pump	GW-4 Hand Pump near Ramayyapalli Village
1.	Calcium as Ca	mg/L	3500-Ca.B	75	200	75	76
2.	Magnesium as Mg	mg/L	3500-Mg.B	30	100	67	68
3.	Chlorides as Cl-	mg/L	4500-Cl-.B	250	1000	73	218
4.	Sulphates as SO42-	mg/L	4500-SO42- .E	200	400	67	102
5.	Fluoride as F-	mg/L	4500-F-.C	1.0	1.5	0.9	1.3
6.	Nitrates as NO3	mg/L	4500-NO3-.B	45	No relaxation	31	44
7.	Total Alkalinity as CaCO3	mg/L	2320. B	200	600	405	520
8.	Total Hardness as CaCO3	mg/L	2340. C	200	600	463	470
9.	Sulphide as H_2S	mg/L	4500-S2-F&D	0.05	No relaxation	BDL	BDL
10.	Total Ammonia-N	mg/L	IS 3025 (Part 34)	0.5	No relaxation	BDL	BDL
11.	Phenolic compounds as C6H5OH	mg/L	5530-D	0.001	0.002	BDL	BDL
12.	Residual free chlorine	mg/L	4500-Cl-.B	0.2	1.0	BDL	BDL
13.	Mineral oil	mg/L	IS:3025 (part 39)	0.5	No relaxation	absent	absent
14.	Anionic Detergents (as MBAS)	mg/L	IS:13428:2005K	0.2	1.0	<0.2	<0.2
15.	Aluminium as Al	mg/L	3120-B	0.03	0.2	BDL	BDL
16.	Barium as Ba	mg/L	3120. B	0.7	No relaxation	0.19	0.21
17.	Boron as B	mg/L	3120-B	0.5	2.4	0.08	0.11
18.	Iron as Fe	mg/L	3120-B	1.0	No relaxation	0.42	0.66
19.	Zinc as Zn	mg/L	3120-B	5	15	0.13	0.17
20.	Copper as Cu	mg/L	3120-B	0.05	1.5	BDL	BDL
21.	Manganese as Mn	mg/L	3120-B	0.1	0.3	BDL	BDL
22.	Selenium as Se	mg/L	3120-B	0.01	No relaxation	BDL	BDL

Table 4.3.3 Parameters Concerning Toxic Substances

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT	
						GW-2 Julapalli Village Hand Pump	GW-4 Hand Pump near Ramayyapalli Village
1.	Cadmium as Cd	mg/L	3120-B	0.003	No relaxation	BDL	BDL
2.	Cyanide as CN-	mg/L	4500-CN-.F	0.05	No relaxation	BDL	BDL
3.	Lead as Pb	mg/L	3120-B	0.01	No relaxation	BDL	BDL
4.	Molybdenum as Mo	mg/L	3120. B	0.07	No relaxation	BDL	BDL
5.	Nickel as Ni	mg/L	3120-B	0.02	No relaxation	BDL	BDL
6.	Total Arsenic as As	mg/L	3120-B	0.01	0.05	BDL	BDL
7.	Total Chromium as Cr	mg/L	3120-B	0.05	No relaxation	BDL	BDL
8.	Mercury as Hg	µg/L	3500-Hg.B	0.001	No relaxation	BDL	BDL
9.	**Pesticides:** α–BHC, β-BHC, γ-BHC, δ-BHC, o, p-DDT, p, p' –DDT, Endosulfan, β- Endosulfan, Aldrin, Dieldrin	µg/L	6630. D	Absent	0.001	ND	ND
	2,4-D, Carboryl (Carbonate) Malathion Methyl Parathion Anilophos, Chloropyriphos	Qualitative Analysis	6630. D	Absent	0.001	ND	ND
10.	**Polyaromatic Hydrocarbons (PAH's):** Acenaphthene, Acenaphthylene, Anthracene, B(a)A, B(a)P, B(b)F, B(k)F, Pyrene, Dibenz (a,h) anthracene, Fluoranthene, Fluorene, Indeno (1,2,3-(d) Pyrene, Naphthalene, Phenanthrene, Pyrene, Methyl Naphthalene	µg/L	6440.C	--	--	ND	ND

Table 4.3.4 Bacteriological Quality of Drinking water

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT	
						GW-2 Julapalli Village Hand Pump	GW-4 Hand Pump near Ramayyapalli Village
1.	Total Coliforms	MPN/100 mL	9221 B	-	-	<1.8	<1.8
2.	Fecal Coliforms	MPN/100 mL	9221 E	-	-	<1.8	<1.8

ANNEXURE-V

ANALYSIS OF NOISE MONITORING REPORTS- ADRIYALA SHAFT PROJECT FROM APRIL 2023 TO MARCH 2024

1. ADRIYALA SHAFT SITE OFFICE (CORE ZONE).

Sl. No.	Location name & code & date of sampling	Standard limits of noise	
	ALP Site Office (CN-5)	Day time	Night time
		75	70
		Noise levels in dB(A)	
		Leq Day	Leq Night
1	14.04.2023	69.5	52.8
2	27.04.2023	66.9	56.8
3	14.05.2023	65.4	54.7
4	28.05.2023	61.9	52.5
5	14.06.2023	66.8	53.8
6	26.06.2023	50.1	40.7
7	11.07.2023	42.6	46.4
8	25.07.2023	49.3	37.4
9	08.08.2023	57.6	43.9
10	24.08.2023	58.3	43.3
11	11.09.2023	54.4	46.6
12	25.09.2023	49.0	39.5
13	10.10.2023	56.3	46.6
14	26.10.2023	64.7	54.2
15	11.11.2023	54.0	48.6
16	25.11.2023	56.8	42.8
17	11.12.2023	49.9	30.8
18	25.12.2023	56.1	42.1
19	09.01.2024	61.6	54.0
20	26.01.2024	56.1	42.1
21	07.02.2024	54.8	46.4
22	24.02.2024	57.1	48.2
23	14.03.2024	56.7	44.8
24	26.03.2024	55.5	46.1
	Minimum	**42.6**	**30.8**
	Maximum	**69.5**	**56.8**
	Average	**57.1**	**46.5**
	98 percentile	**68.3**	**55.8**

2. MULKALAPALLI VILLAGE (BUFFER ZONE).

Sl.No	Location name & Code. Date of Sampling	Standard limits of Noise	
	Mulkalapalli Village (BN-1)	Day time	Night time
		55	45
		Noise levels in dB (A)	
1	14.04.2023	41.2	30.1
2	27.04.2023	42.3	32.6
3	14.05.2023	42.8	31.6
4	28.05.2023	43.6	39.5
5	14.06.2023	42.1	30.8
6	26.06.2023	46.8	33.2
7	10.07.2023	41.6	32.1
8	24.07.2023	46.9	34.4
9	07.08.2023	44.3	32.2
10	23.08.2023	47.5	34.8
11	09.09.2023	46.1	30.6
12	23.09.2023	39.3	29.7
13	11.10.2023	44.1	34.3
14	26.10.2023	39.2	28.6
15	11.11.2023	35.7	24.8
16	25.11.2023	40.3	29.4
17	11.12.2023	48	35.9
18	25.12.2023	44.6	33.9
19	08.01.2024	49.4	34.4
20	26.01.2024	44.6	33.9
21	07.02.2024	49.3	38.8
22	26.02.2024	48.5	37.7
23	12.03.2024	44.1	32.6
24	24.03.2024	47.2	38.3
	Minimum	**35.7**	**24.8**
	Maximum	**49.4**	**38.8**
	Average	**44.3**	**32.9**
	98 percentile	**49.4**	**38.6**

3. JULAPALLI VILLAGE (BUFFER ZONE)

Sl.No	Location name & Code. Date of Sampling	Standard limits of Noise	
	Julapalli Village (BN-2)	Day time	Night time
		55	45
		Noise levels in dB (A)	
1	15.04.2023	47.1	31.7
2	30.04.2023	40.9	28.4
3	15.05.2023	46.3	35.4
4	30.05.2023	42.1	30.5
5	15.06.2023	43.9	32.1
6	26.06.2023	41.5	33.8
7	10.07.2023	32.5	23.3
8	24.07.2023	45.5	35.6
9	07.08.2023	38.3	29.4
10	23.08.2023	43.3	33.9
11	12.09.2023	49.1	34.3
12	23.09.2023	41.8	34.3
13	09.10.2023	42.1	30.6
14	26.10.2023	44.9	36.2
15	11.11.2023	38.3	27.4
16	25.11.2023	48.1	38.7
17	11.12.2023	47.0	34.9
18	25.12.2023	47.6	34.0
19	08.01.2024	49.4	34.4
20	26.01.2024	44.6	33.9
21	07.02.2024	48.6	37.3
22	26.02.2024	47.2	35.6
23	13.03.2024	46.5	35.3
24	24.03.2024	45.5	37.7
	Minimum	**32.5**	**23.3**
	Maximum	**49.4**	**39.5**
	Average	**44.0**	**33.6**
	98 percentile	**49.3**	**39.1**