Your (Half Yearly Compliance Report) has been Submitted with following details	
Proposal No	Letter No J-11015/175/2008- IA.II
Compliance ID	127623430
Compliance Number(For Tracking)	EC/M/COMPLIANCE/127623430/2025
Reporting Year	2025
Reporting Period	01 Jun(01 Oct - 31 Mar)
Submission Date	30-05-2025
RO/SRO Name	V Geroge Jenner
RO/SRO Email	tr025@ifs.nic.in
State	ANDHRA PRADESH
RO/SRO Office Address	Integrated Regional Offices, Vijayawada
Note:- SMS and E-Mail has been sent to V Geroge Jenner, ANDHRA PRADESH with Notification to Project Proponent.	

UTCL/APCW/TLM/ENV/MOEF&CC/2025-26

Date: 29.05.2025

To
The Regional Director
Integrated Regional Office,
MoEF&CC, Vijayawada Greenhouse Complex,
Gopal Reddy Road, Vijayawada, A.P – 520010.

Dear Sir,

Sub : Submission of Six-monthly Compliance Status Report of the Environment Clearance granted by MoEF & CC for Lime stone Mine (M.L Area of 90.52ha.) located at village: Bandarlapalle, Mandal: Kolimigundla, Dist.: Nandyal, Andhra Pradesh by M/s UltraTech Cement Limited (Unit: Andhra Pradesh Cement Works)-Reg.

Ref : Environmental Clearance letter No. J-11015/175/2006-IA. II (M), Dt. 09.06.2009

This has reference to the above cited subject, we are here with we are submitting point wise six-monthly compliance status report (for the period October -2024 to March -2025) of the Environmental Clearance for Bandarlapalle Limestone Mine (M.L Area of 90.52ha.) with the production capacity of 1.30 Million TPA located at village Bandarlapalle, Mandal: Kolimigundla, Dist.: Nandyal, Andhra Pradesh by M/s UltraTech Cement Limited (Unit: Andhra Pradesh Cement Works).

As per MoEF&CC notification S.O.5845 (E) dated 16.11.2018, we are submitting here with the compliance report to your good office through E-mail: eccompliance-ap@gov.in

This is for your kind information and acknowledge the same please.

Thanking you,

Yours faithfully,
For & on behalf of M/s UltraTech Cement Limited
(Unit: A.P. Cement Works)

Authorized Signatory

Cc to : i) The Regional Director, CPCB Regional,76, Mount salai, Guindy, Chennai-60032.
ii) The Member Secretary, APPCB, APIIC Colony Road, Gurunanak Colony, Vijayawada – 520007
iii) The Environmental Engineer, R.O., APPCB, Dr. YSR Paryavaran Bhavan,VR Colony, Kurnool.

ENVIRONMENTAL COMPLIANCE AUDIT REPORT REPORT

For

UltraTech Cement Limited- APCW

Bandarlapalle Limestone Mine (Mining Lease Area 90.52 ha) with production capacity of 1.30 MTPA, Bandarlapalle (V), Kolimigundla (M), Nandyal (erstwhile Kurnool) Andhra Pradesh.

Environmental Consultant

Rejig GreenLogic Private Limited

7th Floor, Block C, AWFIS,

Laxmi Cyber City, White Field, Hyderabad

NABET Certificate No:NABET/EIA/24-27/IA 0135
Validity upto:28th January,2027

May-2025

DECLARATION BY EXPERTS

Environmental Compliance Audit Report has been prepared by Rejig GreenLogic Private Limited (RGPL) on the behalf of and for the exclusive use of Bandarlapalle Limestone Mine (BLM) ML Area: 90.52 ha, a unit of UltraTech Cement Limited (UTCL), in compliance with the Consent for Operation (CFO) conditions prescribed by the Andhra Pradesh Pollution Control Board (APPCB).

J.M EnviroLab Pvt. Ltd., recognized by the Ministry of Environment, Forest and Climate Change (MoEF&CC) and accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL), conduct the environmental monitoring for the reporting period. The monitoring data generated by JM EnivroLab was used as the basis for audit and assessment.

Rejig GreenLogic Private Limited, a NABET-accredited consultancy, has reviewed, interpreted and audited the compliance status based on the monitoring data, documentation provided by BLM and site observations. The conclusions and technical opinions presented in this report are based on the best professional judgment and available data.

This report shall be considered as a Technical Professional Opinion and not a legal or formal opinion. It does not relieve any party from its regulatory, legal or contractual responsibilities concerning environmental compliance. The findings presented herein remain valid only when this document is presented in full and shall become null and void if changes or modifications relevant to the report are not communicated to RGPL.

Signature	:	
Name	:	Mr. P. Suresh
Designation	:	Technical Head
Name of the Consultant Organization	:	Rejig GreenLogic Private Limited

REJIG GREENLOGIC PRIVATE LIMITED Hyderabad

1. Introduction

UltraTech Cement Limited (UTCL) is a flagship company of Aditya Birla Group. It is the largest manufacturer of grey cement, ready-mix concrete (RMC) and white cement in India. The company has consolidated capacity of 190.46 Million Tonnes Per Annum (Million TPA) of gray cement. UTCL has 34 Integrated Manufacturing Plants, 1 Clinerization Plant, 34 Grinding Units and 9 Bulk Terminals.

It has one White Cement unit and three Wall Care putty unit, with a current capacity of 2.6 MTPA. With 348 Ready Mix Concrete (RMC) plants in 140 cities, UTCL is the largest manufacturer of concrete in India. Its operations span across India, UAE, Bahrain, Bangladesh and Sri Lanka.

2. Andhra Pradesh Cement Works

Andhra Pradesh Cement Works, a subsidiary of UltraTech Cement Limited was acquired by Aditya Birla Group from L&T Group in 2004. It is located on the hilly area near Tadipatri, on the border line between Anantapur and Nandyal Districts in Rayalseema.

It is operating an existing Integrated Cement Plant with installed capacity of 6.5 MTPA Clinker, 9.0 MTPA Cement, 100 MW CPP and 20 MW WHRS at Village: Bhogasamudhram, Mandal: Tadipatri, District: Anantapur, Andhra Pradesh. Environmental Clearance for the existing Integrated Cement Plant has been obtained from MoEF&CC, New Delhi and CPP from SEIAA, Andhra Pradesh. Details of the existing clearance is given in below table.

Table 1: Existing Units and production capacity along with Clearances

S No	Particulars	Installed capacity	Obtained EC
1.	Clinker, MTPA	6.5 (Line I: 2.7 & Line II: 3.8)	Vide letter no. J-11011/303/2008-IA-II (I) dated 8th Oct., 2008.
2.	Cement, MTPA	9.0 (Line I: 3.2 & Line II: 5.8)	
3.	Captive Power Plant, MW	100	Vide SEIAA letter no. SEIAA/AP/ANT-26/2010-1113 dated 16th July, 2011.
4.	WHRS, MW	4	Vide MoEF&CC letter no. J-11011/324/2006-IA II (I) dated 05th March, 2007
		16	Vide MoEF&CC letter no. J-11011/324/2006-IA II (I) dated 05th March, 2007

At present, the plant has obtained EC for expansion of the cement plant capacity for Clinker (6.5 to 10.0 MTPA), Cement (9.0 to 14.0 MTPA) & WHRS (20 to 36 MW) in vide letter no: J-11011/2303/2008-IA-II (I), dt: 22.07.2022.

Consent for establishment for the above expansion project has been obtained from APPCB in vide order no: 184/APPCB/CFE/RO-ATP/HO/2010, dt: 06.09.2022.

3. Interlinked projects:

The main raw material, Limestone will be sourced from the following captive limestone mines which are present in Kolimigundla Mandal, Nandyal District, Andhra Pradesh.

1. Tummalapenta Limestone Mine (Mining Lease Area- 844.939 ha) with production capacity of 9.2 MTPA at Villages: Tummalapenta and Petnikota, Mandal: Kolimigundla, District: Nandyal, Andhra Pradesh.
   Environmental Clearance for the same was obtained from MoEF&CC, New Delhi vide letter no. J-11015/273/2006-IA. II (M); dated 21st May 2007.

2. Petnikota Limestone Mine (Mining Lease Area: 29.7 ha) with production capacity of 1.0 MTPA at Village: Petnikota, Mandal: Kolimigundla, District: Nandyal, Andhra Pradesh.
   Environmental Clearance for the same was obtained from SEIAA, Andhra Pradesh vide letter no. SEIAA/AP/KNL-42/2008-602; dated 8th June 2009.

3. Tummalapenta Lease-2 Limestone Mine (Mining Lease Area: 114.372 ha) with production capacity of 3.0 MTPA at Villages: Ankireddipalle &Tummalapenta, Mandal: Kolimigundla, District: Nandyal, Andhra Pradesh.
   Environmental Clearance for the same was obtained from MoEF&CC, New Delhi vide letter no. J-11015/174/2008-IA.II (M); dated 9th June 2009.

4. Bandarlapalle Limestone Mine (Mining Lease Area: 90.52 ha) with production capacity of 1.30 MTPA at Village- Bandarlapalle, Mandal- Kolimigundla, District- Nandyal (erstwhile Kurnool) Andhra Pradesh.
   Environmental Clearance for the same was obtained from MoEF&CC, New Delhi vide letter no. J-11015/175/2008-IA.II (M); dated 9th June 2009.

5. Guruvanipalle Limestone Mine (Mining Lease Area: 395.15 ha) with production capacity of 0.30 MTPA at Village: Guruvanipalle Revenue Village: Petnikota, Mandal: Kolimigundla, District: Nandyal Andhra Pradesh. Environmental Clearance for the same was obtained from MoEF&CC, New Delhi vide letter no. J-11015/212/2008-IA.II (M) dated 1st July 2009.

   At Present, the Guruvanipalle Limestone Mine has obtained EC for expansion of the limestone capacity from 0.30 MTPA to to 4.00 Million TPA, Soil: 0.31 Million TPA (Total Excavation: 4.31 Million TPA) in vide letter no: IA-J-11015/56/2021-IA-II(NCM), dt: 06.02.2024

4. Present Report on Condition wise compliance Report:

APCW has obtained the Consent to Operate order vide order no.: APPCB/KNL/TPT/184/HO/CFO/2021; dated: 27.09.2021 . One of the condition in CFO is as follows:

"The industry shall submit Half yearly compliance reports to all the stipulated conditions in Environmental Clearance (EC), Consent for Establishment (CFE) and Consent for Operation (CFO) through website i.e., https://pcb.ap.gov.in by 1st January and 1st July of every year. The first half yearly compliance reports shall be furnished by the industry and second half yearly compliance reports shall be audited through MoEF&CC recognized and National Accreditation Board for Laboratory Testing (NABL) accredited third party".

In view of the above given compliance condition, the Environmental Clearance datedt: 22.07.2022 has been prepared after due visit to the plant and mining lease areas of APCW. The condition wise compliance report is enclosed herewith.

EC Compliance Status Report

Name of the Project	:	UltraTech Cement Limited Unit: Andhra Pradesh Cement Works. Bandarlapalle Limestone Mine.
Environment Clearance No	:	J-11015/175/2008- IA. II (M) Dated: 09.06.2009
Period of Compliance Report	:	1st October 2024 to 31st March 2025

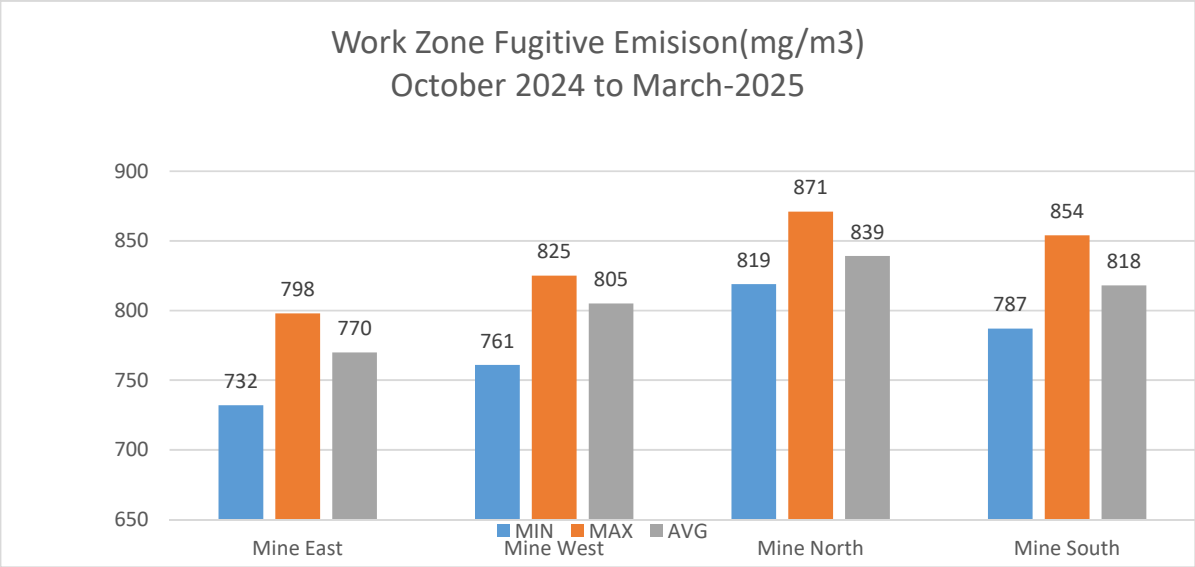
S. No.	Description of Condition	Compliance
SPECIFIC CONDITIONS		
1	The subject mine and the other mine viz. Tummalapenta Limestone Mine-2 (ML area 114.372 Ha.) along with the existing working mine viz. Tummalpenta Limestone Mine (ML area 844.939 Ha.) being contiguous, steps shall be taken to amalgamate these mines as one mine and taking into account the requirement of limestone of different grades, mining shall be done in a way that would ensure least land degradation and the attended pollution.	All the mining operations are in the initial phase. Request letter submitted to District Mines and Geology office, Nandyal pertaining to amalgamation of mining leases.
2	No two pits shall be simultaneously worked I.e. before the first pit is exhausted and reclamation work completed, no mineral bearing area shall be worked	No two pits simultaneously worked, mining operations are being started a single pit after exhausting this pit reclamation works will be started before starting another pit.
3	After exhausting the first mine pit and before starting mining operations in the next pit, reclamation and plantation works in the exhausted pit shall be completed so as to ensure that reclamation, forest cover and vegetation are Visible during the first year of mining operations in the next pit. This process will follow till the last pit is exhausted. Adequate rehabilitation of mined pit shall be completed before any ore bearing area is worked.	After exhausting the first mine pit and before starting mining operations in the next pit, reclamation and plantation works in the exhausted pit will be completed so as to ensure that reclamation, forest cover and vegetation are Visible during the first year of mining operations in the next pit. This process will be followed till the last pit is exhausted. Adequate rehabilitation of mined pit will be completed before any ore bearing area is worked.
4	Adequate buffer zone shall be maintained between two consecutive mineral bearing deposits	Duly noted, Adequate buffer zone will be maintained between two consecutive minerals bearing deposits.
5	Hydro-geological study of the area shall be reviewed annually and results submitted to the Ministry and concerned agency in the State Govt.	Mining operation are initial state and there is no adverse impact of ground water.

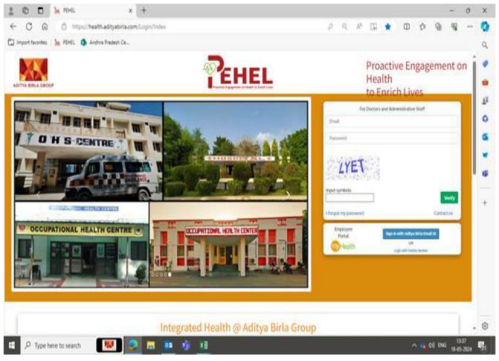
	In case adverse effect on ground water quality and quantity is observed mining shall be stopped and resumed only after mitigating steps to contain any adverse impact on ground water is implemented. Specific hydro-geological shall be conducted at the end of mining plan period i.e. at the end of the 5th year of mining, before proceeding to undertake mining in the 6th year. The report shall be submitted to the Regional Office of the Ministry.	
6	A 50 m barrier of no mining zone all along the side(s) facing the nallahs/streams passing through or adjacent the lease area shall be demarcated and thick vegetation of native species raised. Status of implementation shall be submitted to the regional office of the Ministry on half yearly basis. It shall be ensured that no silt originating from mining activity is transported in the nallah/surface water course.	Mining operations are not being carried out from 50m on either side of the nallas/streams. Phase wise plantation is being carried out within the safety zone.
7	Need based assessment for the nearby villages shall be conducted to study economic measures which can help in upliftment of poor section of society. Income generating projects/tools such as development of fodder farm, fruit bearing orchards, vocational training etc. can form a part of such programme. Company shall provide separate budget for Community development activities and income generating programmes. This will be in addition to vocational training for individuals imparted to take up self-employment and jobs. Local employable youth shall be trained in skills relevant to the project for eventual employment in the project itself to the extent feasible.	All the factors are considered and being covered under CSR activities. The company has adopted surrounding 10 villages to conduct community development activities, social upliftment, infrastructure development and promoting self-employment.
8	Land-use pattern of the nearby villages shall be studied and action plan for abatement and compensation for damage to agricultural land/ common property land (if any) in the nearby villages, due to mining activity shall be submitted to the Regional office of the Ministry within six months. Annual status of implementation of the plan and expenditure thereon shall be reported	Land-use pattern of the nearby villages has studied during the EIA study and no impact at nearby villages land due to mining operation.

	to the Regional Office of the Ministry from time to time.	
9	Maintenance of village roads through which transportation of ores are undertaken shall be carried out by the company regularly at its own expenses. The roads shall be black topped.	Village roads are not being used for mineral transportation and developed internal haul road by considering public safety and environmental protections.
10	Rain water harvesting shall be undertaken to recharge the ground water source. Status of implementation shall be submitted to the Regional Office of the Ministry within six months and thereafter every year from the next consequent year.	Rain Water Harvesting (RWH) structures are established to recharge ground water. 6 nos of check dams are constructed in and around the ML area and 2 roof water harvesting structures (area of roof top: 2120 m_2) are provided in the colony to recharge ground water.
11	Measures for prevention and control of soil erosion and management of silt shall be Undertaken. Protection of dumps against erosion shall be carried out with geo textile matting or other suitable material, and thick plantations of native trees and shrubs shall be carried out at the dump slopes. Dumps shall be protected by retaining walls.	Will be adhered to the condition. At present no dumping activity has been carried out.
12	Trenches / garland drains shall be constructed at foot of dumps and coco filters installed at regular intervals to arrest silt from being carried to water bodies. Adequate number of Check Dams and Gully Plugs shall be constructed across seasonal/perennial nallahs (if any) flowing through the ML area and silts arrested. De-silting at regular intervals shall be carried out. Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and for waste dump and sump capacity shall be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation	Check dams are constructed to improve ground water levels in this region.

	pits shall be constructed at the corners of the garland drains and de-silted at regular intervals.	
13	Ground water in the core zone shall be regularly monitored for contamination and depletion due to mining activity and records maintained. The monitoring data shall be submitted to the regional office of the Ministry regularly. Further, monitoring points shall be located between the mine and drainage in the direction of flow of ground water shall be set up and records maintained.	Mine workings are in initial stage. So, there is no impact on the ground water quantity and quality. The mine lease area is adjacent to the existing Thummalapenta mine. Seasonal monitoring is being done for ground water quality and levels. The data being submitted to MOEF six monthly basis.
14	Cultivable waste land (within 5 km of the lease) shall be identified and fodder farming or other suitable productive use of waste land shall be taken up in phased manner. Status of implementation shall be submitted to the Regional office of the Ministry	Cultivable waste land (within 5 km of the lease) identified and fodder farming is being developed
15	Shelter Belt i.e. Wind Break of 30 m width and consisting of at least 5 tiers around lease facing the school/ agricultural fields / human habitation etc. (if any in the vicinity) shall be raised.	Plantation is being carried out phased wise manner.
16	Fugitive dust generation shall be controlled. Fugitive dust emission shall be regularly monitored at locations of nearest human habitation (including schools and other public amenities located nearest to sources of dust generation as applicable) and records submitted to the Regional Office of the Ministry.	Water tankers are in place to control the fugitive emissions. Fugitive Emission quality is being monitored and records submitted to Regional Office once in Six Months. Analysis are given the below for the period of October-2024 to March-2025

FUGITIVE EMISSIONS CONTROL MEASURES& FUGITIVE EMISSION REPORT

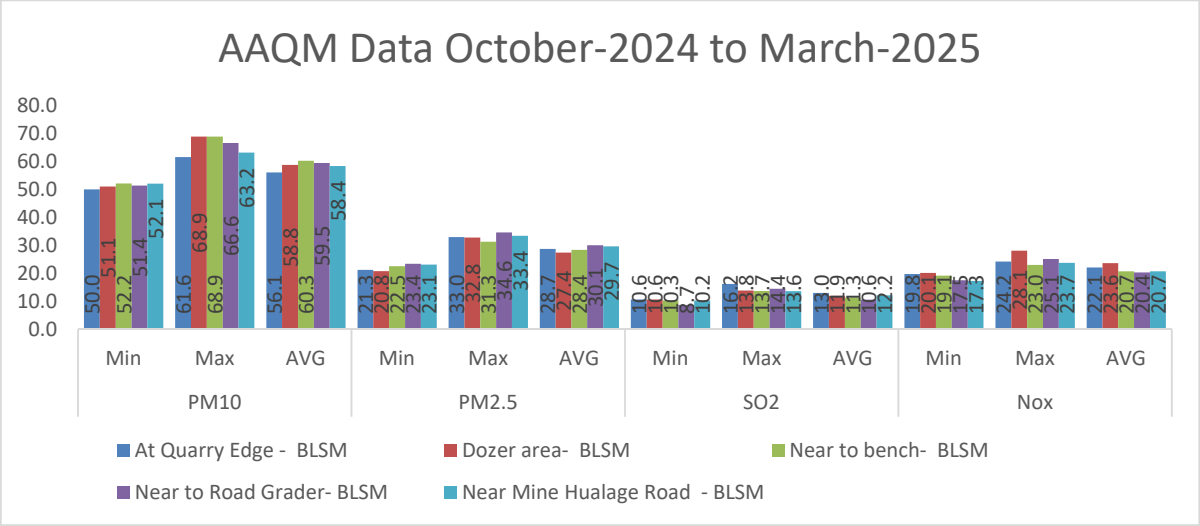


17	Monitoring of soil samples for assessment of transformation to acidic state or contamination due to mining activity (as applicable) shall be regularly conducted and records maintained.	No impact on soil in the surrounding ML area. All the precautionary measures are in place.
18	Transportation of ore shall be done by covering the trucks with tarpaulin or other suitable mechanism so that no spillage of ore / dust takes place.	No over loading and muck piles are being wetted before loading operations.
19	Occupational health and safety measures for the workers including identification of work related health hazards, training on malaria eradication, HIV, and health effects on exposure to mineral dust etc. shall be carried out. The company shall engage a full time qualified doctor who is trained in occupational health. Periodic monitoring for exposure to Respirable mineral dust on the workers shall be conducted and records maintained including health records of the workers. Awareness programme for workers on impact of mining on their health and precautionary measures like use of personal equipment's etc. shall be carried out periodically. Review of impact of various health measures undertaken (at interval of five years of less) shall be conducted followed by follow up action wherever required.	A full-fledged medical health centre has been established with well-qualified Doctors and paramedical staffs, to provide the medical assistance to the employees. Occupational Health Survey is being carrying out by APCW – Medical Centre annually. 

20	Top soil / solid waste shall be stacked properly with proper slope and adequate safeguards and shall be utilized for backfilling (wherever applicable) for reclamation and rehabilitation of mined out area. Top soil shall be separately stacked for utilization later for reclamation and shall not be stacked along with over burden.	Top soil is being used for development of greenbelt.
21	Over burden (OB) shall be stacked at earmarked dump site(s) only and shall not be kept active for long period. The maximum height of the dump shall not exceed 30 m, each stage shall preferably be of 10m and overall slope of the dump shall not exceed 28°. The OB dump shall be backfilled. The OB dumps shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests on six monthly bases	No over burden waste generation during the mining operation. Compliance report is submitted regularly to MoEF on six monthly bases, the last compliance report was submitted on 25.11.2024 through PARIVESH Portal.
22	Slope of the mining bench and ultimate pit limit shall be as per the mining scheme approved by Indian Bureau of Mines.	Mining operations are being carried out as per the mining plan approved by Indian Bureau of Mines.
23	Adequate plantation shall be raised in the ML area, haul roads, OB dump sites etc. Green belt development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO / Agriculture Department. Herbs and shrubs shall also form a part of afforestation programme besides tree plantation. The density of the trees shall not be less than 2500 plants per ha. The company shall involve local people with the help of self help group for plantation programme. Details of year wise Afforestation programme including rehabilitation of mined out area shall be submitted to the Regional Office of the Ministry every year.	Plantation is being carried out by phase wise manner continuously to develop the green belt in and around the mining lease area. Six monthly Compliance status is being submitted to the Ministry of Environment & Forests.

24	Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year - pre- monsoon (October-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected shall be regularly sent to MoEF, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Regular monitoring of ground water level and quality is being carried out by establishing a network of existing wells and piezometers.
25	Adequate air monitoring stations shall be installed in areas of human habitations near the mine and the results of ambient air quality shall be maintained and regularly submitted to the Regional Office of the Ministry. The monitor data for criteria pollutants shall be regularly uploaded on the company's website and also displayed at project site.	Ambient Air Quality monitoring stations are set up in areas of human habitation near mine and monitoring is being carried out regularly. The monthly reports of the same are submitted to board's office. Analysis are given the below for the period of October-2024 to March-2025

AMBIENT AIR QUALITY FOR CORE ZONE (October 2024 –March 2025)



Note: All the values for PM10, PM2.5, SO2 & NOx are expressed in µg/m3

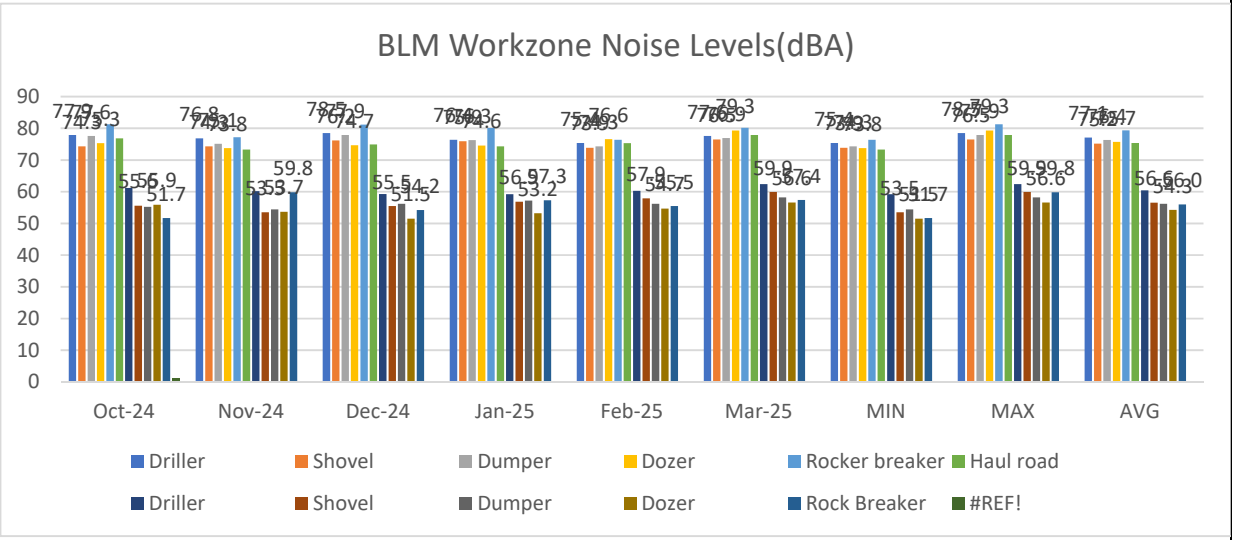
26	The waste water from the mine shall be treated to conform to the prescribe standards before discharging in to the natural stream. The discharged water from the Tailing Dam (if any) shall be regularly monitored and report	Existing system at Thummalapenta Mines will be utilised for treating the waste water generated during the maintenance of the

	submitted to the Ministry of Environment & Forests, Central Pollution Control Board and the State Pollution Control Board.	HEMM. Hence separate system was not required.
27	Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transportation of ores and others shall have valid permissions as prescribed under Central Motor Vehicle Rules, 1989 and its amendments. Transportation of ore shall be done only during day time. The vehicles transporting ores shall be covered with a tarpaulin or other suitable enclosures so that no dust particles / fine matters escape during the course of transportation. No overloading of ores for transportation shall be committed. The trucks transporting ore shall not pass through wild life sanctuary.	Proper maintenance shall be carried out for all the vehicles used in the mining operations & no over loading and water is being spray on muck piles before loading to minimise dust emission. There is no transportation of ore passing through wild life sanctuary.
28	Prior permission from the Competent Authority shall be obtained for extraction of ground water, if any.	Mining operations are initial stage so, the existing mine sump water will be utilised (i.e., Thummalapenta Mine sump)
29	Action plan with respect to suggestions/improvements and recommendations made during public consultation/hearing shall be submitted to the Ministry and the State Govt. within six months.	Commitments made in public hearing are being implemented.
30	A final mine closure plan, along with details of Corpus Fund, shall be submitted to the Ministry of Environment & Forests, 5 years in advance of final mine closure for approval.	Final mine closure plan as directed will be submitted. Bank guarantee of Rs. 3,80,51,563/- was already submitted to Asst. Director of Mines and Geology, Banaganapalli as performance security.
GENERAL CONDITIONS		
1	No change in mining technology and scope of working shall be made without prior approval of the Ministry of environment & Forests.	No change in mining technology and scope of working.
2	No change in the calendar plan including excavation, quantum of mineral and waste shall be made.	Mining operations are being carried out as per the approved mining plan.
3	Fugitive dust emissions from all the sources shall be controlled regularly. Water spraying arrangement on haul roads, loading and	Existing system is utilised for the transportation of material no additional transfer points are required. However, the

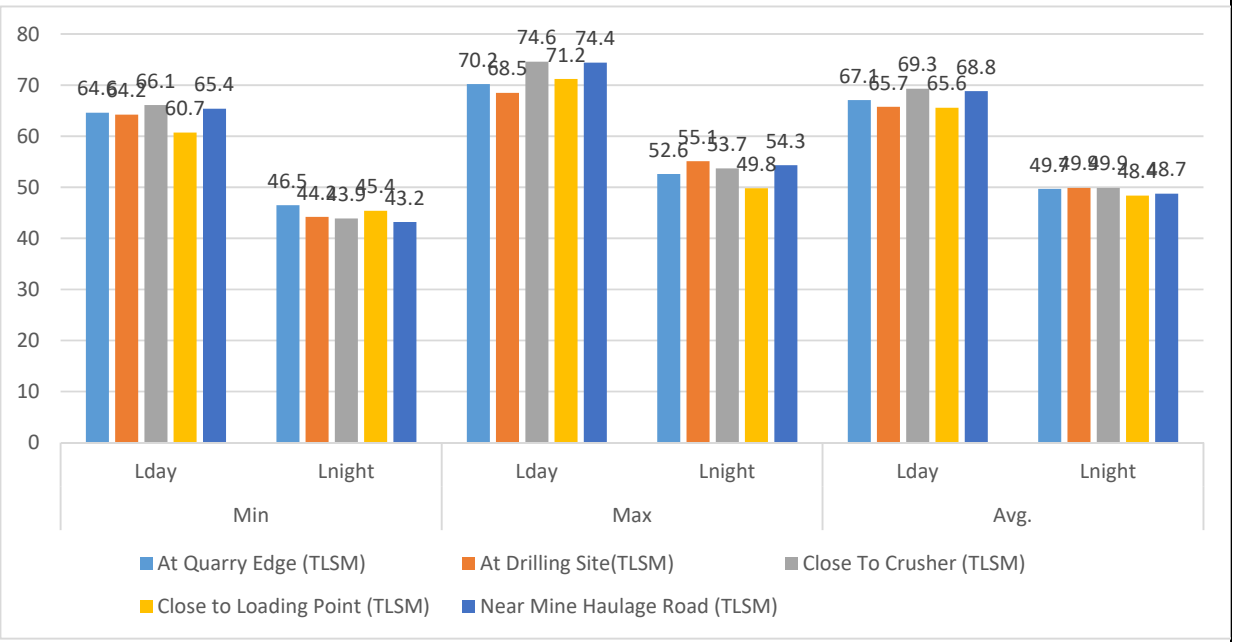
	unloading and at transfer points shall be provided and properly maintained	haul roads, loading and unloading points are regularly wetted with water to control the fugitive emissions. Analysis report are given in the Point no 16 of Specific condition for the period of October-2024 to March-2025.
4	Four ambient air quality-monitoring stations shall be established in the core zone as well as in the buffer zone for RPM, SPM, S02, NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Ambient Air Quality monitoring stations established to monitor the prescribed parameters. Monitoring reports are maintained. Analysis report are given in the Point no 25 of Specific condition for the period of October-2024 to March-2025.
5	Data on ambient air quality (RPM, SPM, S02, NOx) should be regularly submitted to the Ministry including its Regional office located at Bangalore and the State Pollution Control Board / Central Pollution Control Board once in six months. The monitoring data of criteria pollutants mentioned above shall be regularly uploaded on the company's website and also displayed at project site	The data of Ambient air quality monitored is being submitted to the state pollution control board, CPCB and to the Regional office of the ministry at Bangalore at a regular interval. I.e. once in six months along with the compliance report. Analysis report are given in the Point no 16 of Specific condition for the period of October-2024 to March-2025.
6	Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. shall be provided with ear plugs/ muffs.	Personal protection equipment will be provided to all to utilise where high noise environment, to reduce the exposure of noise levels. All the vehicles are equipped with sound proof AC cabins to minimise the noise exposure. Noise Monitoring Reports are given the below for the period of October-2024 to March-2025.

WORK ZONE SOURCE NOISE LEVELS IN dB (A)

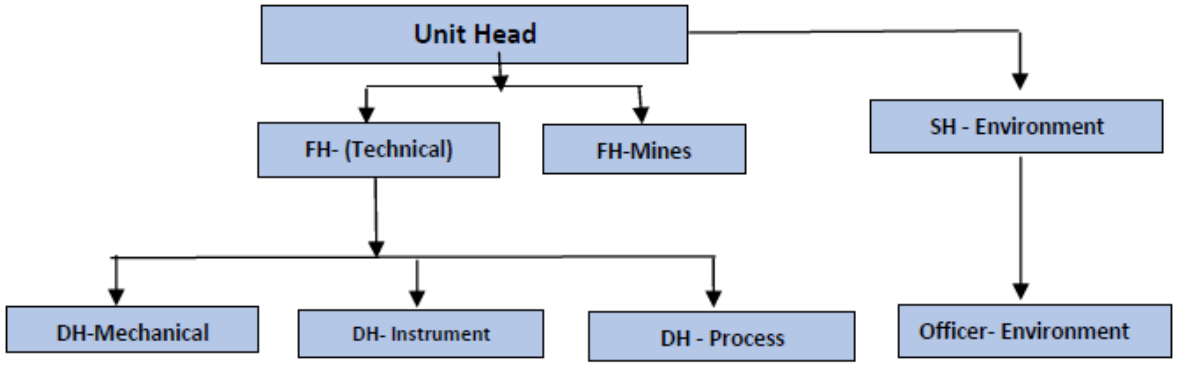
Bandarlapalli Limestone Mines (October-2024 to March-2025)



CORE ZONE NOISE LEVELS IN dB (A) (October-2024 to March-2025)



7	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap	Existing system will be utilised for treating the waste water generated during the maintenance of the existing HEMM. Hence separate system is not required.

	shall be installed before discharge of workshop effluents	
8	Personnel working in dusty areas shall be provided with protective respiratory devices and they shall also be imparted adequate training and information on safety and health aspects	Usage of PPE's is compulsory for all the personnel working in the workshop & mines. Adequate training imparted to all workmen on safety and health aspects.
9	Provision shall be made for the housing the labourers within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	As there is no provision is required within the site as existing man power will be utilized and the existing township is sufficient.
10	A separate Environmental Management Cell with suitable qualified personnel shall be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization	A separate Environmental Management Cell with suitable qualified personnel are formed under the control of a Senior Executive, who will report directly to the Head of the Organization.
		
11	The project authorities shall inform to the Regional Office of the Ministry located at Bangalore regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Financial closure and final approval of the project has been informed RO- MoEF&CC. Final approval proceedings are issued Asst. Director of Mines and Geology, Banaganapalli vide proceedings no 45/ML/2017 on 07.01.2017. Mining Operations (land development) are commenced on 14.11.2018
12	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other	Adequate funds are earmarked for Environment Protection. The Expenditure incurred for environmental protection

	purpose. Year wise expenditure shall be reported to the Ministry and its Regional Office located at Bangalore.	activities for the report period is Rs. 8.84 Lakhs.
13	The project authorities shall inform the Regional Office located at Bangalore regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Financial closure and final approval of the project has been informed RO- MoEF&CC. Final approval proceedings are issued Asst. Director of Mines and Geology, Banaganapalli vide proceedings no 45/ML/2017 on 07.01.2017. Mining Operations (land development) are commenced on 14.11.2018
14	The Regional Office of the Ministry located at Bangalore shall monitor compliance of the stipulated conditions. The project authorities shall extend full cooperation to the officer(s) of the Regional Office by furnishing the requisite data / information / monitoring reports	Well noted and will be complied.
15	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Bangalore, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the environment of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, Ministry of Environment and Forests, Bangalore.	Submitted Half yearly compliance on 25.11.2024 through PARIVESH Portal.
16	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal. The clearance letter shall also be put on the website of the company.	Submitted copy of EC to Panchayat office.
17	State Pollution Control Board shall display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office / Tehsildar's Office for 30 days.	--

18	The project authorities shall advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.inand a copy of the same shall be forwarded to the Regional Office of the Ministry located in Bangalore.	Advertised the EC information in the local language i.e. Telugu (Vaartha) Dated: 20.07.2009 and in English (The Hindu) Dated 20.07.2009, copy of advertisements of Environmental Clearance in the newspaper advertisement are given in the below.

Advertisement of Environmental Clearance in the newspaper

PUBLIC NOTICE

UltraTech Cement Limited - Bandarlapally Limestone mines, Bandarlapally, Andhra Pradesh has been awarded environmental Clearance by Ministry of Environment and Forests (MoEF) vide letter No. **J-11015/175/2008-IA.II(M)** dated: **09.06.2009** for the production Capacity of Lime Stone 1.3 MTPA. The copy of clearance letter is available with State Pollution Control Board (APPCB) and may also be seen at the website of Ministry of Environment and Forest (MoEF) at http:// envfor.nic.in
Date: 20.07.2009

ప్రకటన

పర్యావరణ మరియు అటవీ మంత్రిత్వ శాఖ **(MoEF)** వారి ఉత్తర్వు నెంబరు **J-11015/175/2008-IA.II (M)** తారీఖు **09.06.2009** ద్వారా అల్ట్రాటెక్ సిమెంట్ లిమిటెడ్, బందార్లవల్లి లైంస్టోన్ మైన్స్‌కు సంవత్సరానికి 1.3 మిలియన్ టన్నుల లైంస్టోన్ ఉత్పత్తి చేయుటకు గాను ఆమోదించబడినదని ఇందుమూలముగా తెలియజేయుచున్నాము. ఈ ఆమోదిత పత్రమును రాష్ట్ర కాలుష్య నివారణ కేంద్రము మరియు కేంద్ర పర్యావరణ మరియు అటవీ శాఖ వారి ఇంటర్నెట్ వెబ్‌సైట్‌లో చూడవచ్చును. వెబ్‌సైట్ చిరునామా: **http: / / envfor.nic.in**
తేది: 20-07-2009

ENVIRONMENT MONITORING REPORT

SEASONAL REPORTS

BANDARLAPALLI LIMESTONE MINES

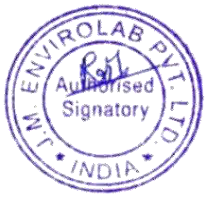
October to December, 2024

SUBMITTED TO	SUBMITTED BY
UltraTech Cement Limited **(Unit: Andhra Pradesh Cement Works)** **Bandarlapalli Mine** Village – Bandarlapalli , Mandal Kolimigundala, Kurnool District,Andhra Pradesh.	**JM EnviroLab Pvt. Ltd.** 424, Ground Floor, Udyog Vihar,Phase- 4, Gurugram- 122015 (Haryana)

ACKNOWLEDGEMENT

We are thankful to UltraTech Cement Ltd. (UTCL) for providing JM Envirolab Pvt. Ltd. an opportunity to carry out Post Project Compliance monitoring at their various units, which shall guide them towards executing and implementing better environment management plan. We are thankful to the dedicated team who carried out the monitoring with the utmost sincerity and diligence. It is because of their honest effort; we could bring out this resourceful report.

We express our sincere thanks to management of Cement Plant, CPP & Mines of Andhra Pradesh Cement Works of M/s UltraTech Cement Ltd. at Village - Bhogasamudram, Mandal - Tadipatri, District - Anantapur and Village - Tummalapenta, Mandal - Kolimigundla, District - Nandyal, Andhra Pradesh for their co-operation & unstinted help without which the environment monitoring could not have been possible. The courtesy extended to our team is highly appreciated.



For J.M. Envirolab Pvt. Ltd. **Date: 04/01/2025**
Gurugram

CONTENTS

1. INTRODUCTION

UltraTech Cement Limited has set up its most technically advanced and modern Cement Plant of 10.00 MTPA clinker capacity in the name of Andhra Pradesh Cement Works (APCW) near Bhogasamudram village, Tadipatri mandal in Anantapur District and Tummalapenta village, Kolimigundla mandal, Nandyal District of A.P. APCW has mining leases at Tummalapenta village, Kolimigundla Mandal Nandyal District to cater the limestone requirement of the cement plant.

This seasonal monitoring is being carried out pertaining to Bandarlapalli Limestone Mine of M/s Ultratech Cement works (Unit: Andhra Pradesh Cement Works) over and extent of 90.52 Ha located at Thummalapenta village in Kolimigundla Mandal of Nandyal District.

In order to assess the likely impacts arising out the existing mine activity, **JM Envirolab Pvt. Ltd, Gurgaon (Haryana)** was entrusted with the task of undertaking Seasonal Environmental Monitoring for various environmental parameters, which are likely to be affected.

2. Scope of Work

The scope of work includes the data generation for various environmental components viz Air, Noise, Water and Respirable dust. Samples were collected and analyzed during **Season (October to December, 2024)**

2.1 Mining Methodology and Operations

The technically viable option for the Bandarlapalli Limestone Mine deposits is the open-cast mining. The mine will be worked-out by mechanical mode of mining.

After removal of overburden soil and blasting, Limestone is extracted by Shovels / Excavators. This operation is followed by transportation of Limestone to crusher by loading Dumpers, then crushing and conveying to the stacker through the covered belt conveyors.

The equipment deployment planning for various mining operations has been done keeping in view the following:

- Removal of overburden/top soil by dozer and its handling by excavator /dumper combination.
- Breaking of lime stone by drilling and blasting activity.
- Loading of limestone and transportation to crusher by excavator/dumper combination.

2.2 Mining Operations

The mining operations include:

- Mine excavation
- Loading
- Transportation
- Crushing and Conveying

3 Pollution Control Measures

All the required precautions are being implemented to reduce the pollution from different environmental attributes viz air, noise, water, etc.

3.1 Air Pollution Control

There is every chance of fine dust entering into the atmosphere during the mining operations like drilling, blasting and transportation, become air born, thus leading to increase in SPM levels in ambient air. In order to curb the air pollution, mine authorities have taken the following steps.

- Wet drilling to suppress the dust emission from the drill machines at its source by inbuilt water injection system
- Regular water sprinkling on blasted heaps and haul roads with water tankers.
- Water tankers are deployed to suppress the dust on all the roads used for transport of the mineral.
- Use of sharp drill bits for drilling holes. Charging the holes by using optimum charge and using time delay detonators.
- Adapting of controlled blasting techniques to suppress dust generation while blasting.
- Regular grading of haul roads and service roads to clear accumulation of loose material.
- Avoiding over filling of dumpers and consequent spillage on the roads.
- The vehicles and machinery are kept in well-maintained condition so that emissions are minimized.
- Plantation along approach roads, and on safety barrier zones to arrest spread of dust. The plantation already is helping in this direction.
- AC cabins are provided all HEMM equipment, to minimize dust exposure of the operators.
- Crushers are enclosed in the chambers and bag filters are provided for dust collection.

4 Green Belt Development

A comprehensive plan is envisaged for development of Green Belt.

- The Green belt development is being helped in controlling the dust emissions as well as act as barrier for reducing the noise levels.
- Dense tree belt developed as required to minimize the dust emission

5 Noise Pollution Control

- AC cabins are provided all HEMM equipment (shovels, Dumpers, Drills etc.,), to minimize noise exposure of the operators.
- All the equipment chosen were having optimum noise levels, in the operator's cabins, of less than the 90 dB (A) as per OSHA standards for 8 hours shifts.
- Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
- Proper and regular maintenance of all HEMM and other auxiliary equipment.

6.0 DETAILS OF SAMPLING LOCATIONS

6.1 Meteorology and Ambient Air Quality

Meteorological data was collected concurrently with the ambient air quality monitoring. Wind speed, wind direction, relative humidity and temperature were recorded at hourly intervals continuously. The limestone mine lease out area are shown in **Figure-1**

All the sampling locations fall within the mine lease area. To assess the effect of mining activity on the air environment parameters like Particulate Matter (PM10), (PM2.5), Sulphur Dioxide (SO_2), Oxides of Nitrogen (NOx) and Respirable dust were monitored. The details of the sampling locations with respect to the operating mines are given below in **Table-1** and **Table-2** depicted in **Figure-1.**

TABLE-1

AMBIENT AIR QUALITY LOCATIONS CORE ZONE

Sampling Code	Locations	Sampling Height(m)	Location Details
AAQ1	At Quarry edge	05	Represents Up-wind air quality
AAQ3	Near to Bench	05	Represents Cross -wind air quality
AAQ4	Near to Road Grader	05	Represents Down-wind air quality
AAQ5	Near to Mines Haul Road	05	Represents Down-wind air quality

TABLE-2

AMBIENT AIR QUALITY LOCATIONS BUFFER ZONE

Sampling Code	Locations	Sampling Height(m)	Location Details
AAQ1	Thummalapenta village	05	Represents Cross-wind air quality
AAQ2	Ankireddypalli village	05	Represents Up-wind air quality
AAQ3	Guruvanipalli village	05	Represents Cross -wind air quality
AAQ4	Bandarlapalli village	05	Represents Down-wind air quality
AAQ5	Petnikota village	05	Represents Down-wind air quality

6.2 Respirable Dust Monitoring

Respirable Dust estimation (personal and static) was carried to estimate the Total Suspended particulate matter and Respirable dust generated due to the mining activities. The monitoring was carried out at Various locations. The sampling locations are given below in **Table-2(A) and Table-2(B)** and shown in **Figure-3**

TABLE-2(A)

RESPIRABLE DUST MONITORING LOCATIONS (Personal dust sampling)

Sampling Code	Measurement point	Location Details
RPM 1	Shovel	Cabin Inside
RPM 2	Dumper	Cabin inside
RPM 3	Loading Point	Transportation

TABLE-2(B)

RESPIRABLE DUST MONITORING LOCATIONS (Static Sampling)

Sampling Code	Locations	Location Details
RPM 4	Near Mines Operation	-
RPM 5	Near Road Grader Area	-
RPM 6	Dozing Area	Limestone

7.0 Water Quality

Water samples (ground) from Various locations and APCW colony. The samples were collected as per the standard procedures and analyzed as per IS: 10500 specifications. Parameters like Temperature, Electrical conductivity, pH and Dissolved Oxygen were analyzed in-situ using portable water analysis kit. Samples were collected by taking suitable precautions, particularly using sterilized bottles for bacteriological analysis. The details of the sampling locations are given in **Table-3**

TABLE- 3

S.NO	Location Code	Location	Source
1	W1	Ankireddy palli Village	Bore well Water
2	W2	Tummalapenta Village	Bore well Water
3	W3	Guruvanipalli Village	Bore well Water
4	W4	Bandarlla Palli Village	Bore well Water
5	W5	Petnikota Village	Bore well Water
5	W6	APCW colony	Bore well Water

8 Noise Levels

Noise levels vary depending on the various activities in the mining area such as movement of dumpers and trucks as well as other activities in the workshop. Accordingly, noise levels were recorded at Various locations to assess the noise level.

The details of the noise sampling locations are given in **Table-3** and depicted in **Figure – 3.**

TABLE- 4

WORKPLACE NOISE LEVEL MONITORING LOCATIONS

Sample Code	Core Zone	Sample Code	Ambient Noise Locations
NL 1	Shovel	AN1	Ankireddypalle Village
NL 2	Dumper	AN2	Thummalapenta Village
NL 3	Dozer	AN3	Guruvanipalli Village
NL 4	Road Grader	AN4	Petnikota Village
NL 5	Haul road	AN5	Bandarlapalle Village

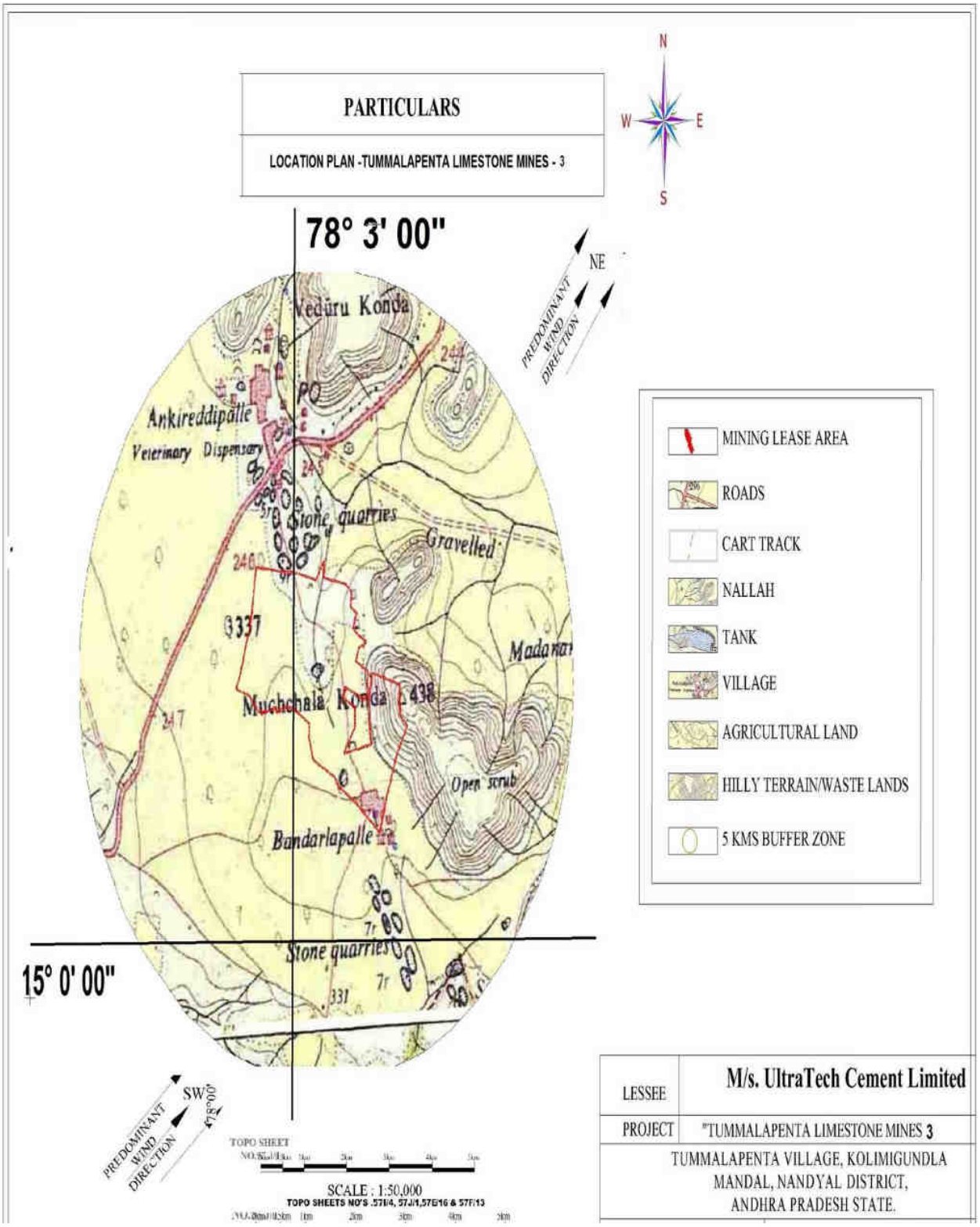


FIGURE - 1

BANDARLAPALLE LIMESTONE MINES - MINE LEASE AREA

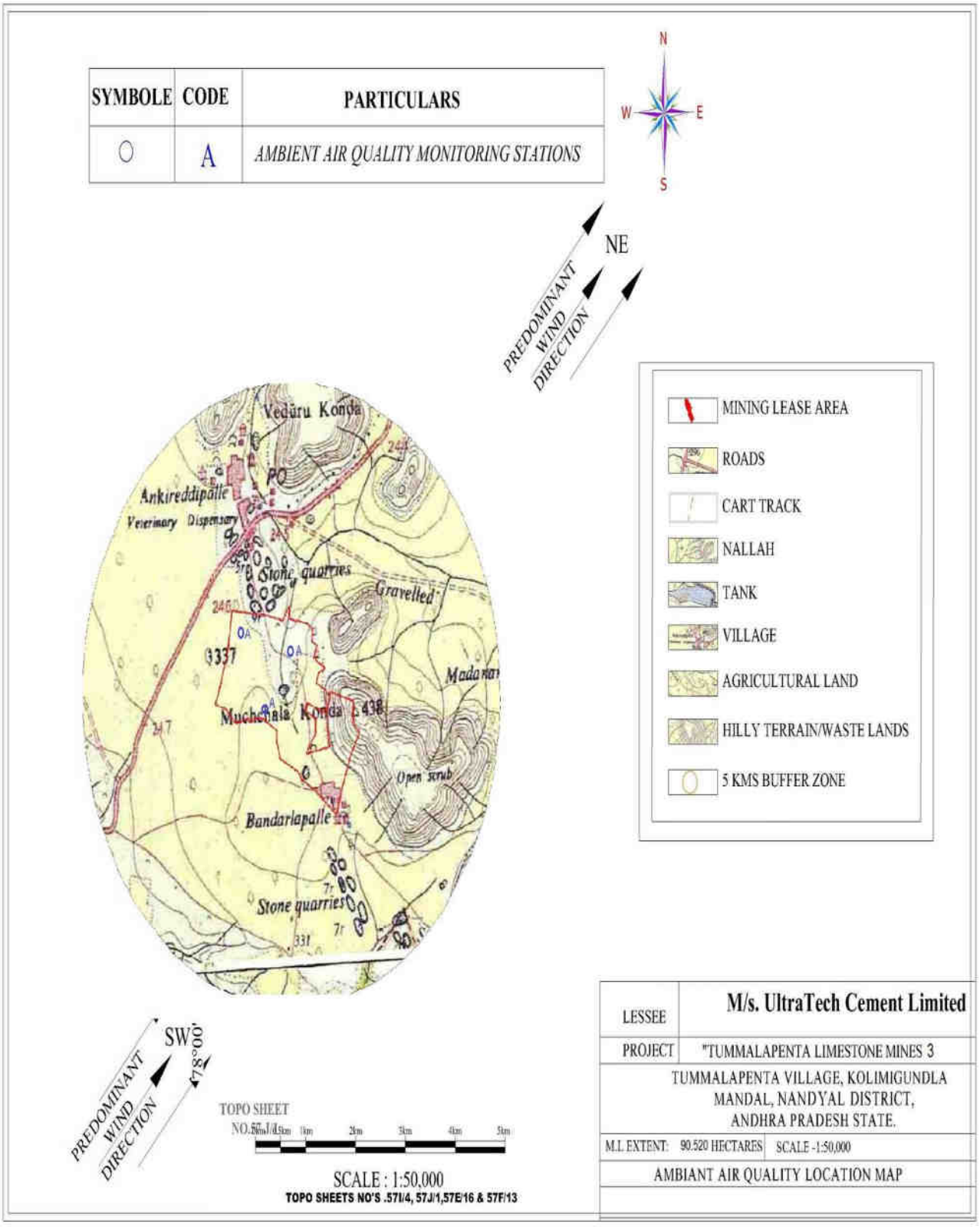


FIGURE - 2

BANDARLAPALLE LIMESTONE MINES LEASE AREA– AMBIENT AIR QUALITY STATIONS

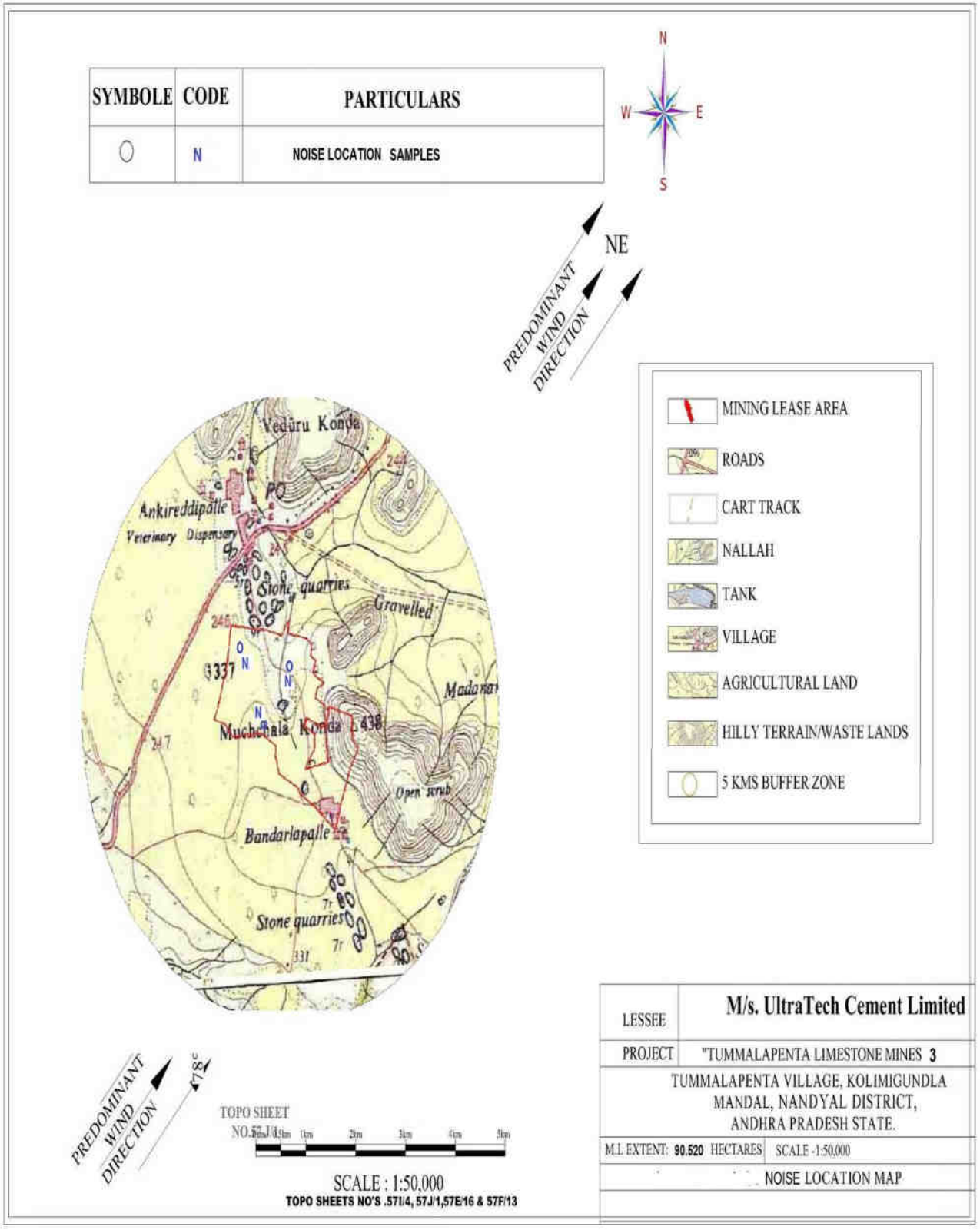


FIGURE - 3

BANDARLAPALLE LIMESTONE MINES LEASE AREA – NOISE MONITORING STATIONS

9.0 METHODOLOGY OF SAMPLING AND ANALYTICAL PROCEDURE

Methodology of Sampling

9.1 Meteorology

Micro-meteorological data was observed using automatic weather station installed at Site The data was recorded continuously. Wind direction and speed is recorded using wind vane and anemometer. Temperature, Relative humidity & Atm. Pressure are recorded using sensors applicable. Rainfall measured using Rain gauge.

9.2 Ambient Air Quality

Sampling was carried out continuously for forty-eight hours per week at each station during the four-week study period using pre-calibrated Respirable Dust Samplers and fine dust samplers. In each of the stations earmarked, samples were collected for SO_2 and NOx, Particulate Matter (PM2.5), PM10 and Suspended Particulate Matter (SPM) samples were collected on twenty-four hourly average basis and same were sent to Central Laboratory to analyze the samples.

The Respirable Dust monitoring was carried out by using pre-calibrated Respirable Dust Samplers.

TABLE – 5.0 TECHNIQUES USED FOR AMBIENT AIR QUALITY MONITORING

Sr.No	Parameter	Technique	Minimum detectable limit ($\mu g/m^3$)
1	Particulate Matter($P.M_{10}$)	(Gravimetric Method)	4.0
2	Particulate Matter($P.M_{2.5}$)	(Gravimetric Method)	1.0
3	Sulphur Dioxide	Modified West & Gaeke	5.0
4	Oxides of Nitrogen	Jacob and Hocheiser	5.0
5	Carbon Monoxide	GC-FID method	0.01

9.3 Water Quality

Water samples were collected for physico-chemical and bacteriological parameters taking suitable precautions. Temperature, pH, Dissolved Oxygen and Electrical conductivity were measured in the field while collecting the samples.

Sterilized bottles were used to collect samples for bacteriological analysis, stored in ice and transported to the Central Laboratory. Samples for analysis of metals were collected separately and preserved with nitric acid.

9.4 Noise Levels

Outdoor noise measurements were recorded at 1.5 m away from the noise generating sources. The noise monitoring was carried out continuously on hourly basis over a period of one day at each location. The noise level monitoring was carried out using a Digital noise level meter.

10.0 Existing ENVIRONMENT CONDITIONS

10.1 Data Analysis

Observation on Meteorology: The meteorological parameters play a vital role in transport and dispersion of pollutants in the atmosphere. Fieldwork during **October , 2024 to December, 2024** consisted of collection and analysis of samples of Ambient Air and Water in addition to meteorological data and Noise levels at different locations within the mining lease area

10.2 WIND ROSE (Meteorological Data) & Wind Pattern during Season

(October , 2024 to December, 2024)

Meteorological data was collected on hourly basis for wind speed, temperature and relative humidity continuously for three months during the study period. The analysed data is elaborated below.

Temperature and Relative Humidity Levels during Season (October, 2024 to December, 2024)

Maximum and minimum temperatures recorded during the study period were 33.0(˚C) and 25.0 (˚C) respectively. Maximum and minimum Relative Humidity recorded during the study period was 96.0 % and 58.0% respectively.

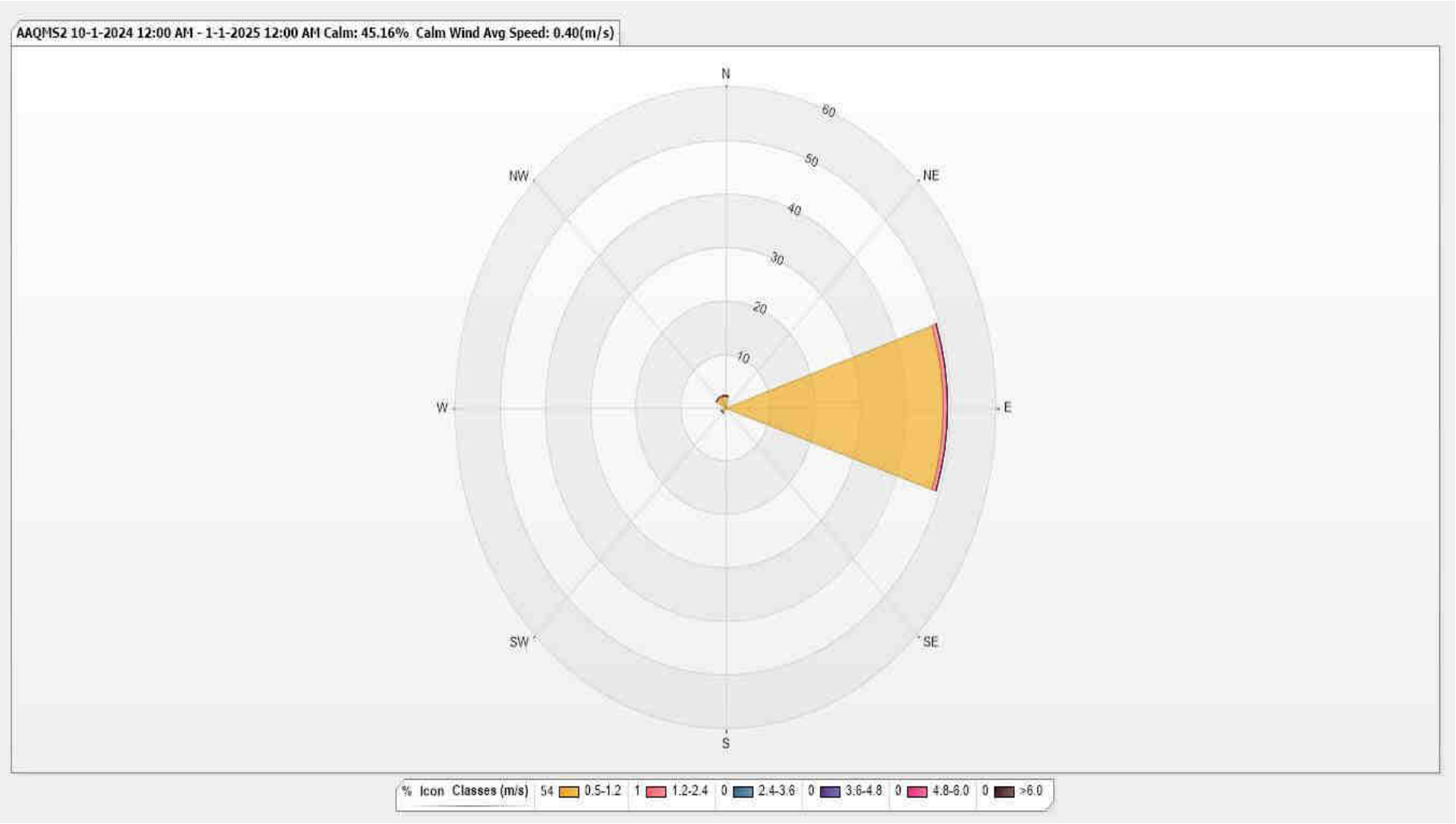
SITE SPECIFIC METROLOGICAL CONDITIONS

Site specific climatic condition refers to weather conditions comprising of temperature, relative humidity, wind speed, rainfall, cloud cover etc. This determines the baseline conditions and probable impacts on environmental parameters with respect to the Project. The site specific climatic conditions for the month of October to December, 2024 are given below in below table: 5

Table 6: Metrological Conditions

Month	-	Temperature (˚C)	Relative Humidity (%)	Wind speed (M/s)	Rain fall mm
October to December, 2024	Min	25.0	58.0	0.3	110.5 Cumulative
	Max	33.0	96.0	1.2	
	Average	27.6	81.0	0.6	

(Source: IMD AAQM Station-2 Near Industrial Canteen)


AAQMS2 10-1-2024 12:00 AM - 1-1-2025 12:00 AM Calm: 45.16% Calm Wind Avg Speed: 0.40(m/s)
N
NE
E
SE
S
SW
W
NW
60
50
40
30
20
10
% Icon Classes (m/s)
54 0.5-1.2
1 1.2-2.4
0 2.4-3.6
0 3.6-4.8
0 4.8-6.0
0 >6.0

ENVIRONMENT MONITORING DATA

11. AMBIENT AIR QUALITY

12. AMBIENT AIR QUALITY MONITORING RESULTS:

Ambient air quality has been generated at five Locations. The 08 hours average values of Respirable particulate Matter PM10, PM2.5, SO2 and NOx, Levels Recorded at all the Sampling Locations are discussed below . The values are than compared are standards prescribed by CPCB for industrial and Mixed uses, The ambient air Quality levels (PM10, PM2.5, SO2 and NOx)for all the sampling locations given in Below table.

THUMMALAPENTA MINES LEASE -3 CORE ZONE

Table 7: Ambient Air Quality Results (December Month -2024) (CORE ZONE)

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
At Quarry Edge – AAQ1					
02.12.2024 to 03.12.2024	56.7	25.4	12.99	21.07	0.55
03.12.2024 to 04.12.2024	55.4	23.9	12.3	22.75	0.54
09.12.2024 to 10.12.2024	57.3	27.4	11.07	19.11	0.56
10.12.2024 to 11.12.2024	51.2	21.7	10.11	16.23	0.50
16.12.2024 to 17.12.2024	53.5	22.7	11.87	24.04	0.55
17.12.2024 to 18.12.2024	50.1	20.9	12.49	20.23	0.51
23.12.2024 to 24.12.2024	52.1	21.7	11.23	21.84	0.57
26.12.2024 to 27.12.2024	52.7	22.3	10.82	16.54	0.51
Minimum	**50.1**	**20.9**	**10.11**	**16.23**	**0.50**
Maximum	**57.3**	**27.4**	**12.99**	**24.04**	**0.57**
Average	**53.62**	**23.25**	**11.61**	**20.22**	**0.53**
Dozing Area- AAQ2					
02.12.2024 to 03.12.2024	51.2	21.5	11.41	20.17	0.59
03.12.2024 to 04.12.2024	52.6	22.3	12.33	23.11	0.55
09.12.2024 to 10.12.2024	55.3	24.2	9.46	22.4	0.56
10.12.2024 to 11.12.2024	56.9	24.4	11.36	23.10	0.52
16.12.2024 to 17.12.2024	57.4	26.1	9.75	19.06	0.55
17.12.2024 to 18.12.2024	58.3	27.2	9.11	20.59	0.57
23.12.2024 to 24.12.2024	55.4	26.5	10.47	22.52	0.54
26.12.2024 to 27.12.2024	54.1	25.9	12.76	22.70	0.55
Minimum	**27.1**	**21.5**	**9.11**	**19.06**	**0.52**
Maximum	**57.4**	**27.2**	**12.76**	**23.11**	**0.59**
Average	**51.25**	**24.76**	**10.83**	**21.70**	**0.55**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
Near to Bench – AAQ 3					
02.12.2024 to 03.12.2024	57.2	26.9	11.23	16.36	0.59
03.12.2024 to 04.12.2024	55.6	25.3	11.14	19.76	0.55
09.12.2024 to 10.12.2024	54.3	25.1	8.96	17.01	0.57
10.12.2024 to 11.12.2024	56.1	25.9	12.13	17.25	0.55
16.12.2024 to 17.12.2024	55.2	24.6	10.23	23.32	0.53
17.12.2024 to 18.12.2024	55.7	26.2	11.36	22.3	0.59
23.12.2024 to 24.12.2024	57.2	27.6	10.24	19.22	0.61
26.12.2024 to 27.12.2024	56.4	25.9	11.36	18.24	0.57
Minimum	**54.3**	**24.6**	**8.96**	**16.36**	**0.53**
Maximum	**57.2**	**27.6**	**12.13**	**23.32**	**0.61**
Average	**55.96**	**25.93**	**10.83**	**19.18**	**0.57**
Near to Road Grader AAQ 4					
02.12.2024 to 03.12.2024	56.6	26.2	8.63	22.45	0.53
03.12.2024 to 04.12.2024	60.8	29.6	7.25	17.36	0.52
09.12.2024 to 10.12.2024	56.4	23.5	9.83	18.17	0.55
10.12.2024 to 11.12.2024	59.7	28.3	10.41	18.98	0.54
16.12.2024 to 17.12.2024	57.5	27.6	8.81	20.16	0.56
17.12.2024 to 18.12.2024	56.2	25.1	9.35	17.25	0.53
23.12.2024 to 24.12.2024	58.5	28.5	8.04	20.48	0.55
26.12.2024 to 27.12.2024	58.0	26.8	10.12	21.19	0.57
Minimum	**56.2**	**23.5**	**7.25**	**17.25**	**0.52**
Maximum	**60.8**	**29.6**	**10.41**	**22.45**	**0.57**
Average	**57.96**	**26.95**	**9.05**	**19.50**	**0.54**
Near Haul Road AAQ 5					
02.12.2024 to 03.12.2024	56.2	25.5	11.21	16.19	0.55
03.12.2024 to 04.12.2024	57.3	26.7	13.26	16.56	0.57
09.12.2024 to 10.12.2024	54.5	24.0	11.40	19.87	0.53
10.12.2024 to 11.12.2024	57.9	24.4	12.84	17.13	0.53
16.12.2024 to 17.12.2024	58.4	26.3	11.92	21.20	0.60
17.12.2024 to 18.12.2024	55.6	25.1	12.70	20.09	0.61
23.12.2024 to 24.12.2024	58.5	26.5	12.41	17.01	0.54
26.12.2024 to 27.12.2024	56.3	24.5	10.21	18.73	0.59
Minimum	**54.5**	**24.0**	**10.21**	**16.19**	**0.53**
Maximum	**58.5**	**26.7**	**13.26**	**21.2**	**0.61**
Average	**56.83**	**25.37**	**11.99**	**18.37**	**0.56**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
MINE EAST					
02.12.2024 to 03.12.2024	58.2	26.3	12.52	16.13	0.55
03.12.2024 to 04.12.2024	57.3	25.5	12.31	14.54	0.57
09.12.2024 to 10.12.2024	55.6	26.2	11.46	17.23	0.55
10.12.2024 to 11.12.2024	56.4	26.4	12.23	16.28	0.61
16.12.2024 to 17.12.2024	55.3	26.0	13.23	21.91	0.56
17.12.2024 to 18.12.2024	54.3	22.4	11.7	19.23	0.56
23.12.2024 to 24.12.2024	57.6	26.3	12.25	17.41	0.59
26.12.2024 to 27.12.2024	56.8	25.4	13.21	15.29	0.55
Minimum	**54.3**	**22.4**	**11.46**	**14.54**	**0.55**
Maximum	**58.2**	**26.4**	**13.23**	**21.91**	**0.61**
Average	**56.43**	**25.56**	**12.36**	**17.25**	**0.56**
MINE WEST					
02.12.2024 to 03.12.2024	57.6	26.5	11.25	19.52	0.53
03.12.2024 to 04.12.2024	55.3	24.2	11.78	18.70	0.56
09.12.2024 to 10.12.2024	56.9	26.7	10.53	21.18	0.55
10.12.2024 to 11.12.2024	56.6	25.9	9.60	20.61	0.59
16.12.2024 to 17.12.2024	54.3	26.7	11.56	18.00	0.52
17.12.2024 to 18.12.2024	55.9	26.7	10.49	20.38	0.54
23.12.2024 to 24.12.2024	56.6	26.9	11.03	21.50	0.55
26.12.2024 to 27.12.2024	55.3	27.4	10.21	23.79	0.55
Minimum	**54.3**	**24.2**	**9.60**	**18.00**	**0.52**
Maximum	**57.6**	**27.4**	**11.78**	**23.79**	**0.59**
Average	**56.06**	**26.37**	**10.80**	**20.46**	**0.54**
MINE SOUTH					
02.12.2024 to 03.12.2024	56.2	21.0	10.3	25.3	0.52
03.12.2024 to 04.12.2024	55.1	22.1	9.32	25.6	0.59
09.12.2024 to 10.12.2024	54.6	23.8	8.59	20.83	0.55
10.12.2024 to 11.12.2024	55.7	25.6	7.26	23.85	0.59
16.12.2024 to 17.12.2024	57.6	26.3	10.56	21.60	0.58
17.12.2024 to 18.12.2024	55.4	26.6	11.68	21.41	0.50
23.12.2024 to 24.12.2024	55.5	25.9	12.91	26.5	0.56
26.12.2024 to 27.12.2024	55.3	25.1	10.86	23.8	0.54
Minimum	**54.6**	**21.6**	**7.26**	**20.83**	**0.50**
Maximum	**57.6**	**26.6**	**12.91**	**26.5**	**0.59**
Average	**55.67**	**24.55**	**10.18**	**23.61**	**0.55**

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
MINE NORTH					
02.12.2024 to 03.12.2024	57.6	26.1	16.24	13.72	0.50
03.12.2024 to 04.12.2024	56.4	24.2	15.15	14.71	0.55
09.12.2024 to 10.12.2024	55.9	21.9	11.84	12.23	0.53
10.12.2024 to 11.12.2024	53.6	22.3	12.21	13.51	0.55
16.12.2024 to 17.12.2024	55.1	21.6	11.56	15.23	0.52
17.12.2024 to 18.12.2024	49.9	19.3	12.52	13.21	0.55
23.12.2024 to 24.12.2024	50.6	20.5	13.60	12.57	0.57
26.12.2024 to 27.12.2024	51.4	23.6	12.22	14.21	0.56
Minimum	**49.9**	**19.3**	**11.56**	**12.23**	**0.50**
Maximum	**57.6**	**26.1**	**16.24**	**15.23**	**0.57**
Average	**53.81**	**22.43**	**13.16**	**13.67**	**0.54**

MINES AREA – BUFFER ZONE

Table 8: Ambient Air Quality Results (December Month -2024)

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
THUMMALAPENTA VILLAGE –AAQ 1	**Coordinates:-**15°00'36.4" N, 78°01'11.0" E				
05.12.2024 to 06.12.2024	57.5	26.5	12.45	19.14	0.59
06.12.2024 to 07.12.2024	59.8	27.4	16.24	21.62	0.61
12.12.2024 to 13.12.2024	56.7	25.8	12.96	20.21	0.62
13.12.2024 to 14.12.2024	57.2	25.7	13.41	21.43	0.57
19.12.2024 to 20.12.2024	56.2	26.2	11.86	20.16	0.53
20.12.2024 to 21.12.2024	57.4	26.8	13.66	22.5	0.55
27.12.2024 to 28.12.2024	55.6	27.6	12.37	21.7	0.58
30.12.2024 to 31.12.2024	58.5	28.3	14.88	22.9	0.57
Minimum	**55.6**	**25.7**	**11.86**	**19.14**	**0.53**
Maximum	**59.8**	**28.3**	**16.24**	**22.9**	**0.61**
Average	**56.37**	**26.78**	**13.47**	**21.20**	**0.57**
ANKIREDDYPALLE VILLAGE- AAQ2	**Coordinates:-**15°01'27.2" N, 78°01'18.3" E				
05.12.2024 to 06.12.2024	54.2	25.4	10.51	21.49	0.60
06.12.2024 to 07.12.2024	56.8	25.9	11.41	22.47	0.56
12.12.2024 to 13.12.2024	53.4	24.2	10.26	21.36	0.55
13.12.2024 to 14.12.2024	59.6	27.4	15.32	24.57	0.55
19.12.2024 to 20.12.2024	57.2	26.3	14.78	24.21	0.58
20.12.2024 to 21.12.2024	59.7	27.8	15.44	25.69	0.60
27.12.2024 to 28.12.2024	53.8	24.2	10.17	19.25	0.55
30.12.2024 to 31.12.2024	56.9	25.1	12.49	20.27	0.54
Minimum	**53.4**	**24.2**	**10.17**	**19.25**	**0.54**
Maximum	**59.7**	**27.8**	**15.44**	**25.69**	**0.62**
Average	**56.45**	**25.78**	**12.54**	**22.41**	**0.60**
GURUVANIPALLI VILLAGE – AAQ 3	**Coordinates:-**15°04'28.6" N, 78°01'18.4" E				
05.12.2024 to 06.12.2024	57.4	25.2	12.13	26.54	0.59
06.12.2024 to 07.12.2024	55.8	24.7	11.74	24.2	0.55
12.12.2024 to 13.12.2024	57.3	26.3	12.41	25.78	0.57
13.12.2024 to 14.12.2024	56.9	25.2	11.47	25.32	0.60
19.12.2024 to 20.12.2024	58.7	26.1	12.36	26.31	0.59
20.12.2024 to 21.12.2024	59.3	27.6	13.47	27.36	0.58
27.12.2024 to 28.12.2024	58.4	26.9	14.57	26.87	0.57
30.12.2024 to 31.12.2024	57.5	26.4	13.26	25.4	0.56
Minimum	**55.8**	24.7	11.47	**24.2**	**0.55**
Maximum	**59.3**	**27.6**	**14.57**	**27.36**	**0.60**
Average	**57.66**	**26.05**	**12.67**	**25.97**	**0.57**

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
BANDARLAPALLE VILLAGE– AAQ 4					
05.12.2024 to 06.12.2024	56.7	25.7	11.2	17.44	0.59
06.12.2024 to 07.12.2024	58.3	27.8	12.8	22.4	0.57
12.12.2024 to 13.12.2024	56.4	26.6	11.5	18.7	0.58
13.12.2024 to 14.12.2024	55.7	25.3	10.78	19.36	0.56
19.12.2024 to 20.12.2024	57.6	26.4	12.3	22.1	0.59
20.12.2024 to 21.12.2024	55.2	25.7	10.23	17.52	0.62
27.12.2024 to 28.12.2024	56.7	26.8	11.74	22.47	0.60
30.12.2024 to 31.12.2024	55.6	25.2	10.58	22.7	0.61
Minimum	**55.2**	**25.2**	**10.23**	**17.44**	**0.56**
Maximum	**58.3**	**27.8**	**12.8**	**22.7**	**0.62**
Average	**56.52**	**26.18**	**11.39**	**20.33**	**0.59**
PETNIKOTA VILLAGE - AAQ 5					
05.12.2024 to 06.12.2024	55.1	21.2	11.3	20.21	0.55
06.12.2024 to 07.12.2024	56.8	22.4	12.7	19.14	0.55
12.12.2024 to 13.12.2024	54.5	20.6	10.25	18.74	0.56
13.12.2024 to 14.12.2024	52.4	19.4	11.74	19.62	0.59
19.12.2024 to 20.12.2024	54.8	20.4	10.1	20.14	0.62
20.12.2024 to 21.12.2024	57.6	21.7	12.8	22.41	0.54
27.12.2024 to 28.12.2024	58.2	25.5	14.59	23.58	0.60
30.12.2024 to 31.12.2024	57.2	26.2	13.74	22.4	0.58
Minimum	**52.4**	**19.4**	**10.1**	**18.74**	**0.54**
Maximum	**58.2**	**26.2**	**14.59**	**23.58**	**0.62**
Average	**55.82**	**22.17**	**12.15**	**20.78**	**0.57**

THUMMALAPENTA MINES LEASE -3 CORE ZONE

Table 9: Ambient Air Quality Results November Month -2024

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
At Quarry Edge – AAQ1					
04.11.2024 to 05.11.2024	52.3	21.7	11.6	22.2	0.55
05.11.2024 to 06.11.2024	53.5	22.3	12.8	21.1	0.60
11.11.2024 to 12.11.2024	50.3	20.1	12.6	18.5	0.57
12.11.2024 to 13.11.2024	50.5	20.3	11.8	16.3	0.55
18.11.2024 to 19.11.2024	50.2	20.0	12.7	24.5	0.54
19.11.2024 to 20.11.2024	51.7	21.8	12.7	23.7	0.60
25.11.2024 to 26.11.2024	52.1	22.5	11.6	22.5	0.62
26.11.2024 to 27.11.2024	51.8	21.3	12.9	28.3	0.55
Minimum	**50.2**	**20.0**	**11.6**	**16.3**	**0.54**
Maximum	**53.5**	**22.5**	**12.9**	**28.3**	**0.62**
Average	**51.55**	**21.25**	**12.33**	**22.13**	**0.57**
Dozing Area- AAQ2					
04.11.2024 to 05.11.2024	50.3	20.5	11.2	22.41	0.55
05.11.2024 to 06.11.2024	51.5	21.2	12.8	22.9	0.56
11.11.2024 to 12.11.2024	50.8	20.5	10.11	22.7	0.57
12.11.2024 to 13.11.2024	51.9	20.4	12.45	23.70	0.53
18.11.2024 to 19.11.2024	50.3	20.3	10.8	19.98	0.55
19.11.2024 to 20.11.2024	51.2	21.2	9.32	21.95	0.54
25.11.2024 to 26.11.2024	50.8	20.8	10.2	23.87	0.53
26.11.2024 to 27.11.2024	51.7	21.4	11.27	24.19	0.58
Minimum	**50.3**	**20.3**	**9.32**	**19.98**	**0.53**
Maximum	**51.9**	**21.4**	**12.8**	**23.87**	**0.58**
Average	**51.06**	**20.78**	**11.01**	**22.71**	**0.55**
Near to Bench – AAQ 3					
04.11.2024 to 05.11.2024	51.2	21.2	11.7	19.5	0.60
05.11.2024 to 06.11.2024	52.3	22.5	11.6	21.1	0.59
11.11.2024 to 12.11.2024	51.7	21.6	9.14	17.9	0.63
12.11.2024 to 13.11.2024	52.2	21.4	10.2	18.5	0.57
18.11.2024 to 19.11.2024	51.6	22.6	11.6	21.3	0.55
19.11.2024 to 20.11.2024	52.7	23.2	11.8	22.7	0.61
25.11.2024 to 26.11.2024	53.2	24.5	11.4	22.4	0.52
26.11.2024 to 27.11.2024	52.4	23.2	12.7	19.8	0.59
Minimum	**51.2**	**21.2**	**9.14**	**17.9**	**0.52**
Maximum	**53.2**	**24.5**	**12.7**	**22.7**	**0.63**
Average	**52.16**	**22.52**	**11.26**	**20.4**	**0.58**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
Near to Road Grader AAQ 4					
04.11.2024 to 05.11.2024	50.36	23.2	9.41	23.2	0.54
05.11.2024 to 06.11.2024	51.58	24.8	8.55	17.11	0.55
11.11.2024 to 12.11.2024	51.77	23.5	10.23	19.22	0.59
12.11.2024 to 13.11.2024	50.11	22.1	10.3	19.47	0.53
18.11.2024 to 19.11.2024	52.37	23.4	9.39	21.36	0.58
19.11.2024 to 20.11.2024	50.25	22.2	7.47	19.45	0.60
25.11.2024 to 26.11.2024	52.3	23.4	8.63	20.12	0.57
26.11.2024 to 27.11.2024	52.7	24.3	11.22	22.4	0.55
Minimum	**50.11**	**22.1**	**7.47**	**17.11**	**0.53**
Maximum	**52.7**	**24.8**	**11.22**	**23.2**	**0.6**
Average	**51.43**	**23.4**	**9.4**	**20.29**	**0.56**
Near Haul Road AAQ 5					
04.11.2024 to 05.11.2024	51.29	20.4	11.23	21.44	0.58
05.11.2024 to 06.11.2024	52.34	22.2	10.87	17.98	0.55
11.11.2024 to 12.11.2024	52.12	23.1	12.1	21.36	0.57
12.11.2024 to 13.11.2024	51.36	21.5	11.6	18.74	0.59
18.11.2024 to 19.11.2024	53.5	24.2	11.4	22.9	0.60
19.11.2024 to 20.11.2024	52.6	25.2	13.38	21.45	0.54
25.11.2024 to 26.11.2024	51.4	24.8	11.26	21.2	0.55
26.11.2024 to 27.11.2024	52.3	23.6	10.47	22.4	0.62
Minimum	**51.29**	**20.4**	**10.47**	**17.98**	**0.54**
Maximum	**53.5**	**25.2**	**13.38**	**22.9**	**0.62**
Average	**52.11**	**23.12**	**11.53**	**20.93**	**0.57**
MINE EAST					
04.11.2024 to 05.11.2024	52.3	23.5	15.6	18.63	0.59
05.11.2024 to 06.11.2024	53.4	25.1	13.2	19.25	0.53
11.11.2024 to 12.11.2024	55.2	26.3	12.27	18.6	0.54
12.11.2024 to 13.11.2024	53.2	24.2	13.25	19.3	0.60
18.11.2024 to 19.11.2024	55.8	26.4	12.4	22.5	0.55
19.11.2024 to 20.11.2024	56.2	25.5	12.65	21.8	0.51
25.11.2024 to 26.11.2024	54.6	25.8	12.41	19.74	0.55
26.11.2024 to 27.11.2024	60.5	27.2	11.76	17.21	0.58
Minimum	**52.3**	**23.5**	**11.76**	**17.21**	**0.51**
Maximum	**60.5**	**27.2**	**15.6**	**22.5**	**0.60**
Average	**55.15**	**25.5**	**12.94**	**19.62**	**0.55**

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
MINE WEST					
04.11.2024 to 05.11.2024	51.3	26.2	11.2	20.45	0.55
05.11.2024 to 06.11.2024	52.7	26.9	12.31	18.6	0.57
11.11.2024 to 12.11.2024	55.6	27.3	11.94	21.3	0.60
12.11.2024 to 13.11.2024	55.4	28.3	10.23	20.4	0.59
18.11.2024 to 19.11.2024	56.3	26.8	12.77	19.2	0.58
19.11.2024 to 20.11.2024	56.8	28.5	11.92	21.6	0.57
25.11.2024 to 26.11.2024	56.2	28.1	12.11	23.2	0.60
26.11.2024 to 27.11.2024	55.8	27.5	12.4	22.1	0.57
Minimum	**51.3**	**26.2**	**10.23**	**18.6**	**0.55**
Maximum	**56.8**	**28.5**	**11.77**	**23.2**	**0.60**
Average	**55.01**	**26.45**	**11.86**	**20.85**	**0.57**
MINE SOUTH					
04.11.2024 to 05.11.2024	52.7	24.9	9.25	22.5	0.59
05.11.2024 to 06.11.2024	53.5	26.5	8.47	26.2	0.57
11.11.2024 to 12.11.2024	51.7	24.1	9.25	23.2	0.61
12.11.2024 to 13.11.2024	52.6	23.4	8.44	21.3	0.58
18.11.2024 to 19.11.2024	55.2	27.8	12.7	22.2	0.60
19.11.2024 to 20.11.2024	53.4	25.4	12.1	18.3	0.59
25.11.2024 to 26.11.2024	54.3	26.2	10.2	19.2	0.57
26.11.2024 to 27.11.2024	55.7	27.6	11.3	25.9	0.62
Minimum	**51.7**	**23.4**	**8.44**	**18.3**	**0.57**
Maximum	**55.7**	**27.8**	**12.7**	**26.2**	**0.62**
Average	**53.63**	**25.73**	**10.21**	**22.35**	**0.59**
MINE NORTH					
04.11.2024 to 05.11.2024	54.3	27.2	11.74	16.4	0.54
05.11.2024 to 06.11.2024	52.8	24.2	11.3	15.2	0.57
11.11.2024 to 12.11.2024	53.5	23.2	11.7	14.3	0.56
12.11.2024 to 13.11.2024	54.7	24.2	12.41	16.8	0.60
18.11.2024 to 19.11.2024	53.5	23.8	13.3	15.4	0.62
19.11.2024 to 20.11.2024	54.1	24.9	14.2	14.2	0.61
25.11.2024 to 26.11.2024	53.5	23.7	12.5	13.6	0.59
26.11.2024 to 27.11.2024	55.2	28.1	14.9	13.9	0.55
Minimum	**52.8**	**23.2**	**11.3**	**13.6**	**0.54**
Maximum	**55.2**	**28.1**	**14.9**	**16.8**	**0.62**
Average	**53.95**	**24.91**	**12.75**	**14.97**	**0.58**

MINES AREA – BUFFER ZONE

Table 10: Ambient Air Quality Results November Month -2024

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
THUMMALAPENTA VILLAGE -AAQ 1	**Coordinates:-15°00'36.4" N, 78°01'11.0" E**				
07.11.2024 to 08.11.2024	51.2	22.5	9.41	17.55	0.58
08.11.2024 to 09.11.2024	52.3	23.9	12.1	22.1	0.55
14.11.2024 to 15.11.2024	53.7	24.2	11.5	21.8	0.51
15.11.2024 to 16.11.2024	50.8	23.4	11.23	22.5	0.52
21.11.2024 to 22.11.2024	51.8	23.3	9.41	20.8	0.50
22.11.2024 to 23.11.2024	52.7	22.8	12.2	22.1	0.52
28.11.2024 to 29.11.2024	52.8	23.2	12.51	23.4	0.51
29.11.2024 to 30.11.2024	53.5	24.2	11.84	22.4	0.57
Minimum	**50.8**	**22.5**	**9.41**	**17.55**	**0.50**
Maximum	**53.7**	**24.2**	**12.51**	**23.4**	**0.58**
Average	**52.35**	**23.4**	**11.27**	**21.58**	**0.53**
ANKIREDDYPALLE VILLAGE- AAQ2	**Coordinates:-15°01'27.2" N, 78°01'18.3" E**				
07.11.2024 to 08.11.2024	55.2	25.2	11.55	22.5	0.5.8
08.11.2024 to 09.11.2024	54.2	24.2	12.16	21.2	0.52
14.11.2024 to 15.11.2024	53.8	23.5	11.45	22.4	0.55
15.11.2024 to 16.11.2024	59.2	27.4	11.32	23.5	0.56
21.11.2024 to 22.11.2024	57.4	26.5	12.4	23.5	0.57
22.11.2024 to 23.11.2024	59.2	27.2	11.8	22.4	0.62
28.11.2024 to 29.11.2024	53.5	25.8	13.1	24.6	0.62
29.11.2024 to 30.11.2024	60.8	27.1	12.4	25.2	0.58
Minimum	**53.5**	**23.5**	**11.32**	**21.2**	**0.52**
Maximum	**60.8**	**27.4**	**13.1**	**25.2**	**0.62**
Average	**56.66**	**25.86**	**12.02**	**23.16**	**0.57**
GURUVANIPALLI VILLAGE – AAQ 3	**Coordinates:-15°04'28.6" N, 78°01'18.4" E**				
07.11.2024 to 08.11.2024	53.5	23.2	10.72	22.5	0.55
08.11.2024 to 09.11.2024	56.1	24.1	11.2	25.5	0.62
14.11.2024 to 15.11.2024	55.5	25.7	11.27	24.3	0.57
15.11.2024 to 16.11.2024	53.5	24.2	10.12	26.2	0.61
21.11.2024 to 22.11.2024	54.2	23.6	11.29	24.2	0.58
22.11.2024 to 23.11.2024	56.8	26.9	11.14	27.3	0.62
28.11.2024 to 29.11.2024	54.3	24.4	9.36	26.4	0.54
29.11.2024 to 30.11.2024	54.2	23.9	11.45	24.8	0.58
Minimum	**53.5**	23.2	9.36	**22.5**	**0.54**
Maximum	**56.8**	**26.9**	**11.45**	**27.3**	**0.62**
Average	**54.76**	**24.5**	**10.82**	**25.15**	**0.58**

Date	Parameter				
	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
BANDARLAPALLE VILLAGE-AAQ 4					
07.11.2024 to 08.11.2024	57.2	25.2	10.25	18.21	0.62
08.11.2024 to 09.11.2024	54.8	24.7	11.17	21.2	0.58
14.11.2024 to 15.11.2024	51.2	22.5	10.26	18.4	0.56
15.11.2024 to 16.11.2024	53.2	23.2	10.55	19.2	0.55
21.11.2024 to 22.11.2024	56.2	25.6	9.25	23.4	0.53
22.11.2024 to 23.11.2024	55.2	26.2	9.21	18.22	0.54
28.11.2024 to 29.11.2024	52.2	23.1	11.56	21.2	0.51
29.11.2024 to 30.11.2024	54.2	24.5	10.36	21.4	0.55
Minimum	**51.2**	**22.5**	**9.21**	**18.21**	**0.51**
Maximum	**57.2**	**26.2**	**11.56**	**23.4**	**0.62**
Average	**54.27**	**24.37**	**10.32**	**20.15**	**0.55**
PETNIKOTA VILLAGE - AAQ 5					
07.11.2024 to 08.11.2024	54.2	24.9	12.5	20.8	0.56
08.11.2024 to 09.11.2024	53.2	23.6	12.1	18.7	0.58
14.11.2024 to 15.11.2024	51.5	23.5	11.15	19.3	0.54
15.11.2024 to 16.11.2024	50.2	22.4	11.25	21.2	0.58
21.11.2024 to 22.11.2024	53.5	24.2	12.2	22.8	0.61
22.11.2024 to 23.11.2024	51.6	23.2	11.3	23.37	0.57
28.11.2024 to 29.11.2024	53.5	24.5	12.5	23.5	0.61
29.11.2024 to 30.11.2024	52.4	22.4	11.5	22.4	0.63
Minimum	**50.20**	**29.4**	**11.15**	**18.7**	**0.54**
Maximum	**54.2**	**24.9**	**12.5**	**23.5**	**0.63**
Average	**52.51**	**23.6**	**11.81**	**21.5**	**0.58**

MINES AREA – CORE ZONE

Table 11: Ambient Air Quality Results October Month -2024

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
At Quarry Edge - AAQ1					
03.10.2024 to 04.10.2024	52.8	29.5	12.78	23.2	0.59
04.10.2024 to 05.10.2024	55.9	33.2	13.92	22.45	0.61
10.10.2024 to 11.10.2024	48.4	30.2	12.4	18.74	0.58
11.10.2024 to 12.10.2024	54.7	31.7	10.77	16.5	0.53
17.10.2024 to 18.10.2024	56.9	32.8	12.4	24.2	0.57
18.10.2024 to 19.10.2024	51.7	28.5	13.8	23.6	0.59
24.10.2024 to 25.10.2024	53.5	31.7	14.8	21.7	0.65
25.10.2024 to 26.10.2024	55.4	29.6	13.5	29.29	0.55
Minimum	**51.7**	**28.5**	**10.77**	**16.5**	**0.53**
Maximum	**55.9**	**32.8**	**14.8**	**29.29**	**0.65**
Average	**53.66**	**30.9**	**13.04**	**22.46**	**0.58**
Drilling Site - AAQ2					
03.10.2024 to 04.10.2024	59.3	29.2	11.73	23.97	0.59
04.10.2024 to 05.10.2024	61.9	33.1	13.18	26.95	0.57
10.10.2024 to 11.10.2024	65.1	35.9	10.32	25.10	0.58
11.10.2024 to 12.10.2024	72.3	29.4	12.88	26.98	0.57
17.10.2024 to 18.10.2024	69.4	31.6	10.64	23.45	0.52
18.10.2024 to 19.10.2024	67.8	29.0	9.56	24.06	0.64
24.10.2024 to 25.10.2024	66.2	33.2	12.69	26.95	0.56
25.10.2024 to 26.10.2024	63.7	31.2	13.63	28.44	0.59
Minimum	**59.3**	**29.0**	**9.56**	**23.45**	**0.52**
Maximum	**72.3**	**35.9**	**13.63**	**28.44**	**0.64**
Average	**65.7**	**31.6**	**11.83**	**25.74**	**0.58**
Near to Bench - AAQ 3					
03.10.2024 to 04.10.2024	60.88	27.3	10.87	15.74	0.64
04.10.2024 to 05.10.2024	62.41	32.89	11.14	21.25	0.58
10.10.2024 to 11.10.2024	57.92	28.14	9.89	18.36	0.62
11.10.2024 to 12.10.2024	56.25	27.62	11.25	19.27	0.54
17.10.2024 to 18.10.2024	57.36	29.6	12.87	25.36	0.59
18.10.2024 to 19.10.2024	58.24	28.2	10.36	22.74	0.67
24.10.2024 to 25.10.2024	61.2	34.2	11.4	21.25	0.66
25.10.2024 to 26.10.2024	59.36	29.3	10.25	18.63	0.57
Minimum	**56.25**	**27.3**	**9.89**	**18.36**	**0.54**
Maximum	**62.41**	**34.2**	**12.87**	**25.36**	**0.67**
Average	**59.20**	**29.65**	**11.00**	**20.32**	**0.60**

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
Near to Road Grader- AAQ 4					
03.10.2024 to 04.10.2024	59.65	28.6	9.25	22.95	0.59
04.10.2024 to 05.10.2024	61.87	33.7	8.24	16.85	0.55
10.10.2024 to 11.10.2024	55.21	34.9	9.48	18.43	0.59
11.10.2024 to 12.10.2024	60.28	28.4	11.86	19.74	0.57
17.10.2024 to 18.10.2024	57.3	29.3	9.39	22.24	0.57
18.10.2024 to 19.10.2024	52.8	29.7	7.74	18.63	0.62
24.10.2024 to 25.10.2024	56.7	31.2	8.39	22.25	0.53
25.10.2024 to 26.10.2024	53.7	36.9	10.43	21.47	0.58
Minimum	**52.8**	**28.4**	**7.74**	**16.85**	**0.55**
Maximum	**61.87**	**36.9**	**11.86**	**22.95**	**0.59**
Average	**57.18**	**31.58**	**9.34**	**20.32**	**0.57**
Near Haul Road -AAQ 5					
03.10.2024 to 04.10.2024	61.7	32.8	11.36	21.95	0.61
04.10.2024 to 05.10.2024	65.2	31.4	12.74	18.65	0.57
10.10.2024 to 11.10.2024	56.8	28.2	10.29	22.54	0.55
11.10.2024 to 12.10.2024	50.9	30.2	12.87	18.63	0.53
17.10.2024 to 18.10.2024	57.4	26.5	11.39	23.2	0.68
18.10.2024 to 19.10.2024	54.9	30.2	13.45	20.74	0.64
24.10.2024 to 25.10.2024	63.2	33.5	11.41	18.11	0.57
25.10.2024 to 26.10.2024	57.5	27.4	10.77	21.49	0.60
Minimum	**50.9**	**26.5**	**10.29**	**18.11**	**0.53**
Maximum	**65.2**	**33.5**	**13.45**	**23.2**	**0.68**
Average	**58.45**	**30.02**	**11.78**	**20.66**	**0.59**
MINE EAST					
03.10.2024 to 04.10.2024	57.32	29.41	13.17	19.25	0.6
04.10.2024 to 05.10.2024	63.5	33.4	12.52	18.6	0.55
10.10.2024 to 11.10.2024	59.2	32.9	12.47	17.3	0.58
11.10.2024 to 12.10.2024	61.4	34.5	13.19	18.8	0.61
17.10.2024 to 18.10.2024	64.2	33.6	11.87	21.36	0.52
18.10.2024 to 19.10.2024	58.9	34.7	12.74	20.2	0.65
24.10.2024 to 25.10.2024	60.26	32.9	12.66	19.54	0.62
25.10.2024 to 26.10.2024	61.7	37.2	11.78	17.47	0.54
Minimum	**57.32**	**29.41**	**12.78**	**17.3**	**0.52**
Maximum	**64.2**	**37.2**	**13.19**	**21.36**	**0.65**
Average	**60.81**	**33.57**	**12.55**	**19.06**	**0.58**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
MINE WEST					
03.10.2024 to 04.10.2024	51.69	27.54	10.89	21.33	0.61
04.10.2024 to 05.10.2024	53.5	26.9	12.41	19.74	0.59
10.10.2024 to 11.10.2024	52.5	24.5	11.74	20.74	0.55
11.10.2024 to 12.10.2024	53.8	30.36	9.73	21.54	0.62
17.10.2024 to 18.10.2024	56.2	24.5	12.87	18.95	0.57
18.10.2024 to 19.10.2024	57.4	27.4	10.22	22.2	0.60
24.10.2024 to 25.10.2024	58.5	28.6	12.41	24.3	0.69
25.10.2024 to 26.10.2024	56.1	32.3	11.25	20.19	0.57
Minimum	**51.69**	**24.5**	**9.73**	**18.95**	**0.55**
Maximum	**58.5**	**32.3**	**12.87**	**24.3**	**0.69**
Average	**54.96**	**27.76**	**11.44**	**21.12**	**0.6**
MINE SOUTH					
03.10.2024 to 04.10.2024	55.32	28.2	9.51	23.6	0.57
04.10.2024 to 05.10.2024	54.3	32.3	8.74	26.76	0.62
10.10.2024 to 11.10.2024	51.9	27.6	7.74	22.36	0.67
11.10.2024 to 12.10.2024	57.2	29.2	8.33	24.36	0.63
17.10.2024 to 18.10.2024	61.6	33.2	10.47	23.25	0.59
18.10.2024 to 19.10.2024	54.2	28.2	12.63	19.25	0.67
24.10.2024 to 25.10.2024	63.1	31.4	11.74	17.5	0.55
25.10.2024 to 26.10.2024	58.1	26.2	10.11	25.49	0.64
Minimum	**51.9**	**27.6**	**8.33**	**17.5**	**0.55**
Maximum	**63.1**	**33.2**	**12.63**	**26.76**	**0.67**
Average	**56.96**	**29.53**	**9.90**	**22.82**	**0.61**
MINE NORTH					
03.10.2024 to 04.10.2024	53.2	29.6	11.69	17.98	0.63
04.10.2024 to 05.10.2024	56.4	26.4	13.25	16.21	0.59
10.10.2024 to 11.10.2024	52.1	22.4	11.47	15.49	0.555
11.10.2024 to 12.10.2024	57.7	24.9	12.36	17.11	0.62
17.10.2024 to 18.10.2024	52.6	22.3	11.74	19.19	0.58
18.10.2024 to 19.10.2024	52.3	26.7	12.96	15.44	0.63
24.10.2024 to 25.10.2024	55.2	29.6	14.21	18.99	0.58
25.10.2024 to 26.10.2024	57.9	26.31	13.77	17.22	0.54
Minimum	**52.1**	**22.3**	**11.47**	**15.44**	**0.54**
Maximum	**57.9**	**29.6**	**14.21**	**19.19**	**0.63**
Average	**54.67**	**26.02**	**12.68**	**17.20**	**0.59**

MINES AREA – BUFFER ZONE

Table 12: Ambient Air Quality Results (October Month -2024)

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
THUMMALAPENTA VILLAGE –AAQ 1					
07.10.2024 to 08.10.2024	55.2	31.44	8.77	19.11	0.55
08.10.2024 to 09.10.2024	54.8	33.2	12.25	22.36	0.62
14.10.2024 to 15.10.2024	55.3	34.2	11.36	23.25	0.65
15.10.2024 to 16.10.2024	53.8	36.8	11.47	23.89	0.59
21.10.2024 to 22.10.2024	54.7	29.2	9.92	20.17	0.57
22.10.2024 to 23.10.2024	52.9	31.4	11.49	22.36	0.58
28.10.2024 to 29.10.2024	58.5	37.2	13.29	24.17	0.61
29.10.2024 to 30.10.2024	56.7	36.9	11.74	25.12	0.62
Minimum	**52.9**	**29.2**	**8.77**	**19.11**	**0.55**
Maximum	**58.5**	**36.9**	**13.29**	**25.12**	**0.62**
Average	**55.23**	**33.79**	**11.28**	**22.55**	**0.59**
ANKIREDDYPALLE VILLAGE- AAQ2					
07.10.2024 to 08.10.2024	61.25	32.47	10.14	19.87	0.61
08.10.2024 to 09.10.2024	62.26	31.36	12.84	22.14	0.59
14.10.2024 to 15.10.2024	58.4	33.25	10.11	21.36	0.55
15.10.2024 to 16.10.2024	61.97	34.17	11.98	22.36	0.62
21.10.2024 to 22.10.2024	58.25	35.98	11.24	26.25	0.61
22.10.2024 to 23.10.2024	61.26	33.24	10.96	22.41	0.65
28.10.2024 to 29.10.2024	62.79	32.44	11.29	24.78	0.55
29.10.2024 to 30.10.2024	61.77	37.84	11.79	22.69	0.61
Minimum	**58.25**	**31.36**	**10.11**	**19.87**	**0.55**
Maximum	**62.79**	**37.84**	**12.84**	**26.25**	**0.62**
Average	**60.99**	**33.84**	**11.29**	**22.73**	**0.59**
GURUVANIPALLI VILLAGE – AAQ 3					
07.10.2024 to 08.10.2024	52.65	25.74	10.13	22.36	0.55
08.10.2024 to 09.10.2024	54.78	31.3	12.22	25.36	0.65
14.10.2024 to 15.10.2024	57.36	34.29	10.74	21.74	0.59
15.10.2024 to 16.10.2024	53.65	31.36	8.36	26.99	0.54
21.10.2024 to 22.10.2024	54.17	29.36	10.36	22.14	0.63
22.10.2024 to 23.10.2024	55.36	32.41	11.47	24.36	0.62
28.10.2024 to 29.10.2024	53.25	30.36	9.19	28.36	0.58
29.10.2024 to 30.10.2024	52.36	33.25	11.69	25.98	0.57
Minimum	**52.36**	**25.74**	**8.36**	**21.74**	**0.54**
Maximum	**57.36**	**34.29**	**12.22**	**28.36**	**0.65**
Average	**54.19**	**30.99**	**10.52**	**24.66**	**0.59**

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
BANDARLAPALLE VILLAGE– AAQ 4					
07.10.2024 to 08.10.2024	57.65	32.16	10.11	22.36	0.62
08.10.2024 to 09.10.2024	62.21	29.25	11.41	21.36	0.59
14.10.2024 to 15.10.2024	62.36	25.19	10.19	18.36	0.64
15.10.2024 to 16.10.2024	56.25	32.36	10.36	22.36	0.54
21.10.2024 to 22.10.2024	57.6	27.9	8.78	23.25	0.57
22.10.2024 to 23.10.2024	53.29	32.87	7.55	19.36	0.55
28.10.2024 to 29.10.2024	61.14	24.25	10.11	22.14	0.61
29.10.2024 to 30.10.2024	61.78	31.36	8.74	21.36	0.68
Minimum	**53.29**	**24.25**	**7.55**	**18.36**	**0.54**
Maximum	**62.36**	**32.87**	**11.41**	**23.25**	**0.68**
Average	**59.35**	**29.1**	**9.65**	**21.31**	**0.60**
PETNIKOTA VILLAGE - AAQ 5					
07.10.2024 to 08.10.2024	55.6	28.9	9.02	19.42	0.60
08.10.2024 to 09.10.2024	57.8	32.1	11.04	21.35	0.62
14.10.2024 to 15.10.2024	55.7	34.3	10.32	22.66	0.63
15.10.2024 to 16.10.2024	54.3	35.4	12.56	23.67	0.61
21.10.2024 to 22.10.2024	54.6	29.3	9.25	21.65	0.60
22.10.2024 to 23.10.2024	52.4	30.5	10.57	21.08	0.66
28.10.2024 to 29.10.2024	56.8	35.2	12.01	23.74	0.58
29.10.2024 to 30.10.2024	57.36	36.87	13.57	24.41	0.64
Minimum	**52.4**	**28.9**	**9.02**	**19.42**	**0.58**
Maximum	**57.8**	**36.87**	**13.57**	**24.41**	**0.66**
Average	**55.57**	**32.82**	**11.04**	**22.25**	**0.61**

12.1 GROUND WATER QUALITY MONITORING:

Sampling of Ground water was carried out in the month of December , 2024. Grab sample were collected and sampling forms are filled in as per the sampling plan. The preservative sample were properly added to preserve as per standard method and stored immediately in ice boxes, which were ensured for appropriate temperatures. Collection of Ground water and Surface water samples in the study area for the drinking water parameters as per IS 10500: 2012 at 6 Locations,6 samples in Buffer Zone which are summarized below:

Table 13: Ground Water Quality Sampling Locations

S.NO	Location Code	Location	Source
1	W1	Ankireddy palli Village	Bore well Water
2	W2	Thummalapenta Village	Bore well Water
3	W3	Guruvanipalli Village	Bore well Water
4	W4	Bandarlla Palli Village	Bore well Water
5	W5	Petnikota Village	Bore well Water
6	W6	APCW colony	Bore well Water

Table 14: December Ground Water Quality Results

S.No.	Parameters	Unit	W1	W2	W3	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1.	pH (at 25 °C)	-	7.54	7.84	7.76	6.5-8.5	No Relaxation
2.	Colour	Hazen Unit	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	5	15
3.	Turbidity	NTU	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	1	5
4.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as CaCO3	mg/l	286.0	420.0	339.0	200	600
7.	Calcium as Ca	mg/l	98.2	149.0	114.0	75	200
8.	Alkalinity as CaCO3	mg/l	296.0	314.2	426.0	200	600
9.	Chloride as Cl	mg/l	30.1	316.0	147.0	250	1000
10.	Residual free Chlorine	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.2	1
11.	Cyanide as CN	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	No Relaxation
12.	Magnesium as Mg	mg/l	9.97	11.7	13.2	30	100
13.	Total Dissolved Solids	mg/l	402.0	928.0	720.0	500	2000
14.	Sulphate as SO4	mg/l	69.3	269.0	156.0	200	400
15.	Fluoride as F	mg/l	0.88	0.53	0.87	1	1.5
16.	Nitrate as NO3-N	mg/l	8.1	6.2	12.4	45	No Relaxation
17.	Iron as Fe	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	1	No Relaxation
18.	Aluminium as Al	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	0.03	0.2
19.	Boron	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.5	2.4
20.	Phenolic Compounds	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	0.002
21.	Anionic Detergents as MBAS	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.2	1
22.	Hexa Chromium as Cr+6	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	--	--
23.	Zinc as Zn	mg/l	BDL(DL 0.0005)	BDL(DL 0.0005)	BDL(DL 0.0005)	5	15
24.	Copper as Cu	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	1.5
25.	Manganese as Mn	mg/l	BDL(DL 0.10)	BDL(DL 0.10)	BDL(DL 0.10)	0.1	0.3
26.	Cadmium as Cd	mg/l	BDL (DL 0.002)	BDL (DL 0.002)	BDL (DL 0.002)	0.003	No Relaxation
27.	Lead as Pb	mg/l	BDL(DL 0.008)	BDL(DL 0.008)	BDL(DL 0.008)	0.01	No Relaxation
28.	Selenium as Se	mg/l	BDL(DL 0.005)	BDL(DL 0.005)	BDL(DL 0.005)	0.01	No Relaxation
29.	Arsenic as As	mg/l	BDL(DL 0.002)	BDL(DL 0.002)	BDL(DL 0.002)	0.01	No Relaxation
30.	Mercury as Hg	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	No Relaxation
31.	Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
32.	E-Coli	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
33.	Fecal Coliform	MPN/100 ml	Absent	Absent	Absent	--	--

S.no.	Parameters	Unit	W4	W5	W6	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1.	pH (at 25 °C)	-	7.86	7.72	7.58	6.5-8.5	No Relaxation
2.	Colour	Hazen Unit	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	5	15
3.	Turbidity	NTU	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	1	5
4.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as CaCO3	mg/l	378.0	408.0	226.0	200	600
7.	Calcium as Ca	mg/l	81.5	124.0	61.7	75	200
8.	Alkalinity as CaCO3,	mg/l	392.0	431.0	225.0	200	600
9.	Chloride as Cl	mg/l	84.3	135.0	42.4	250	1000
10.	Residual free Chlorine	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.2	1
11.	Cyanide as CN	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	No Relaxation
12.	Magnesium as Mg	mg/l	42.4	23.7	17.5	30	100
13.	Total Dissolved Solids	mg/l	479.0	672.0	294.0	500	2000
14.	Sulphate as SO4	mg/l	34.3	54.3	39.2	200	400
15.	Fluoride as F	mg/l	0.67	0.58	0.52	1	1.5
16.	Nitrate as NO3-N	mg/l	10.2	9.87	9.7	45	No Relaxation
17.	Iron as Fe	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	1	No Relaxation
18.	Aluminium as Al	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	0.03	0.2
19.	Boron	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.5	2.4
20.	Phenolic Compounds	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	0.002
21.	Anionic Detergents as MBAS	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.2	1
22.	Hexa Chromium as Cr+6	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	--	--
23.	Zinc as Zn	mg/l	BDL(DL 0.0005)	BDL(DL 0.0005)	BDL(DL 0.0005)	5	15
24.	Copper as Cu	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	1.5
25.	Manganese as Mn	mg/l	BDL(DL 0.10)	BDL(DL 0.10)	BDL(DL 0.10)	0.1	0.3
26.	Cadmium as Cd	mg/l	BDL (DL 0.002)	BDL (DL 0.002)	BDL (DL 0.002)	0.003	No Relaxation
27.	Lead as Pb	mg/l	BDL(DL 0.008)	BDL(DL 0.008)	BDL(DL 0.008)	0.01	No Relaxation
28.	Selenium as Se	mg/l	BDL(DL 0.005)	BDL(DL 0.005)	BDL(DL 0.005)	0.01	No Relaxation
29.	Arsenic as As	mg/l	BDL(DL 0.002)	BDL(DL 0.002)	BDL(DL 0.002)	0.01	No Relaxation
30.	Mercury as Hg	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	No Relaxation
31.	Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
32.	E-Coli	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
33.	Fecal Coliform	MPN/100 ml	Absent	Absent	Absent	--	--

12.2 MINES DRINKING WATER QUALITY MONITORING:

Sampling of Drinking water was carried out in the month of December, 2024. Grab sample were collected and sampling forms are filled in as per the sampling plan. The preservative sample were properly added to preserve as per standard method and stored immediately in ice boxes, which were ensured for appropriate temperatures. Collection of Ground water and Surface water samples in the study area for the drinking water parameters as per IS 10500: 2012 at 5 Locations 5 Sample which are summarized below:

Table 15: Mines Drinking Water Quality Sampling Locations.

S.NO	Period	Location Code	Location	Source
1	**December -2024**	DW1	Mines Office	RO Water
2		DW2	Canteen	RO Water
3		DW3	Mine Crusher	RO Water
4.		DW4	Phase-1 Rest Shelter	RO Water
5.		DW5	Phase-2 Rest Shelter	RO Water

Drinking water Quality

Table 16: December Mines Drinking Water Quality Results

S. No.	Parameters	Unit	DW1	DW2	DW3	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1.	pH (at 25 °C)	-	7.72	7.50	7.42	6.5-8.5	No Relaxation
2.	Colour	Hazen	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	5	15
3.	Turbidity	NTU	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	1	5
4.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as CaCO3	mg/l	62.9	221.0	182.0	200	600
7.	Calcium as Ca	mg/l	15.3	73.7	61.4	75	200
8.	Alkalinity as CaCO3,	mg/l	75.6	232.0	213.0	200	600
9.	Chloride as Cl	mg/l	21.24	38.58	45.21	250	1000
10.	Residual free Chlorine	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.2	1
11.	Cyanide as CN	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	No Relaxation
12.	Magnesium as Mg	mg/l	6.01	9.03	7.01	30	100
13.	Total Dissolved Solids	mg/l	95.0	316.0	292.0	500	2000
14.	Sulphate as SO4	mg/l	8.4	74.3	43.7	200	400
15.	Fluoride as F	mg/l	0.26	0.52	0.72	1	1.5
16.	Nitrate as NO3-N	mg/l	0.73	4.87	5.04	45	No Relaxation
17.	Iron as Fe	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	1	No Relaxation
18.	Aluminium as Al	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	0.03	0.2
19.	Boron	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.5	2.4
20.	Phenolic Compounds	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	0.002
21.	Anionic Detergents as MBAS	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.2	1
22.	Hexa Chromium as Cr+6	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	--	--
23.	Zinc as Zn	mg/l	BDL(DL 0.0005)	BDL(DL 0.0005)	BDL(DL 0.0005)	5	15
24.	Copper as Cu	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	1.5
25.	Manganese as Mn	mg/l	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	0.1	0.3
26.	Cadmium as Cd	mg/l	BDL (DL 0.002)	BDL (DL 0.002)	BDL (DL 0.002)	0.003	No Relaxation
27.	Lead as Pb	mg/l	BDL(DL 0.008)	BDL(DL 0.008)	BDL(DL 0.008)	0.01	No Relaxation
28.	Selenium as Se	mg/l	BDL(DL 0.005)	BDL(DL 0.005)	BDL(DL 0.005)	0.01	No Relaxation
29.	Arsenic as As	mg/l	BDL(DL 0.002)	BDL(DL 0.002)	BDL(DL 0.002)	0.01	No Relaxation
30.	Mercury as Hg	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	No Relaxation
31.	Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
32.	Fecal Coliform	MPN/100 ml	Absent	Absent	Absent	--	--

Parameters	Unit	DW4	DW5	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
pH (at 25 °C)	-	7.36	7.51	6.5-8.5	No Relaxation
Colour	Hazen	BDL(DL 1.0)	BDL(DL 1.0)	5	15
Turbidity	NTU	BDL(DL 1.0)	BDL(DL 1.0)	1	5
Odour	-	Agreeable	Agreeable	Agreeable	Agreeable
Taste	-	Agreeable	Agreeable	Agreeable	Agreeable
Total Hardness as CaCO3	mg/l	65.1	216.0	200	600
Calcium as Ca	mg/l	11.7	74.1	75	200
Alkalinity as CaCO3,	mg/l	61.9	210.0	200	600
Chloride as Cl	mg/l	16.25	34.15	250	1000
Residual free Chlorine	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	0.2	1
Cyanide as CN	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	0.05	No Relaxation
Magnesium as Mg	mg/l	8.73	7.57	30	100
Total Dissolved Solids	mg/l	84.0	298.0	500	2000
Sulphate as SO4	mg/l	6.8	54.2	200	400
Fluoride as F	mg/l	0.16	0.46	1	1.5
Nitrate as NO3-N	mg/l	0.61	2.4	45	No Relaxation
Iron as Fe	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	1	No Relaxation
Aluminium as Al	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	0.03	0.2
Boron	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	0.5	2.4
Phenolic Compounds	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	0.001	0.002
Anionic Detergents as MBAS	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	0.2	1
Hexa Chromium as Cr+6	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	--	--
Zinc as Zn	mg/l	BDL(DL 0.0005)	BDL(DL 0.0005)	5	15
Copper as Cu	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	0.05	1.5
Manganese as Mn	mg/l	BDL(DL 0.01)	BDL(DL 0.01)	0.1	0.3
Cadmium as Cd	mg/l	BDL (DL 0.002)	BDL (DL 0.002)	0.003	No Relaxation
Lead as Pb	mg/l	BDL(DL 0.008)	BDL(DL 0.008)	0.01	No Relaxation
Selenium as Se	mg/l	BDL(DL 0.005)	BDL(DL 0.005)	0.01	No Relaxation
Arsenic as As	mg/l	BDL(DL 0.002)	BDL(DL 0.002)	0.01	No Relaxation
Mercury as Hg	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	0.001	No Relaxation
Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent
Fecal Coliform	MPN/100 ml	Absent	Absent	--	--

12.3 PERSONAL DUST MONITORING:

Table 17: December Personal Dust Monitoring

S.No.	Location	Date & Time (Hrs)	Respirable Dust Conc. (mg/m³)	FREE SILICA %	* Limits for Personal dust (mg/m³)
1.	Shovel Operator	14.12.2024 08:30-05:30	1.67	0.56	3.0
2.	Dumper	19.12.2024 08:30-05:30	1.75	0.78	
3.	Loading point	22.12.2024 08:30-05:30	1.50	0.61	

DGMS Circular of 1975, Limits for Respirable dust is 3 mg/m3
NIOSH Manual of Analytical Methods (NMAM) 0500

Table 18: November Personal Dust Monitoring

S.No.	Location	Date & Time (Hrs)	Respirable Dust Conc. (mg/m³)	FREE SILICA %	* Limits for Personal dust (mg/m³)
1.	Shovel Operator	16.11.2024 08:30-05:30	1.66	0.64	3.0
2.	Dumper	18.11.2024 08:30-05:30	1.83	0.56	
3.	Loading point	20.11.2024 08:30-05:30	1.75	0.62	

DGMS Circular of 1975, Limits for Respirable dust is 3 mg/m3
NIOSH Manual of Analytical Methods (NMAM) 0500

Table 19: October Personal Dust Monitoring

S.No.	Location	Date & Time (Hrs)	Respirable Dust Conc. (mg/m³)	FREE SILICA %	* Limits for Personal dust (mg/m³)
1.	Shovel Operator	24.10.2024 08:30-05:30	1.62	0.65	3.0
2.	Dumper	27.10.2024 08:30-05:30	1.77	0.56	
3.	Loading point	29.10.2024 08:30-05:30	1.78	0.57	

DGMS Circular of 1975, Limits for Respirable dust is 3 mg/m3
NIOSH Manual of Analytical Methods (NMAM) 0500

12.6 Static Dust Monitoring

Table 20: December Static Dust Monitoring.

S.No.	Location	Date & Time (Hrs)	Total Dust Conc. (mg/m³)	FREE SILICA %
1.	Near mines Operation	28.12.2024 08:30-05:30	1.58	0.64
2.	Near road Grader area	28.12.2024 08:30-05:30	1.77	0.75
3.	Near Dozing area	30.12.2024 08:30-05:30	1.68	0.57

NIOSH Manual of Analytical Methods (NMAM) 0500

Table 21: November Static Dust Monitoring.

S.No.	Location	Date & Time (Hrs)	Total Dust Conc. (mg/m³)	FREE SILICA %
1.	Near mines Operation	22.11.2024 08:30-05:30	1.62	0.59
2.	Near road Grader area	23.11.2024 08:30-05:30	1.80	0.75
3.	Near Dozing area	25.11.2024 08:30-05:30	1.73	0.55

NIOSH Manual of Analytical Methods (NMAM) 0500

Table 22: October Static Dust Monitoring.

S.No.	Location	Date & Time (Hrs)	Total Dust Conc. (mg/m³)	FREE SILICA %
1.	Near mines Operation	24.10.2024 08:30-05:30	1.53	0.48
2.	Near road Grader area	27.10.2024 08:30-05:30	1.74	0.69
3.	Near Dozing area	29.10.2024 08:30-05:30	1.62	0.51

NIOSH Manual of Analytical Methods (NMAM) 0500

13.0 MINES SOURCE NOISE MONITORING

Table 23: December Mines Source Noise Monitoring Results

S.No.	Sample Code	Date of Monitoring	Location	Noise level dB(A)	
				Noise Level Measured at 1.5 mts away from the equipment	Noise Level Measured inside the cabin
THUMALAPENTA MINES LEASE – 3					
1.	NL2	06.12.2024	Shovel	76.2	55.5
2.	NL3	06.12.2024	Dumper	77.9	56.2
3.	NL4	06.12.2024	Dozer	74.7	51.6
4.	NL6	06.12.2024	Haul Road	74.9	NA

Source: Mines Source Noise Monitoring

Ambient Noise Levels

Table 24: Ambient Noise Quality Results December Month-2024 (CORE ZONE)

S.NO	Locations	Date of Monitoring	Noise Level Leq. dB (A)	
			Day Time	Night Time
1	At Quarry Edge-Mines East	05.12.2024	68.5	51.3
2	Dozing Area	05.12.2024	66.3	50.3
3	Near to bench	12.12.2024	71.7	52.9
4	Near to Road Grader	12.12.2024	69.5	48.3
5	Near to Haul Road	20.12.2024	72.8	53.7
6	Mine West	20.12.2024	69.3	51.6
7	Mine South	27.12.2024	67.5	51.8
8	Mine North	27.12.2024	71.4	49.5

Ambient Noise Levels

Table 25: Mines Ambient Noise Monitoring Results for December Month-2024(Buffer Zone)

S.NO	Locations	Latitude & Longitude	Date of Monitoring	Noise Level Leq. dB (A)	
				Day Time	Night Time
1	Thummalapenta Village	15°04'28.6" N, 78°01'18.4" E	13.12.2024	67.2	48.6
2	Ankireddypalle Village	15°00'36.4" N, 78°01'11.0" E	19.12.2024	65.5	50.2
3	Guruvanipalli Village	15°03'19.0" N, 78°00'53.8" E	21.12.2024	62.3	50.3
4	Bandarlapalle Village	15°05'04.3" N, 78°03'46.0"E	27.12.2024	63.5	48.9
5	Petnikota Village	15°00'43.0" N, 78°03'14.2" E	30.12.2024	60.9	44.2

Source: *Ambient Noise Quality Monitoring*

Table 26: November Mines Source Noise Monitoring Results

S.No.	Sample Code	Date of Monitoring	Location	Noise level dB(A)	
				Noise Level Measured at 1.5 mts away from the equipment	Noise Level Measured inside the cabin
THUMALAPENTA MINES LEASE – 3					
1.	NL2	07.11.2024	Shovel	73.9	54.9
2.	NL3	07.11.2024	Dumper	75.9	56.2
3.	NL4	07.11.2024	Dozer	73.1	54.2
4.	NL6	07.11.2024	Haul Road	76.3	NA

TABLE: 27 Ambient Noise Levels

S.NO	Locations	Date of Monitoring	Noise Level Leq. dB (A)	
			Day Time	Night Time
1	At Quarry Edge-Mines East	07.11.2024	64.3	49.8
2	Dozing Area	07.11.2024	65.6	54.7
3	Near to bench	14.11.2024	67.3	50.5
4	Near to Road Grader	14.11.2024	62.9	50.8
5	Near to Haul Road	21.11.2024	66.5	49.5
6	Mine West	21.11.2024	65.4	52.3
7	Mine South	28.11.2024	66.2	51.8
8	Mine North	28.11.2024	72.7	47.2

Source: Mines Source Noise Monitoring

Table 28: Mines Ambient Noise Monitoring Results for November Month-2024(Buffer Zone)

S.NO	Locations	Latitude & Longitude	Date of Monitoring	Noise Level Leq. dB (A)	
				Day Time	Night Time
1	Thummalapenta Village	15°00'36.4" N, 78°01'11.0" E	14.11.2024	67.2	51.7
2	Ankireddypalle Village	15°03'19.2" N, 78°00'53.8" E	16.11.2024	62.5	50.5
3	Guruvanipalli Village	15°04'28.6" N, 78°01'18.4" E	20.11.2024	63.2	49.6
4	Bandarlapalle Village	15°00'43.0" N, 78°03'14.2" E	22.11.2024	61.5	48.2
5	Petnikota Village	15°00'43.0" N, 78°03'14.2" E	23.11.2024	58.4	47.9

Source: *Ambient Noise Quality Monitoring*

Table 29: October Mines Source Noise Monitoring Results

S.No.	Sample Code	Date of Monitoring	Location	Noise level dB(A)	
				Noise Level Measured at 1.5 mts away from the equipment	Noise Level Measured inside the cabin
THUMALAPENTA MINES LEASE – 3					
1.	NL2	17.10.2024	Shovel	74.3	55.6
2.	NL3	17.10.2024	Dumper	77.6	55.2
3.	NL4	17.10.2024	Dozer	75.3	55.9
4.	NL6	17.10.2024	Haul Road	76.8	NA

Ambient Noise Levels

Table 30: Ambient Noise Quality Results October Month-2024 (CORE ZONE)

S.NO	Locations	Date of Monitoring	Noise Level Leq. dB (A)	
			Day Time	Night Time
1	At Quarry Edge-Mines East	04.10.2024	67.3	50.3
2	Dozing Area	04.10.2024	65.5	55.1
3	Near to bench	11.10.2024	68.7	50.9
4	Near to Road Grader	11.10.2024	64.2	49.3
5	Near to Haul Road	16.10.2024	67.3	48.4
6	Mine West	16.10.2024	66.2	51.9
7	Mine South	25.10.2024	65.9	52.3
8	Mine North	25.10.2024	73.2	46.9

Source: Mines Source Noise Monitoring

Table 31: Mines Ambient Noise Monitoring Results for October Month-2024 (Buffer Zone)

S.NO	Locations	Latitude & Longitude	Date of Monitoring	Noise Level Leq. dB (A)	
				Day Time	Night Time
1	Thummalapenta Village	15°00'36.4" N, 78°01'11.0" E	18.10.2024	66.2	51.1
2	Ankireddypalle Village	15°03'19.2" N, 78°00'53.8" E	21.10.2024	61.8	51.2
3	Guruvanipalli Village	15°04'28.6" N, 78°01'18.4" E	24.10.2024	61.2	48.4
4	Bandarlapalle Village	15°00'43.0" N, 78°03'14.2" E	26.10.2024	62.7	49.2
5	Petnikota Village	15°00'43.0" N, 78°03'14.2" E	27.10.2024	57.8	48.3

Source: *Ambient Noise Quality Monitoring*

13. Fugitive Dust Emission Monitoring

Fugitive emission was monitored at various location, results of fugitive dust emission are furnished below:

Table 32: October to December 2024 Fugitive Dust Emission Monitoring Results

S.No	Location	December - 2024	SPM (µg/m^3)	November-2024	SPM (µg/m^3)	October - 2024	SPM (µg/m^3)
1	Mine East	20.12.2024	789	19.11.2024	796	18.10.2024	798
2	Mine West	20.12.2024	816	19.11.2024	825	18.10.2024	817
3	Mine North	21.12.2024	837	21.11.2024	839	21.10.2024	829
4	Mine South	21.12.2024	805	21.11.2024	820	21.10.2024	787

Note: As per CPCB Guidelines for Prevention and control of Fugitive Emission from Cement Plants – 5000 µg/m3 for coal Stock Pile and 2000 µg/m3 for rest other areas

-:*******:-

ENVIRONMENT MONITORING REPORT

SEASONAL REPORTS

BANDARLAPALLI LIMESTONE MINES

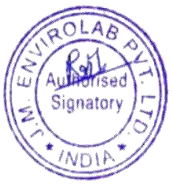
January to March, 2025

SUBMITTED TO	SUBMITTED BY
UltraTech Cement Limited **(Unit: Andhra Pradesh Cement Works)** **Bandarlapalli Mine** Village – Bandarlapalli , Mandal Kolimigundala, Kurnool District,Andhra Pradesh.	**JM EnviroLab Pvt. Ltd.** 424, Ground Floor, Udyog Vihar,Phase- 4, Gurugram- 122015 (Haryana)

ACKNOWLEDGEMENT

We are thankful to UltraTech Cement Ltd. (UTCL) for providing JM Envirolab Pvt. Ltd. an opportunity to carry out Post Project Compliance monitoring at their various units, which shall guide them towards executing and implementing better environment management plan. We are thankful to the dedicated team who carried out the monitoring with the utmost sincerity and diligence. It is because of their honest effort; we could bring out this resourceful report.

We express our sincere thanks to management of Cement Plant, CPP & Mines of Andhra Pradesh Cement Works of M/s UltraTech Cement Ltd. at Village - Bhogasamudram, Mandal - Tadipatri, District - Anantapur and Village - Tummalapenta, Mandal - Kolimigundla, District - Nandyal, Andhra Pradesh for their co-operation & unstinted help without which the environment monitoring could not have been possible. The courtesy extended to our team is highly appreciated.



For J.M. Envirolab Pvt. Ltd.
Gurugram

Date: 04/04/2025

CONTENTS

1. INTRODUCTION

UltraTech Cement Limited has set up its most technically advanced and modern Cement Plant of 10.00 MTPA clinker capacity in the name of Andhra Pradesh Cement Works (APCW) near Bhogasamudram village, Tadipatri mandal in Anantapur District and Tummalapenta village, Kolimigundla mandal, Nandyal District of A.P. APCW has mining leases at Tummalapenta village, Kolimigundla Mandal Nandyal District to cater the limestone requirement of the cement plant.

This seasonal monitoring is being carried out pertaining to Bandarlapalli Limestone Mine of M/s Ultratech Cement works (Unit: Andhra Pradesh Cement Works) over and extent of 90.52 Ha located at Thummalapenta village in Kolimigundla Mandal of Nandyal District.

In order to assess the likely impacts arising out the existing mine activity, **JM Envirolab Pvt. Ltd, Gurgaon (Haryana)** was entrusted with the task of undertaking Seasonal Environmental Monitoring for various environmental parameters, which are likely to be affected.

2. Scope of Work

The scope of work includes the data generation for various environmental components viz Air, Noise, Water and Respirable dust. Samples were collected and analyzed during **Season (January to March, 2025)**

2.1 Mining Methodology and Operations

The technically viable option for the Bandarlapalli Limestone Mine deposits is the open-cast mining. The mine will be worked-out by mechanical mode of mining.

After removal of overburden soil and blasting, Limestone is extracted by Shovels / Excavators. This operation is followed by transportation of Limestone to crusher by loading Dumpers, then crushing and conveying to the stacker through the covered belt conveyors.

The equipment deployment planning for various mining operations has been done keeping in view the following:

- Removal of overburden/top soil by dozer and its handling by excavator /dumper combination.
- Breaking of lime stone by drilling and blasting activity.
- Loading of limestone and transportation to crusher by excavator/dumper combination.

2.2 Mining Operations

The mining operations include:

- Mine excavation
- Loading
- Transportation
- Crushing and Conveying

3 Pollution Control Measures

All the required precautions are being implemented to reduce the pollution from different environmental attributes viz air, noise, water, etc.

3.1 Air Pollution Control

There is every chance of fine dust entering into the atmosphere during the mining operations like drilling, blasting and transportation, become air born, thus leading to increase in SPM levels in ambient air. In order to curb the air pollution, mine authorities have taken the following steps.

- Wet drilling to suppress the dust emission from the drill machines at its source by inbuilt water injection system
- Regular water sprinkling on blasted heaps and haul roads with water tankers.
- Water tankers are deployed to suppress the dust on all the roads used for transport of the mineral.
- Use of sharp drill bits for drilling holes. Charging the holes by using optimum charge and using time delay detonators.
- Adapting of controlled blasting techniques to suppress dust generation while blasting.
- Regular grading of haul roads and service roads to clear accumulation of loose material.
- Avoiding over filling of dumpers and consequent spillage on the roads.
- The vehicles and machinery are kept in well-maintained condition so that emissions are minimized.
- Plantation along approach roads, and on safety barrier zones to arrest spread of dust. The plantation already is helping in this direction.
- AC cabins are provided all HEMM equipment, to minimize dust exposure of the operators.
- Crushers are enclosed in the chambers and bag filters are provided for dust collection.

4 Green Belt Development

A comprehensive plan is envisaged for development of Green Belt.

- The Green belt development is being helped in controlling the dust emissions as well as act as barrier for reducing the noise levels.
- Dense tree belt developed as required to minimize the dust emission

5 Noise Pollution Control

- AC cabins are provided all HEMM equipment (shovels, Dumpers, Drills etc.,), to minimize noise exposure of the operators.
- All the equipment chosen were having optimum noise levels, in the operator's cabins, of less than the 90 dB (A) as per OSHA standards for 8 hours shifts.
- Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
- Proper and regular maintenance of all HEMM and other auxiliary equipment.

6.0 DETAILS OF SAMPLING LOCATIONS

6.1 Meteorology and Ambient Air Quality

Meteorological data was collected concurrently with the ambient air quality monitoring. Wind speed, wind direction, relative humidity and temperature were recorded at hourly intervals continuously. The limestone mine lease out area are shown in **Figure-1**

All the sampling locations fall within the mine lease area. To assess the effect of mining activity on the air environment parameters like Particulate Matter (PM10), (PM2.5), Sulphur Dioxide (SO_2), Oxides of Nitrogen (NOx) and Respirable dust were monitored. The details of the sampling locations with respect to the operating mines are given below in **Table-1** and **Table-2** depicted in **Figure-1.**

TABLE-1

AMBIENT AIR QUALITY LOCATIONS CORE ZONE

Sampling Code	Locations	Sampling Height(m)	Location Details
AAQ1	At Quarry edge	05	Represents Up-wind air quality
AAQ3	Near to Bench	05	Represents Cross -wind air quality
AAQ4	Near to Road Grader	05	Represents Down-wind air quality
AAQ5	Near to Mines Haul Road	05	Represents Down-wind air quality

TABLE-2

AMBIENT AIR QUALITY LOCATIONS BUFFER ZONE

Sampling Code	Locations	Sampling Height(m)	Location Details
AAQ1	Thummalapenta village	05	Represents Cross-wind air quality
AAQ2	Ankireddypalli village	05	Represents Up-wind air quality
AAQ3	Guruvanipalli village	05	Represents Cross -wind air quality
AAQ4	Bandarlapalli village	05	Represents Down-wind air quality
AAQ5	Petnikota village	05	Represents Down-wind air quality

6.2 Respirable Dust Monitoring

Respirable Dust estimation (personal and static) was carried to estimate the Total Suspended particulate matter and Respirable dust generated due to the mining activities. The monitoring was carried out at various locations. The sampling locations are given below in **Table-2(A) and Table-2(B)** and shown in **Figure-3**

TABLE-2(A)

RESPIRABLE DUST MONITORING LOCATIONS (Personal dust sampling)

Sampling Code	Measurement point	Location Details
RPM 1	Shovel	Cabin Inside
RPM 2	Dumper	Cabin inside
RPM 3	Loading Point	Transportation

TABLE-2(B)

RESPIRABLE DUST MONITORING LOCATIONS (Static Sampling)

Sampling Code	Locations	Location Details
RPM 4	Near Mines Operation	-
RPM 5	Near Road Grader Area	-
RPM 6	Dozing Area	Limestone

7.0 Water Quality

Water samples (ground) from various locations and APCW colony. The samples were collected as per the standard procedures and analyzed as per IS: 10500 specifications. Parameters like Temperature, Electrical conductivity, pH and Dissolved Oxygen were analyzed in-situ using portable water analysis kit. Samples were collected by taking suitable precautions, particularly using sterilized bottles for bacteriological analysis. The details of the sampling locations are given in **Table-3**

TABLE- 3

S.NO	Location Code	Location	Source
1	W1	Ankireddy palli Village	Bore well Water
2	W2	Tummalapenta Village	Bore well Water
3	W3	Guruvanipalli Village	Bore well Water
4	W4	Bandarlla Palli Village	Bore well Water
5	W5	Petnikota Village	Bore well Water
5	W6	APCW colony	Bore well Water

8 Noise Levels

Noise levels vary depending on the various activities in the mining area such as movement of dumpers and trucks as well as other activities in the workshop. Accordingly, noise levels were recorded at various locations to assess the noise level.

The details of the noise sampling locations are given in **Table-3** and depicted in **Figure – 3.**

TABLE- 4

WORKPLACE NOISE LEVEL MONITORING LOCATIONS

Sample Code	Core Zone	Sample Code	Ambient Noise Locations
NL 1	Shovel	AN1	Ankireddypalle Village
NL 2	Dumper	AN2	Thummalapenta Village
NL 3	Dozer	AN3	Guruvanipalli Village
NL 4	Road Grader	AN4	Petnikota Village
NL 5	Haul road	AN5	Bandarlapalle Village

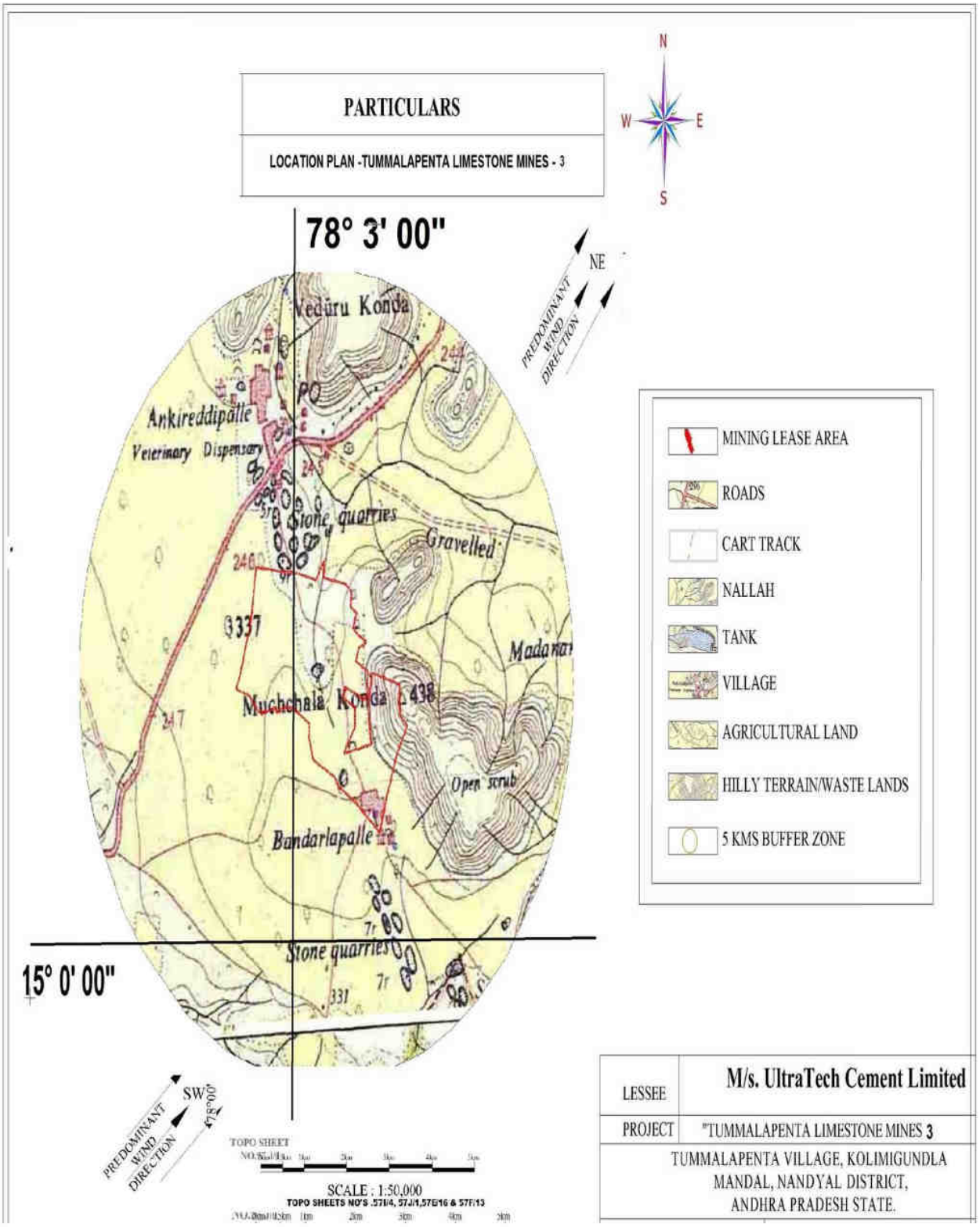


FIGURE - 1

BANDARLAPALLE LIMESTONE MINES - MINE LEASE AREA

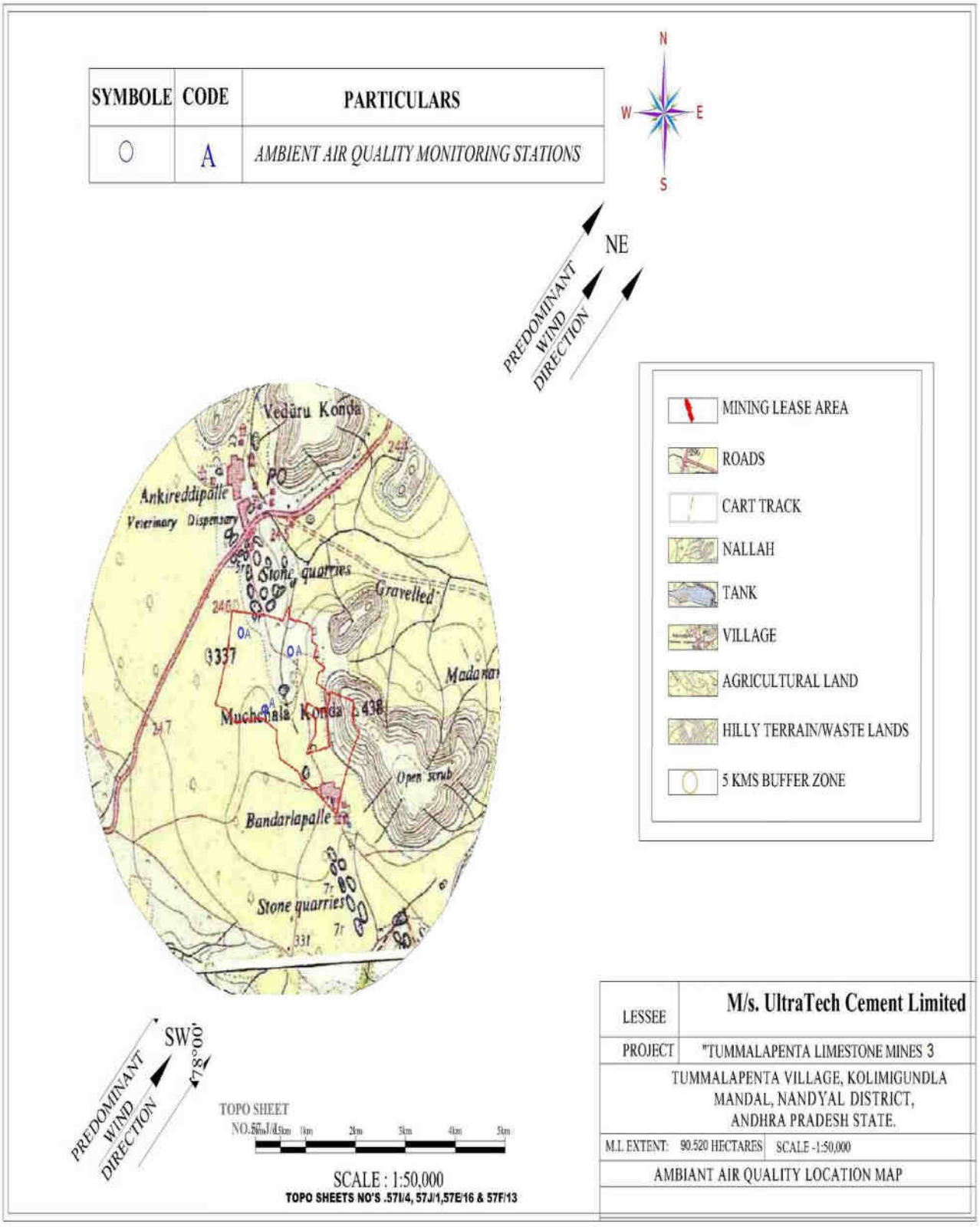


FIGURE - 2

BANDARLAPALLE LIMESTONE MINES LEASE AREA– AMBIENT AIR QUALITY STATIONS

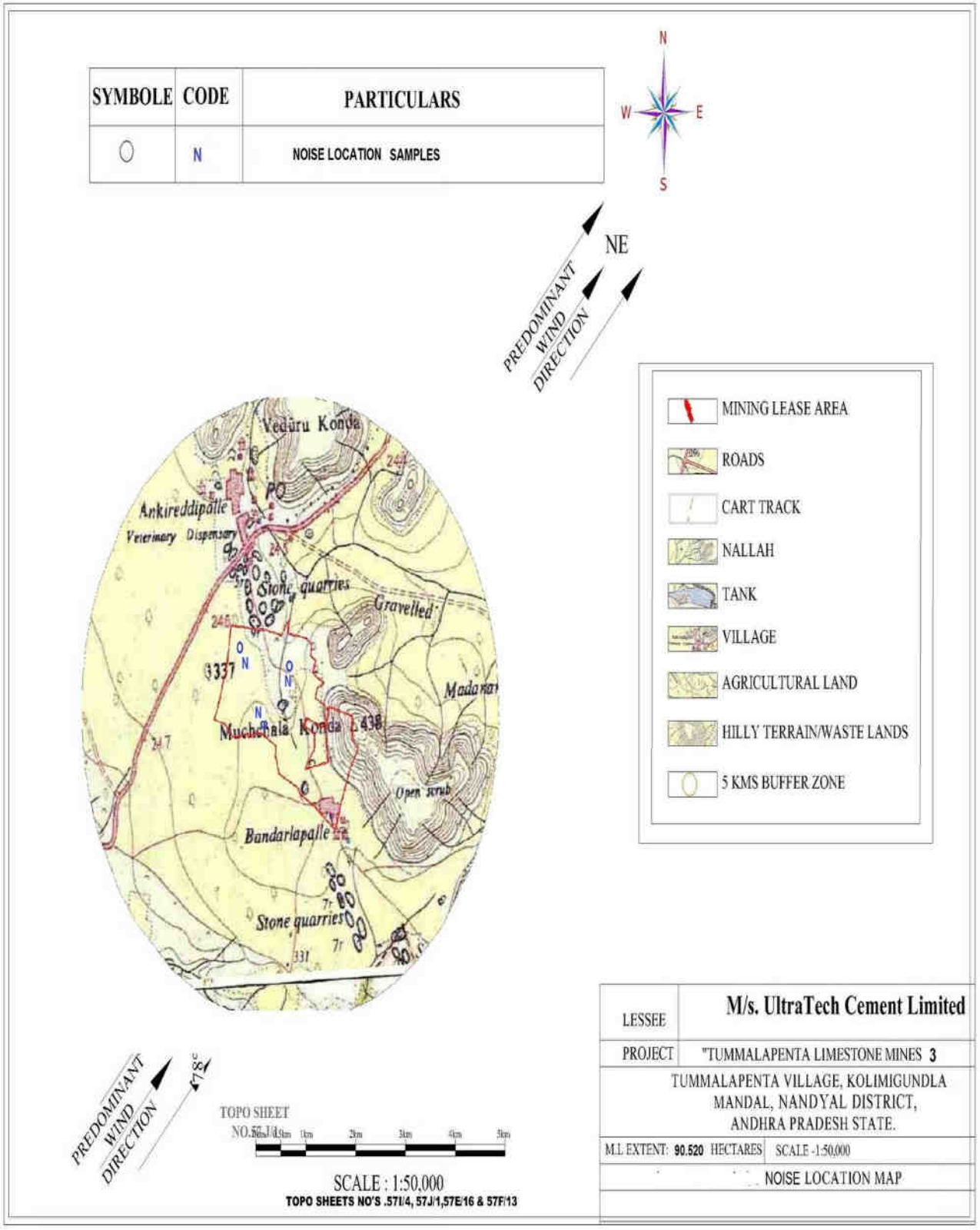


FIGURE - 3

BANDARLAPALLE LIMESTONE MINES LEASE AREA – NOISE MONITORING STATIONS

9.0 METHODOLOGY OF SAMPLING AND ANALYTICAL PROCEDURE

Methodology of Sampling

9.1 Meteorology

Micro-meteorological data was observed using automatic weather station installed at Site The data was recorded continuously. Wind direction and speed is recorded using wind vane and anemometer. Temperature, Relative humidity & Atm. Pressure are recorded using sensors applicable. Rainfall measured using Rain gauge.

9.2 Ambient Air Quality

Sampling was carried out continuously for forty-eight hours per week at each station during the four-week study period using pre-calibrated Respirable Dust Samplers and fine dust samplers. In each of the stations earmarked, samples were collected for SO_2 and NOx, Particulate Matter (PM2.5), PM10 and Suspended Particulate Matter (SPM) samples were collected on twenty-four hourly average basis and same were sent to Central Laboratory to analyze the samples.

The Respirable Dust monitoring was carried out by using pre-calibrated Respirable Dust Samplers.

TABLE – 5.0 TECHNIQUES USED FOR AMBIENT AIR QUALITY MONITORING

Sr.No	Parameter	Technique	Minimum detectable limit ($\mu g/m^3$)
1	Particulate Matter($P.M_{10}$)	(Gravimetric Method)	4.0
2	Particulate Matter($P.M_{2.5}$)	(Gravimetric Method)	1.0
3	Sulphur Dioxide	Modified West & Gaeke	5.0
4	Oxides of Nitrogen	Jacob and Hocheiser	5.0
5	Carbon Monoxide	GC-FID method	0.01

9.3 Water Quality

Water samples were collected for physico-chemical and bacteriological parameters taking suitable precautions. Temperature, pH, Dissolved Oxygen and Electrical conductivity were measured in the field while collecting the samples.

Sterilized bottles were used to collect samples for bacteriological analysis, stored in ice and transported to the Central Laboratory. Samples for analysis of metals were collected separately and preserved with nitric acid.

9.4 Noise Levels

Outdoor noise measurements were recorded at 1.5 m away from the noise generating sources. The noise monitoring was carried out continuously on hourly basis over a period of one day at each location. The noise level monitoring was carried out using a Digital noise level meter.

10.0 Existing ENVIRONMENT CONDITIONS

10.1 Data Analysis

Observation on Meteorology: The meteorological parameters play a vital role in transport and dispersion of pollutants in the atmosphere. Fieldwork during **January, 2025 to March, 2025** consisted of collection and analysis of samples of Ambient Air and Water in addition to meteorological data and Noise levels at different locations within the mining lease area

10.2 WIND ROSE (Meteorological Data) & Wind Pattern during Season

(January, 2025 to March, 2025)

Meteorological data was collected on hourly basis for wind speed, temperature and relative humidity continuously for three months during the study period. The analysed data is elaborated below.

Temperature and Relative Humidity Levels during Season (Janaury, 2025 to March, 2025)

Maximum and minimum temperatures recorded during the study period were 36.0(˚C) and 24.0 (˚C) respectively. Maximum and minimum Relative Humidity recorded during the study period was 82.0 % and 43.0% respectively.

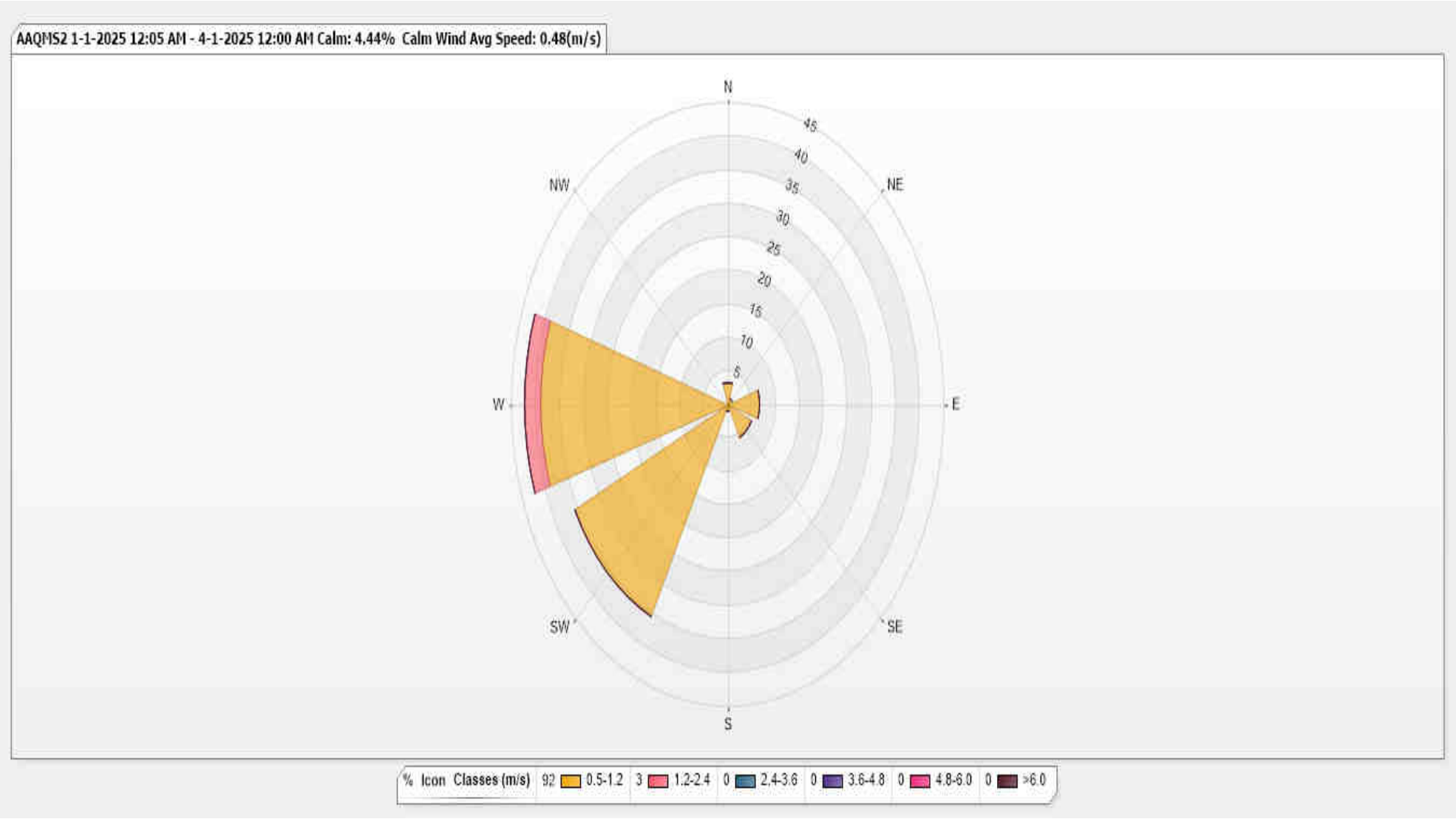
SITE SPECIFIC METROLOGICAL CONDITIONS

Site specific climatic condition refers to weather conditions comprising of temperature, relative humidity, wind speed, rainfall, cloud cover etc. This determines the baseline conditions and probable impacts on environmental parameters with respect to the Project. The site specific climatic conditions for the month of January to March, 2025 are given below in below table: 5

Table 6: Metrological Conditions

Month	-	Temperature (˚C)	Relative Humidity (%)	Wind speed (M/s)	Rain fall mm
January to March, 2025	Min	24.0	43.0	0.5	No rainfall
	Max	36.0	82.0	1.5	
	Average	30.0	75.0	0.8	

(Source: IMD AAQM Station-2 Near Industrial Canteen)


AAQMS2 1-1-2025 12:05 AM - 4-1-2025 12:00 AM Calm: 4.44% Calm Wind Avg Speed: 0.48(m/s)
N
NE
E
SE
S
SW
W
NW
45
40
35
30
25
20
15
10
5
% Icon Classes (m/s)
92 0.5-1.2
3 1.2-2.4
0 2.4-3.6
0 3.6-4.8
0 4.8-6.0
0 >6.0

ENVIRONMENT MONITORING DATA

11. AMBIENT AIR QUALITY

12. AMBIENT AIR QUALITY MONITORING RESULTS:

Ambient air quality has been generated at five Locations. The 08 hours average values of Respirable particulate Matter PM10, PM2.5, SO2 and NOx, Levels Recorded at all the Sampling Locations are discussed below. The values are than compared are standards prescribed by CPCB for industrial and mixed uses, the ambient air Quality levels (PM10, PM2.5, SO2 and NOx) for all the sampling locations given in below table.

THUMMALAPENTA MINES LEASE -3 CORE ZONE

Table 7: Ambient Air Quality Results (March Month -2025) (CORE ZONE)

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
At Quarry Edge – AAQ1					
03.03.2025 to 04.03.2025	61.4	31.2	13.26	26.55	0.63
04.03.2025 to 05.03.2025	58.2	26.8	11.05	25.42	0.61
10.03.2025 to 11.03.2025	61.0	30.9	16.32	23.28	0.65
11.03.2025 to 12.03.2025	57.2	27.3	18.17	22.46	0.60
17.03.2025 to 18.03.2025	55.3	26.9	17.31	19.17	0.58
18.03.2025 to 19.03.2025	58.7	27.2	16.20	21.90	0.62
24.03.2025 to 25.03.2025	61.3	31.0	19.84	23.67	0.63
25.03.2025 to 26.03.2025	59.6	29.6	17.45	21.04	0.65
Minimum	**55.3**	**26.8**	**11.05**	**19.17**	**0.58**
Maximum	**61.4**	**31.2**	**19.84**	**26.55**	**0.65**
Average	**59.1**	**28.9**	**16.20**	**22.94**	**0.62**
Dozing Area- AAQ2					
03.03.2025 to 04.03.2025	58.2	27.5	12.97	25.12	0.63
04.03.2025 to 05.03.2025	57.7	25.9	10.25	23.48	0.60
10.03.2025 to 11.03.2025	59.6	28.9	13.14	22.63	0.59
11.03.2025 to 12.03.2025	57.4	23.1	15.08	20.47	0.57
17.03.2025 to 18.03.2025	55.5	25.3	11.69	19.38	0.61
18.03.2025 to 19.03.2025	57.8	26.9	13.25	18.45	0.58
24.03.2025 to 25.03.2025	59.6	29.3	18.20	19.70	0.62
25.03.2025 to 26.03.2025	57.0	27.0	16.01	21.28	0.64
Minimum	**55.5**	**23.1**	**10.25**	**18.45**	**0.57**
Maximum	**59.6**	**29.3**	**18.20**	**25.12**	**0.64**
Average	**57.8**	**26.7**	**13.83**	**21.32**	**0.61**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
Near to Bench – AAQ 3					
03.03.2025 to 04.03.2025	63.0	31.2	11.61	24.48	0.62
04.03.2025 to 05.03.2025	58.5	28.3	12.49	22.89	0.64
10.03.2025 to 11.03.2025	65.6	33.2	16.76	20.18	0.68
11.03.2025 to 12.03.2025	60.1	29.6	14.90	19.29	0.59
17.03.2025 to 18.03.2025	62.2	31.5	13.36	22.93	0.62
18.03.2025 to 19.03.2025	60.9	31.6	12.38	25.31	0.67
24.03.2025 to 25.03.2025	63.8	32.8	13.69	23.52	0.65
25.03.2025 to 26.03.2025	62.7	32.2	14.13	18.35	0.66
Minimum	**58.5**	**28.3**	**11.61**	**18.35**	**0.59**
Maximum	**65.6**	**33.2**	**16.76**	**25.31**	**0.68**
Average	**62.1**	**31.3**	**13.67**	**22.12**	**0.64**
Near to Road Grader AAQ 4					
03.03.2025 to 04.03.2025	66.3	34.2	14.20	28.63	0.70
04.03.2025 to 05.03.2025	62.3	32.5	16.72	22.89	0.68
10.03.2025 to 11.03.2025	65.8	29.1	14.86	26.13	0.64
11.03.2025 to 12.03.2025	63.1	30.6	15.49	29.55	0.66
17.03.2025 to 18.03.2025	59.5	28.5	12.54	21.47	0.60
18.03.2025 to 19.03.2025	64.1	34.4	10.36	23.09	0.62
24.03.2025 to 25.03.2025	67.0	32.3	17.79	25.32	0.74
25.03.2025 to 26.03.2025	65.3	36.7	13.54	23.84	0.65
Minimum	**59.5**	**28.5**	**10.36**	**21.47**	**0.60**
Maximum	**67.0**	**36.7**	**17.79**	**29.55**	**0.74**
Average	**64.2**	**32.3**	**14.44**	**25.12**	**0.66**
Near Haul Road AAQ 5					
03.03.2025 to 04.03.2025	63.3	27.8	9.83	19.73	0.67
04.03.2025 to 05.03.2025	60.4	30.9	13.25	22.10	0.64
10.03.2025 to 11.03.2025	59.6	32.7	11.10	23.23	0.60
11.03.2025 to 12.03.2025	58.0	34.4	12.93	25.60	0.58
17.03.2025 to 18.03.2025	59.1	27.7	9.98	23.75	0.56
18.03.2025 to 19.03.2025	55.9	28.6	12.30	24.48	0.58
24.03.2025 to 25.03.2025	58.6	34.5	14.46	25.83	0.55
25.03.2025 to 26.03.2025	62.5	36.3	16.90	25.11	0.56
Minimum	**55.9**	**27.7**	**9.83**	**19.73**	**0.55**
Maximum	**63.3**	**36.3**	**16.90**	**25.83**	**0.67**
Average	**59.7**	**31.6**	**12.59**	**23.73**	**0.59**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
MINE EAST					
03.03.2025 to 04.03.2025	61.6	34.7	10.51	21.50	0.66
04.03.2025 to 05.03.2025	55.3	30.8	11.43	17.40	0.61
10.03.2025 to 11.03.2025	61.3	29.9	9.97	19.24	0.64
11.03.2025 to 12.03.2025	61.5	30.2	10.11	22.99	0.67
17.03.2025 to 18.03.2025	59.6	31.7	13.50	18.92	0.61
18.03.2025 to 19.03.2025	63.4	35.1	9.23	17.06	0.60
24.03.2025 to 25.03.2025	64.6	37.4	10.01	18.76	0.65
25.03.2025 to 26.03.2025	57.9	32.1	11.14	20.10	0.62
Minimum	**55.3**	**29.9**	**9.23**	**17.06**	**0.60**
Maximum	**64.6**	**37.4**	**13.50**	**22.99**	**0.67**
Average	**60.6**	**32.7**	**10.74**	**19.50**	**0.63**
MINE WEST					
03.03.2025 to 04.03.2025	57.6	26.5	11.25	19.52	0.53
04.03.2025 to 05.03.2025	55.3	24.2	11.78	18.70	0.56
10.03.2025 to 11.03.2025	56.9	26.7	10.53	21.18	0.55
11.03.2025 to 12.03.2025	56.6	25.9	9.60	20.61	0.59
17.03.2025 to 18.03.2025	54.3	26.7	11.56	18.00	0.52
18.03.2025 to 19.03.2025	55.9	26.7	10.49	20.38	0.54
24.03.2025 to 25.03.2025	56.6	26.9	11.03	21.50	0.55
25.03.2025 to 26.03.2025	55.3	27.4	10.21	23.79	0.55
Minimum	**54.3**	**24.2**	**9.60**	**18.00**	**0.52**
Maximum	**57.6**	**27.4**	**11.78**	**23.79**	**0.59**
Average	**56.06**	**26.37**	**10.80**	**20.46**	**0.54**
MINE SOUTH					
03.03.2025 to 04.03.2025	56.2	21.0	10.3	25.3	0.52
04.03.2025 to 05.03.2025	55.1	22.1	9.32	25.6	0.59
10.03.2025 to 11.03.2025	54.6	23.8	8.59	20.83	0.55
11.03.2025 to 12.03.2025	55.7	25.6	7.26	23.85	0.59
17.03.2025 to 18.03.2025	57.6	26.3	10.56	21.60	0.58
18.03.2025 to 19.03.2025	55.4	26.6	11.68	21.41	0.50
24.03.2025 to 25.03.2025	55.5	25.9	12.91	26.5	0.56
25.03.2025 to 26.03.2025	55.3	25.1	10.86	23.8	0.54
Minimum	**54.6**	**21.6**	**7.26**	**20.83**	**0.50**
Maximum	**57.6**	**26.6**	**12.91**	**26.5**	**0.59**
Average	**55.67**	**24.55**	**10.18**	**23.61**	**0.55**

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
MINE NORTH					
03.03.2025 to 04.03.2025	57.3	30.9	17.10	26.09	0.62
04.03.2025 to 05.03.2025	61.7	31.9	18.44	26.61	0.69
10.03.2025 to 11.03.2025	62.2	28.8	15.70	24.83	0.57
11.03.2025 to 12.03.2025	56.7	31.2	19.64	23.32	0.69
17.03.2025 to 18.03.2025	61.4	28.8	16.50	26.18	0.62
18.03.2025 to 19.03.2025	54.5	30.2	15.49	21.41	0.58
24.03.2025 to 25.03.2025	60.3	32.2	18.30	25.17	0.61
25.03.2025 to 26.03.2025	67.7	29.6	20.39	23.53	0.59
Minimum	**54.5**	**28.8**	**15.49**	**21.41**	**0.57**
Maximum	**67.7**	**32.2**	**20.39**	**26.61**	**0.69**
Average	**60.2**	**30.5**	**17.69**	**24.64**	**0.62**

MINES AREA – BUFFER ZONE

Table 8: Ambient Air Quality Results (March Month -2025)

Date	Parameter				
	PM $_{10}$ (µg/m³)	PM $_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
THUMMALAPENTA VILLAGE –AAQ 1		**Coordinates:-**15°00'36.4" N, 78°01'11.0" E			
06.03.2025 to 07.03.2025	61.0	36.4	10.39	21.82	0.63
07.03.2025 to 08.03.2025	62.5	32.3	12.63	23.99	0.66
13.03.2025 to 14.03.2025	66.5	34.6	11.36	19.91	0.69
14.03.2025 to 15.03.2025	59.7	35.0	13.58	26.08	0.65
20.03.2025 to 21.03.2025	63.0	27.4	11.36	24.40	0.61
21.03.2025 to 22.03.2025	60.4	30.8	9.87	21.11	0.64
27.03.2025 to 28.03.2025	67.4	32.6	12.63	24.87	0.63
28.03.2025 to 29.03.2025	64.7	35.8	16.14	26.69	0.65
Minimum	**59.7**	**27.4**	**9.87**	**19.91**	**0.61**
Maximum	**67.4**	**36.4**	**16.14**	**26.69**	**0.69**
Average	**63.1**	**33.1**	**12.25**	**23.61**	**0.64**
ANKIREDDYPALLE VILLAGE- AAQ2		**Coordinates:-**15°01'27.2" N, 78°01'18.3" E			
06.03.2025 to 07.03.2025	56.6	25.2	12.53	23.23	0.58
07.03.2025 to 08.03.2025	54.1	24.6	14.82	21.48	0.53
13.03.2025 to 14.03.2025	55.2	27.0	12.09	22.39	0.56
14.03.2025 to 15.03.2025	60.7	27.3	10.56	24.26	0.57
20.03.2025 to 21.03.2025	58.8	26.5	13.45	26.55	0.60
21.03.2025 to 22.03.2025	61.3	28.9	12.80	22.61	0.65
27.03.2025 to 28.03.2025	54.1	25.8	15.32	26.10	0.67
28.03.2025 to 29.03.2025	62.3	28.2	13.20	28.71	0.62
Minimum	**54.1**	**24.6**	**10.56**	**21.48**	**0.53**
Maximum	**62.3**	**28.9**	**15.32**	**28.71**	**0.67**
Average	**57.9**	**26.7**	**13.10**	**24.42**	**0.60**
GURUVANIPALLI VILLAGE – AAQ 3		**Coordinates:-**15°04'28.6" N, 78°01'18.4" E			
06.03.2025 to 07.03.2025	56.7	29.2	13.40	22.51	0.67
07.03.2025 to 08.03.2025	53.8	34.7	12.76	20.20	0.58
13.03.2025 to 14.03.2025	52.4	32.4	10.22	18.15	0.64
14.03.2025 to 15.03.2025	49.9	29.6	11.68	20.34	0.62
20.03.2025 to 21.03.2025	52.3	32.1	14.03	25.98	0.59
21.03.2025 to 22.03.2025	55.0	27.4	11.83	21.09	0.56
27.03.2025 to 28.03.2025	52.8	30.8	13.25	23.11	0.62
28.03.2025 to 29.03.2025	57.4	34.5	10.11	25.39	0.56
Minimum	**49.9**	**27.4**	**10.11**	**18.15**	**0.56**
Maximum	**57.4**	**34.7**	**14.03**	**25.98**	**0.67**
Average	**53.8**	**31.3**	**12.16**	**22.10**	**0.61**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
BANDARLAPALLE VILLAGE– AAQ 4					
06.03.2025 to 07.03.2025	54.1	24.1	16.15	19.59	0.60
07.03.2025 to 08.03.2025	55.6	25.7	14.36	20.24	0.55
13.03.2025 to 14.03.2025	57.5	27.0	12.70	19.56	0.58
14.03.2025 to 15.03.2025	55.4	24.8	15.49	20.29	0.64
20.03.2025 to 21.03.2025	58.1	28.6	12.84	23.66	0.57
21.03.2025 to 22.03.2025	58.5	26.1	13.10	22.92	0.53
27.03.2025 to 28.03.2025	56.9	26.4	10.25	20.76	0.56
28.03.2025 to 29.03.2025	64.2	28.7	18.25	18.09	0.59
Minimum	**54.1**	**24.1**	**10.25**	**18.09**	**0.53**
Maximum	**64.2**	**28.7**	**18.25**	**23.66**	**0.64**
Average	**57.5**	**26.4**	**14.14**	**20.64**	**0.58**
PETNIKOTA VILLAGE - AAQ 5					
06.03.2025 to 07.03.2025	57.1	30.5	11.52	20.43	0.63
07.03.2025 to 08.03.2025	58.8	29.2	13.72	19.88	0.60
13.03.2025 to 14.03.2025	57.3	27.5	11.00	16.15	0.65
14.03.2025 to 15.03.2025	59.7	33.0	9.49	17.46	0.66
20.03.2025 to 21.03.2025	64.1	27.2	13.02	23.50	0.68
21.03.2025 to 22.03.2025	54.6	27.9	10.59	17.23	0.59
27.03.2025 to 28.03.2025	52.7	29.1	8.26	19.58	0.57
28.03.2025 to 29.03.2025	54.2	30.2	12.01	20.76	0.64
Minimum	**52.7**	**27.2**	**8.26**	**16.15**	**0.57**
Maximum	**64.1**	**33.0**	**13.72**	**23.50**	**0.68**
Average	**57.3**	**29.3**	**11.20**	**19.37**	**0.63**

THUMMALAPENTA MINES LEASE -3 CORE ZONE

Table 9: Ambient Air Quality Results February Month -2025

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
At Quarry Edge – AAQ1					
03.02.2025 to 04.02.2025	59.3	29.4	12.62	25.23	0.61
04.02.2025 to 05.02.2025	56.2	25.2	11.34	24.16	0.59
10.02.2025 to 11.02.2025	58.9	29.1	15.83	22.23	0.63
11.02.2025 to 12.02.2025	55.3	25.7	15.32	21.35	0.58
17.02.2025 to 18.02.2025	53.4	25.3	16.46	18.22	0.56
18.02.2025 to 19.02.2025	56.7	25.6	15.23	19.18	0.60
24.02.2025 to 25.02.2025	59.2	29.2	18.64	22.5	0.59
25.02.2025 to 26.02.2025	57.6	27.9	16.98	20.67	0.62
Minimum	**53.4**	**25.2**	**11.34**	**18.22**	**0.56**
Maximum	**59.3**	**29.4**	**18.64**	**25.23**	**0.63**
Average	**57.1**	**27.2**	**15.30**	**21.69**	**0.60**
Dozing Area- AAQ2					
03.02.2025 to 04.02.2025	56.2	25.9	12.34	23.5	0.61
04.02.2025 to 05.02.2025	55.7	24.4	11.42	22.32	0.59
10.02.2025 to 11.02.2025	57.6	27.2	12.5	21.51	0.58
11.02.2025 to 12.02.2025	55.4	21.7	13.4	19.46	0.56
17.02.2025 to 18.02.2025	53.6	23.8	11.12	18.42	0.59
18.02.2025 to 19.02.2025	55.8	25.3	11.21	17.54	0.57
24.02.2025 to 25.02.2025	57.6	27.6	12.9	18.72	0.59
25.02.2025 to 26.02.2025	55.1	25.4	15.23	20.23	0.62
Minimum	**53.6**	**21.7**	**11.12**	**17.54**	**0.56**
Maximum	**57.6**	**27.6**	**15.23**	**23.50**	**0.62**
Average	**55.9**	**25.2**	**12.52**	**20.21**	**0.59**
Near to Bench – AAQ 3					
03.02.2025 to 04.02.2025	59.9	29.4	10.6	22.2	0.59
04.02.2025 to 05.02.2025	55.6	26.6	11.4	19.7	0.61
10.02.2025 to 11.02.2025	62.4	31.2	15.3	18.3	0.65
11.02.2025 to 12.02.2025	57.2	27.9	13.6	17.5	0.56
17.02.2025 to 18.02.2025	59.2	29.6	12.2	20.8	0.59
18.02.2025 to 19.02.2025	57.9	29.7	11.3	22.2	0.64
24.02.2025 to 25.02.2025	60.7	30.9	12.5	21.7	0.62
25.02.2025 to 26.02.2025	59.6	30.3	12.9	17.2	0.63
Minimum	**55.6**	**26.6**	**10.60**	**17.20**	**0.56**
Maximum	**62.4**	**31.2**	**15.30**	**22.20**	**0.65**
Average	**59.1**	**29.5**	**12.48**	**19.95**	**0.61**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
Near to Road Grader AAQ 4					
03.02.2025 to 04.02.2025	62.4	28.2	11.69	19.86	0.62
04.02.2025 to 05.02.2025	58.6	26.5	13.77	15.88	0.60
10.02.2025 to 11.02.2025	60.7	24.0	10.32	18.13	0.57
11.02.2025 to 12.02.2025	59.4	25.2	12.15	20.65	0.59
17.02.2025 to 18.02.2025	56.0	23.5	9.79	14.97	0.53
18.02.2025 to 19.02.2025	60.3	28.3	10.32	16.45	0.55
24.02.2025 to 25.02.2025	63.1	26.6	14.65	17.7	0.66
25.02.2025 to 26.02.2025	61.5	30.2	10.1	16.54	0.58
Minimum	**56.0**	**23.5**	**9.79**	**14.97**	**0.53**
Maximum	**63.1**	**30.2**	**14.65**	**20.65**	**0.66**
Average	**60.3**	**26.6**	**11.60**	**17.52**	**0.59**
Near Haul Road AAQ 5					
03.02.2025 to 04.02.2025	60.2	29.2	9.25	18.94	0.66
04.02.2025 to 05.02.2025	57.5	32.5	11.25	21.38	0.61
10.02.2025 to 11.02.2025	56.7	34.4	10.45	22.3	0.58
11.02.2025 to 12.02.2025	55.2	36.2	12.17	24.2	0.56
17.02.2025 to 18.02.2025	56.2	29.1	9.39	22.8	0.54
18.02.2025 to 19.02.2025	53.2	31.2	11.25	23.5	0.56
24.02.2025 to 25.02.2025	55.3	36.3	13.61	24.8	0.52
25.02.2025 to 26.02.2025	59.2	38.2	13.14	24.11	0.56
Minimum	**53.2**	**29.1**	**9.25**	**18.94**	**0.52**
Maximum	**60.2**	**38.2**	**13.61**	**24.80**	**0.66**
Average	**56.7**	**33.4**	**11.31**	**22.75**	**0.57**
MINE EAST					
03.02.2025 to 04.02.2025	59.5	34.23	9.78	19.21	0.63
04.02.2025 to 05.02.2025	53.4	30.36	10.63	16.32	0.59
10.02.2025 to 11.02.2025	59.2	29.5	9.28	17.9	0.61
11.02.2025 to 12.02.2025	59.4	31.4	9.41	21.39	0.63
17.02.2025 to 18.02.2025	57.6	31.2	12.56	17.6	0.59
18.02.2025 to 19.02.2025	61.2	34.6	8.59	15.87	0.58
24.02.2025 to 25.02.2025	62.4	35.6	9.31	17.45	0.62
25.02.2025 to 26.02.2025	55.9	32.5	10.36	19.32	0.60
Minimum	**53.4**	**29.5**	**8.59**	**15.87**	**0.58**
Maximum	**62.4**	**35.6**	**12.56**	**21.39**	**0.63**
Average	**58.6**	**32.4**	**9.99**	**18.13**	**0.61**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
MINE WEST					
03.02.2025 to 04.02.2025	55.7	32.7	14.57	22.24	0.52
04.02.2025 to 05.02.2025	54.0	34.8	12.56	19.79	0.56
10.02.2025 to 11.02.2025	52.6	32.1	11.55	18.34	0.58
11.02.2025 to 12.02.2025	50.1	30.4	12.63	19.31	0.60
17.02.2025 to 18.02.2025	52.3	32.8	14.09	25.42	0.57
18.02.2025 to 19.02.2025	54.9	28.4	12.68	22.42	0.52
24.02.2025 to 25.02.2025	53.0	30.6	13.77	23.51	0.55
25.02.2025 to 26.02.2025	57.8	34.1	11.62	24.13	0.53
Minimum	**50.1**	**28.4**	**11.55**	**18.34**	**0.52**
Maximum	**57.8**	**34.8**	**14.57**	**25.42**	**0.60**
Average	**53.8**	**32.0**	**12.93**	**21.90**	**0.55**
MINE SOUTH					
03.02.2025 to 04.02.2025	58.2	30.7	19.86	23.77	0.64
04.02.2025 to 05.02.2025	59.5	37.2	17.26	27.78	0.66
10.02.2025 to 11.02.2025	55.6	34.9	21.13	24.17	0.58
11.02.2025 to 12.02.2025	51.2	31.2	18.9	21.98	0.61
17.02.2025 to 18.02.2025	54.5	33.6	19.85	23.65	0.60
18.02.2025 to 19.02.2025	54.7	35.1	17.82	22.11	0.59
24.02.2025 to 25.02.2025	59.8	36.2	18.89	27.88	0.6
25.02.2025 to 26.02.2025	58.2	34.5	16.96	20.77	0.57
Minimum	**51.2**	**30.7**	**16.96**	**20.77**	**0.57**
Maximum	**59.8**	**37.2**	**21.13**	**27.88**	**0.66**
Average	**56.5**	**34.2**	**18.8**	**24.0**	**0.61**
MINE NORTH					
03.02.2025 to 04.02.2025	56.5	28.5	11.24	24.8	0.63
04.02.2025 to 05.02.2025	60.8	29.4	12.12	25.29	0.70
10.02.2025 to 11.02.2025	61.3	26.6	10.32	23.6	0.58
11.02.2025 to 12.02.2025	55.9	28.8	12.91	22.16	0.70
17.02.2025 to 18.02.2025	60.5	26.6	10.92	24.88	0.63
18.02.2025 to 19.02.2025	53.7	27.8	10.18	20.35	0.59
24.02.2025 to 25.02.2025	59.4	29.7	12.14	23.92	0.62
25.02.2025 to 26.02.2025	66.7	27.3	13.4	22.36	0.6
Minimum	**53.7**	**26.6**	**10.18**	**20.35**	**0.58**
Maximum	**66.7**	**29.7**	**13.40**	**25.29**	**0.70**
Average	**59.4**	**28.1**	**11.65**	**23.42**	**0.63**

MINES AREA – BUFFER ZONE

Table 10: Ambient Air Quality Results February Month -2025

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
THUMMALAPENTA VILLAGE -AAQ 1	**Coordinates:-15°00'36.4" N, 78°01'11.0" E**				
06.02.2025 to 07.02.2025	58.9	35.6	10.14	20.54	0.65
07.02.2025 to 08.02.2025	60.4	32.8	12.32	22.58	0.69
13.02.2025 to 14.02.2025	64.2	35.1	10.47	18.74	0.74
14.02.2025 to 15.02.2025	57.7	35.5	13.25	24.55	0.68
20.02.2025 to 21.02.2025	60.9	27.8	11.08	22.96	0.63
21.02.2025 to 22.02.2025	58.3	31.3	9.63	19.87	0.66
26.02.2025 to 27.02.2025	65.1	33.1	12.32	23.41	0.65
27.02.2025 to 28.02.2025	62.5	36.4	15.44	25.12	0.68
Minimum	**57.7**	**27.8**	**9.63**	**18.74**	**0.63**
Maximum	**65.1**	**36.4**	**15.44**	**25.12**	**0.74**
Average	**61.0**	**33.5**	**11.83**	**22.22**	**0.67**
ANKIREDDYPALLE VILLAGE- AAQ2	**Coordinates:-15°01'27.2" N, 78°01'18.3" E**				
06.02.2025 to 07.02.2025	55.2	24.2	11.55	22.5	0.57
07.02.2025 to 08.02.2025	54.6	23.6	12.16	20.8	0.52
13.02.2025 to 14.02.2025	53.8	23.5	11.45	22.6	0.55
14.02.2025 to 15.02.2025	59.2	26.2	11.32	23.5	0.56
20.02.2025 to 21.02.2025	57.4	25.4	12.4	25.7	0.59
21.02.2025 to 22.02.2025	59.2	26.2	11.8	21.9	0.63
26.02.2025 to 27.02.2025	53.5	24.8	13.1	25.3	0.65
27.02.2025 to 28.02.2025	60.8	27.1	12.5	27.1	0.60
Minimum	**53.5**	**23.5**	**11.32**	**20.8**	**0.52**
Maximum	**60.8**	**27.1**	**13.10**	**27.1**	**0.65**
Average	**56.7**	**25.1**	**12.04**	**23.7**	**0.58**
GURUVANIPALLI VILLAGE – AAQ 3	**Coordinates:-15°04'28.6" N, 78°01'18.4" E**				
06.02.2025 to 07.02.2025	53.9	28.2	13.07	21.54	0.62
07.02.2025 to 08.02.2025	51.2	33.5	12.45	19.2	0.56
13.02.2025 to 14.02.2025	49.8	31.3	10.22	17.25	0.61
14.02.2025 to 15.02.2025	47.5	28.6	11.39	18.32	0.66
20.02.2025 to 21.02.2025	49.7	30.9	13.69	24.69	0.57
21.02.2025 to 22.02.2025	52.3	26.5	11.54	20.51	0.54
26.02.2025 to 27.02.2025	50.2	29.8	13.25	22.4	0.60
27.02.2025 to 28.02.2025	54.6	33.4	9.86	24.62	0.52
Minimum	**47.5**	**26.5**	**9.86**	**17.3**	**0.52**
Maximum	**54.6**	**33.5**	**13.69**	**24.7**	**0.66**
Average	**51.2**	**30.3**	**11.93**	**21.1**	**0.59**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
BANDARLAPALLE VILLAGE-AAQ 4					
06.02.2025 to 07.02.2025	52.3	23.5	15.6	18.63	0.59
07.02.2025 to 08.02.2025	53.4	25.1	13.2	19.25	0.54
13.02.2025 to 14.02.2025	55.2	26.3	12.27	18.6	0.57
14.02.2025 to 15.02.2025	53.2	24.2	13.25	19.3	0.63
20.02.2025 to 21.02.2025	55.8	26.4	12.4	22.5	0.56
21.02.2025 to 22.02.2025	56.2	25.5	12.65	21.8	0.52
26.02.2025 to 27.02.2025	54.6	25.8	12.41	19.74	0.55
27.02.2025 to 28.02.2025	60.5	27.2	11.76	17.21	0.58
Minimum	**52.3**	**23.5**	**11.76**	**17.21**	**0.52**
Maximum	**60.5**	**27.2**	**15.60**	**22.50**	**0.63**
Average	**55.2**	**25.5**	**12.94**	**19.63**	**0.57**
PETNIKOTA VILLAGE - AAQ 5					
06.02.2025 to 07.02.2025	55.7	29.8	11.12	19.23	0.62
07.02.2025 to 08.02.2025	57.4	28.5	13.24	18.36	0.59
13.02.2025 to 14.02.2025	55.9	26.8	10.62	15.2	0.62
14.02.2025 to 15.02.2025	58.2	32.2	9.16	16.43	0.65
20.02.2025 to 21.02.2025	62.5	26.5	12.56	21.8	0.67
21.02.2025 to 22.02.2025	53.3	27.2	10.22	16.22	0.58
26.02.2025 to 27.02.2025	51.4	28.4	7.97	17.49	0.56
27.02.2025 to 28.02.2025	52.9	29.5	11.59	19.54	0.63
Minimum	**51.4**	**26.5**	**7.97**	**15.20**	**0.56**
Maximum	**62.5**	**32.2**	**13.24**	**21.80**	**0.67**
Average	**55.9**	**28.6**	**10.81**	**18.03**	**0.62**

MINES AREA – CORE ZONE

Table 11: Ambient Air Quality Results Janaury Month -2025

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
At Quarry Edge - AAQ1					
01.01.2025 to 02.01.2025	58.6	28.7	10.9	23.2	0.59
02.01.2025 to 03.01.2025	57.1	27.9	10.1	22.1	0.62
03.01.2025 to 04.01.2025	55.5	22.6	10.6	19.5	0.59
09.01.2025 to 10.01.2025	55.7	21.3	9.2	15.3	0.53
10.01.2025 to 11.01.2025	53.2	23.0	10.3	16.5	0.55
20.01.2025 to 21.01.2025	56.6	26.4	11.5	20.7	0.61
21.01.2025 to 22.01.2025	54.1	23.3	10.6	20.5	0.60
27.01.2025 to 28.01.2025	56.8	26.3	11.9	20.3	0.57
Minimum	**53.2**	**21.3**	**9.2**	**15.3**	**0.53**
Maximum	**58.6**	**28.7**	**11.9**	**23.2**	**0.62**
Average	**55.95**	**24.93**	**10.63**	**19.76**	**0.58**
Drilling Site - AAQ2					
01.01.2025 to 02.01.2025	54.3	20.5	11.21	21.41	0.59
02.01.2025 to 03.01.2025	55.5	22.6	11.82	22.9	0.58
03.01.2025 to 04.01.2025	53.8	21.5	10.11	21.7	0.56
09.01.2025 to 10.01.2025	57.9	27.4	11.45	22.70	0.59
10.01.2025 to 11.01.2025	56.3	26.3	10.83	20.98	0.57
20.01.2025 to 21.01.2025	52.2	21.2	9.32	21.95	0.56
21.01.2025 to 22.01.2025	51.8	20.8	10.26	22.87	0.58
27.01.2025 to 28.01.2025	52.7	21.4	10.14	23.19	0.59
Minimum	**51.8**	**20.5**	**9.32**	**20.98**	**0.56**
Maximum	**57.9**	**27.4**	**11.82**	**23.19**	**0.59**
Average	**54.31**	**22.7**	**10.64**	**22.21**	**0.57**
Near to Bench - AAQ 3					
01.01.2025 to 02.01.2025	53.2	20.2	10.7	19.6	0.60
02.01.2025 to 03.01.2025	54.3	22.5	12.6	20.3	0.59
03.01.2025 to 04.01.2025	53.7	22.9	9.34	17.41	0.63
09.01.2025 to 10.01.2025	52.2	20.4	10.12	16.9	0.56
10.01.2025 to 11.01.2025	53.6	22.6	11.63	20.7	0.59
20.01.2025 to 21.01.2025	54.7	23.6	11.14	21.6	0.61
21.01.2025 to 22.01.2025	53.2	24.7	10.21	22.3	0.62
27.01.2025 to 28.01.2025	52.4	23.7	10.14	21.7	0.59
Minimum	**52.2**	**20.2**	**9.34**	**19.6**	**0.56**
Maximum	**54.7**	**24.7**	**12.6**	**22.3**	**0.63**
Average	**53.41**	**22.57**	**10.73**	**20.06**	**0.59**

Date	Parameter				
	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO2 (µg/m^3)	CO (mg/m^3)
NAAQS	**100**	**60**	**80**	**80**	**4**
Near to Road Grader- AAQ 4					
01.01.2025 to 02.01.2025	54.36	24.2	10.31	23.2	0.59
02.01.2025 to 03.01.2025	53.1	25.8	10.21	17.11	0.60
03.01.2025 to 04.01.2025	52.7	22.4	9.31	18.39	0.62
09.01.2025 to 10.01.2025	50.1	22.1	10.17	17.22	0.58
10.01.2025 to 11.01.2025	53.4	23.9	8.93	21.14	0.57
20.01.2025 to 21.01.2025	52.3	22.9	9.32	18.14	0.62
21.01.2025 to 22.01.2025	54.6	23.7	10.14	22.14	0.56
27.01.2025 to 28.01.2025	53.7	24.3	10.87	21.74	0.57
Minimum	**50.1**	**22.1**	**8.93**	**17.11**	**0.56**
Maximum	**54.6**	**25.8**	**10.87**	**23.2**	**0.62**
Average	**53.03**	**23.66**	**9.90**	**19.88**	**0.58**
Near Haul Road -AAQ 5					
01.01.2025 to 02.01.2025	56.29	24.4	10.23	20.40	0.59
02.01.2025 to 03.01.2025	57.34	27.9	11.87	17.91	0.59
03.01.2025 to 04.01.2025	54.12	23.4	10.1	20.14	0.57
09.01.2025 to 10.01.2025	53.36	21.5	9.61	18.14	0.58
10.01.2025 to 11.01.2025	54.5	24.7	10.21	22.32	0.63
20.01.2025 to 21.01.2025	52.6	25.4	11.36	20.47	0.62
21.01.2025 to 22.01.2025	56.4	26.8	10.14	20.63	0.63
27.01.2025 to 28.01.2025	52.3	23.6	8.23	21.2	0.62
Minimum	**52.3**	**21.5**	**8.23**	**17.91**	**0.57**
Maximum	**57.34**	**27.9**	**11.87**	**22.32**	**0.63**
Average	**54.61**	**24.71**	**10.21**	**20.15**	**0.60**
MINE EAST					
01.01.2025 to 02.01.2025	57.3	28.5	11.6	17.63	0.50
02.01.2025 to 03.01.2025	55.4	26.1	10.2	18.25	0.52
03.01.2025 to 04.01.2025	55.9	26.3	9.27	19.6	0.56
09.01.2025 to 10.01.2025	56.9	27.2	10.25	17.3	0.61
10.01.2025 to 11.01.2025	55.8	26.4	11.4	20.5	0.56
20.01.2025 to 21.01.2025	56.2	25.5	11.65	20.1	0.53
21.01.2025 to 22.01.2025	54.6	25.8	10.41	16.12	0.57
27.01.2025 to 28.01.2025	60.1	27.2	11.14	14.21	0.59
Minimum	**54.6**	**25.5**	**9.27**	**14.21**	**0.50**
Maximum	**60.1**	**28.5**	**11.65**	**20.5**	**0.61**
Average	**56.52**	**26.62**	**10.74**	**17.96**	**0.55**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
MINE WEST					
01.01.2025 to 02.01.2025	55.2	25.2	11.22	19.2	0.59
02.01.2025 to 03.01.2025	59.7	26.9	10.31	18.63	0.54
03.01.2025 to 04.01.2025	55.6	25.3	10.94	20.16	0.66
09.01.2025 to 10.01.2025	55.4	26.3	10.23	20.4	0.52
10.01.2025 to 11.01.2025	56.3	26.8	9.13	19.16	0.56
20.01.2025 to 21.01.2025	57.8	27.5	10.21	20.4	0.57
21.01.2025 to 22.01.2025	58.2	28.1	11.10	23.2	0.55
27.01.2025 to 28.01.2025	55.8	27.5	12.4	20.14	0.57
Minimum	**55.2**	**25.2**	**9.13**	**18.63**	**0.52**
Maximum	**59.7**	**28.1**	**12.4**	**23.2**	**0.66**
Average	**56.75**	**26.7**	**10.69**	**20.16**	**0.57**
MINE SOUTH					
01.01.2025 to 02.01.2025	57.3	28.9	10.25	21.2	0.57
02.01.2025 to 03.01.2025	53.5	26.5	8.47	25.2	0.59
03.01.2025 to 04.01.2025	54.3	24.8	9.25	22.2	0.60
09.01.2025 to 10.01.2025	56.2	23.6	8.41	21.3	0.57
10.01.2025 to 11.01.2025	55.2	27.4	12.72	22.2	0.60
20.01.2025 to 21.01.2025	53.4	25.3	10.47	19.3	0.59
21.01.2025 to 22.01.2025	54.3	24.3	10.2	19.2	0.57
27.01.2025 to 28.01.2025	55.7	27.6	11.36	25.9	0.62
Minimum	**53.4**	**23.6**	**8.41**	**19.2**	**0.57**
Maximum	**57.3**	**28.9**	**12.72**	**25.9**	**0.62**
Average	**54.98**	**26.05**	**10.14**	**22.06**	**0.58**
MINE NORTH					
01.01.2025 to 02.01.2025	55.2	25.2	10.74	15.1	0.59
02.01.2025 to 03.01.2025	56.4	26.2	11.3	15.3	0.58
03.01.2025 to 04.01.2025	57.4	28.2	9.7	12.4	0.59
09.01.2025 to 10.01.2025	53.6	24.2	10.41	15.8	0.61
10.01.2025 to 11.01.2025	52.7	23.8	12.3	16.4	0.63
20.01.2025 to 21.01.2025	55.4	24.9	11.2	15.2	0.62
21.01.2025 to 22.01.2025	57.6	28.7	10.5	16.6	0.57
27.01.2025 to 28.01.2025	55.6	26.1	11.9	14.9	0.57
Minimum	**52.7**	**23.8**	**9.7**	**12.4**	**0.57**
Maximum	**57.6**	**28.7**	**12.3**	**16.4**	**0.63**
Average	**55.48**	**25.91**	**11.00**	**15.21**	**0.59**

MINES AREA – BUFFER ZONE

Table 12: Ambient Air Quality Results (January Month -2025)

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
THUMMALAPENTA VILLAGE –AAQ 1					
06.01.2025 to 07.01.2025	63.1	30.3	12.55	23.25	0.63
07.01.2025 to 08.01.2025	60.9	28.6	11.69	22.34	0.55
15.01.2025 to 16.01.2025	59.6	27.2	10.23	20.69	0.55
16.01.2025 to 17.01.2025	52.5	21.7	9.73	21.7	0.52
17.01.2025 to 18.01.2025	53.9	22.6	10.41	20.6	0.56
23.01.2025 to 24.01.2025	52.7	21.8	9.23	19.9	0.52
24.01.2025 to 25.01.2025	52.5	23.9	10.33	18.7	0.57
29.01.2025 to 30.01.2025	53.7	24.2	11.29	21.4	0.60
Minimum	**52.5**	**21.7**	**9.23**	**18.7**	**0.52**
Maximum	**63.1**	**30.3**	**12.55**	**23.25**	**0.63**
Average	**56.11**	**25.03**	**10.68**	**21.07**	**0.56**
ANKIREDDYPALLE VILLAGE- AAQ2					
06.01.2025 to 07.01.2025	63.2	32.6	13.5	23.9	0.63
07.01.2025 to 08.01.2025	60.5	29.2	12.23	21.6	0.61
15.01.2025 to 16.01.2025	59.7	23.5	11.41	22.4	0.57
16.01.2025 to 17.01.2025	59.2	26.9	10.32	23.9	0.59
17.01.2025 to 18.01.2025	57.9	25.7	11.4	20.5	0.56
23.01.2025 to 24.01.2025	59.2	26.2	11.8	22.9	0.60
24.01.2025 to 25.01.2025	61.5	30.6	11.6	24.6	0.61
29.01.2025 to 30.01.2025	60.8	29.4	12.4	25.2	0.59
Minimum	**57.9**	**23.5**	**10.32**	**20.5**	**0.56**
Maximum	**60.8**	**32.6**	**13.5**	**25.2**	**0.63**
Average	**63.2**	**28.01**	**11.83**	**23.12**	**0.59**
GURUVANIPALLI VILLAGE – AAQ 3					
06.01.2025 to 07.01.2025	56.5	24.2	10.56	22.6	0.59
07.01.2025 to 08.01.2025	57.6	27.1	11.23	23.2	0.62
15.01.2025 to 16.01.2025	60.9	29.7	11.47	26.3	0.57
16.01.2025 to 17.01.2025	57.5	23.2	10.59	26.5	0.61
17.01.2025 to 18.01.2025	59.9	29.2	11.36	25.6	0.63
23.01.2025 to 24.01.2025	56.9	25.1	11.27	27.3	0.62
24.01.2025 to 25.01.2025	58.3	26.8	9.39	26.9	0.64
29.01.2025 to 30.01.2025	57.2	24.2	11.41	27.8	0.59
Minimum	**56.5**	23.2	9.39	**22.6**	**0.57**
Maximum	**60.9**	**29.7**	**11.47**	**27.8**	**0.63**
Average	**58.1**	**26.18**	**10.91**	**25.77**	**0.60**

Date	Parameter				
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)
NAAQS	**100**	**60**	**80**	**80**	**4**
BANDARLAPALLE VILLAGE– AAQ 4					
06.01.2025 to 07.01.2025	57.6	28.9	10.77	18.29	0.66
07.01.2025 to 08.01.2025	56.3	26.3	10.41	21.4	0.61
15.01.2025 to 16.01.2025	56.8	26.9	10.10	18.9	0.53
16.01.2025 to 17.01.2025	55.7	25.7	9.14	19.3	0.59
17.01.2025 to 18.01.2025	55.9	26.2	9.23	20.44	0.58
23.01.2025 to 24.01.2025	55.6	25.9	9.28	19.21	0.56
24.01.2025 to 25.01.2025	55.2	25.7	10.13	20.36	0.55
29.01.2025 to 30.01.2025	56.9	25.3	10.11	22.74	0.57
Minimum	**55.2**	**25.3**	**9.14**	**18.29**	**0.53**
Maximum	**57.6**	**28.9**	**10.77**	**22.74**	**0.61**
Average	**56.25**	**26.36**	**9.89**	**20.08**	**0.57**
PETNIKOTA VILLAGE - AAQ 5					
06.01.2025 to 07.01.2025	59.6	29.9	11.7	21.63	0.59
07.01.2025 to 08.01.2025	56.9	27.6	10.19	18.90	0.55
15.01.2025 to 16.01.2025	55.6	25.5	10.15	17.36	0.59
16.01.2025 to 17.01.2025	51.6	21.9	9.96	21.93	0.57
17.01.2025 to 18.01.2025	53.5	23.2	9.23	22.39	0.60
23.01.2025 to 24.01.2025	51.9	22.2	8.12	23.35	0.57
24.01.2025 to 25.01.2025	53.7	24.5	10.36	23.53	0.62
29.01.2025 to 30.01.2025	52.4	23.7	10.14	22.42	0.62
Minimum	**51.6**	**21.9**	**8.12**	**17.36**	**0.55**
Maximum	**59.6**	**29.9**	**11.7**	**23.53**	**0.62**
Average	**54.4**	**24.81**	**9.98**	**21.43**	**0.58**

12.1 GROUND WATER QUALITY MONITORING:

Sampling of Ground water was carried out in the month of March, 2025. Grab sample were collected and sampling forms are filled in as per the sampling plan. The preservative sample were properly added to preserve as per standard method and stored immediately in ice boxes, which were ensured for appropriate temperatures. Collection of Ground water and Surface water samples in the study area for the drinking water parameters as per IS 10500: 2012 at 6 Locations,6 samples in Buffer Zone which are summarized below:

Table 13: Ground Water Quality Sampling Locations

S.NO	Location Code	Location	Source
1	W1	Ankireddy palli Village	Bore well Water
2	W2	Thummalapenta Village	Bore well Water
3	W3	Guruvanipalli Village	Bore well Water
4	W4	Bandarlla Palli Village	Bore well Water
5	W5	Petnikota Village	Bore well Water
6	W6	APCW colony	Bore well Water

Table 14: March Ground Water Quality Results

S.No.	Parameters	Unit	W1	W2	W3	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1.	pH (at 25 °C)	-	7.42	7.81	7.74	6.5-8.5	No Relaxation
2.	Colour	Hazen Unit	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	5	15
3.	Turbidity	NTU	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	1	5
4.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as CaCO3	mg/l	284.0	408.0	339.0	200	600
7.	Calcium as Ca	mg/l	98.7	152.0	112.0	75	200
8.	Alkalinity as CaCO3	mg/l	302.0	313.2	427.0	200	600
9.	Chloride as Cl	mg/l	29.9	334.0	151.0	250	1000
10.	Residual free Chlorine	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.2	1
11.	Cyanide as CN	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	No Relaxation
12.	Magnesium as Mg	mg/l	9.18	6.99	14.18	30	100
13.	Total Dissolved Solids	mg/l	392.0	935.0	724.0	500	2000
14.	Sulphate as SO4	mg/l	69.3	272.0	156.0	200	400
15.	Fluoride as F	mg/l	0.92	0.54	0.85	1	1.5
16.	Nitrate as NO3-N	mg/l	8.3	6.2	12.30	45	No Relaxation
17.	Iron as Fe	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	1	No Relaxation
18.	Aluminium as Al	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	0.03	0.2
19.	Boron	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.5	2.4
20.	Phenolic Compounds	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	0.002
21.	Anionic Detergents as MBAS	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.2	1
22.	Hexa Chromium as Cr+6	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	--	--
23.	Zinc as Zn	mg/l	BDL(DL 0.0005)	BDL(DL 0.0005)	BDL(DL 0.0005)	5	15
24.	Copper as Cu	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	1.5
25.	Manganese as Mn	mg/l	BDL(DL 0.10)	BDL(DL 0.10)	BDL(DL 0.10)	0.1	0.3
26.	Cadmium as Cd	mg/l	BDL (DL 0.002)	BDL (DL 0.002)	BDL (DL 0.002)	0.003	No Relaxation
27.	Lead as Pb	mg/l	BDL(DL 0.008)	BDL(DL 0.008)	BDL(DL 0.008)	0.01	No Relaxation
28.	Selenium as Se	mg/l	BDL(DL 0.005)	BDL(DL 0.005)	BDL(DL 0.005)	0.01	No Relaxation
29.	Arsenic as As	mg/l	BDL(DL 0.002)	BDL(DL 0.002)	BDL(DL 0.002)	0.01	No Relaxation
30.	Mercury as Hg	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	No Relaxation
31.	Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
32.	E-Coli	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
33.	Fecal Coliform	MPN/100 ml	Absent	Absent	Absent	--	--

S.no.	Parameters	Unit	W4	W5	W6	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1.	pH (at 25 °C)	-	7.92	7.75	7.62	6.5-8.5	No Relaxation
2.	Colour	Hazen Unit	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	5	15
3.	Turbidity	NTU	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	1	5
4.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as CaCO3	mg/l	386.0	418.0	229.0	200	600
7.	Calcium as Ca	mg/l	83.8	127.0	64.8	75	200
8.	Alkalinity as CaCO3,	mg/l	397.0	435.0	227.0	200	600
9.	Chloride as Cl	mg/l	88.6	141.0	44.3	250	1000
10.	Residual free Chlorine	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.2	1
11.	Cyanide as CN	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	No Relaxation
12.	Magnesium as Mg	mg/l	43.2	24.6	16.5	30	100
13.	Total Dissolved Solids	mg/l	484.0	676.0	298.0	500	2000
14.	Sulphate as SO4	mg/l	37.3	57.9	41.9	200	400
15.	Fluoride as F	mg/l	0.72	0.64	0.55	1	1.5
16.	Nitrate as NO3-N	mg/l	11.8	10.2	9.86	45	No Relaxation
17.	Iron as Fe	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	1	No Relaxation
18.	Aluminium as Al	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	0.03	0.2
19.	Boron	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.5	2.4
20.	Phenolic Compounds	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	0.002
21.	Anionic Detergents as MBAS	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.2	1
22.	Hexa Chromium as Cr+6	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	--	--
23.	Zinc as Zn	mg/l	BDL(DL 0.0005)	BDL(DL 0.0005)	BDL(DL 0.0005)	5	15
24.	Copper as Cu	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	1.5
25.	Manganese as Mn	mg/l	BDL(DL 0.10)	BDL(DL 0.10)	BDL(DL 0.10)	0.1	0.3
26.	Cadmium as Cd	mg/l	BDL (DL 0.002)	BDL (DL 0.002)	BDL (DL 0.002)	0.003	No Relaxation
27.	Lead as Pb	mg/l	BDL(DL 0.008)	BDL(DL 0.008)	BDL(DL 0.008)	0.01	No Relaxation
28.	Selenium as Se	mg/l	BDL(DL 0.005)	BDL(DL 0.005)	BDL(DL 0.005)	0.01	No Relaxation
29.	Arsenic as As	mg/l	BDL(DL 0.002)	BDL(DL 0.002)	BDL(DL 0.002)	0.01	No Relaxation
30.	Mercury as Hg	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	No Relaxation
31.	Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
32.	E-Coli	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
33.	Fecal Coliform	MPN/100 ml	Absent	Absent	Absent	--	--

12.2 MINES DRINKING WATER QUALITY MONITORING:

Sampling of Drinking water was carried out in the month of March, 2025. Grab sample were collected and sampling forms are filled in as per the sampling plan. The preservative sample were properly added to preserve as per standard method and stored immediately in ice boxes, which were ensured for appropriate temperatures. Collection of Ground water and Surface water samples in the study area for the drinking water parameters as per IS 10500: 2012 at 5 Locations 5 Sample which are summarized below:

Table 15: Mines Drinking Water Quality Sampling Locations.

S.NO	Period	Location Code	Location	Source
1	**March -2025**	DW1	Mines Office	RO Water
2		DW2	Canteen	RO Water
3		DW3	Mine Crusher	RO Water
4.		DW4	Phase-1 Rest Shelter	RO Water
5.		DW5	Phase-2 Rest Shelter	RO Water

Drinking water Quality

Table 16: March Mines Drinking Water Quality Results

S. No.	Parameters	Unit	DW1	DW2	DW3	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1.	pH (at 25 °C)	-	7.74	7.54	7.42	6.5-8.5	No Relaxation
2.	Colour	Hazen	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	5	15
3.	Turbidity	NTU	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)	1	5
4.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as CaCO3	mg/l	76.0	134.0	182.0	200	600
7.	Calcium as Ca	mg/l	17.4	30.7	61.4	75	200
8.	Alkalinity as CaCO3,	mg/l	78.6	147.0	196.0	200	600
9.	Chloride as Cl	mg/l	23.52	22.63	45.21	250	1000
10.	Residual free Chlorine	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.2	1
11.	Cyanide as CN	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	No Relaxation
12.	Magnesium as Mg	mg/l	7.93	4.28	7.01	30	100
13.	Total Dissolved Solids	mg/l	104.0	218.0	292.0	500	2000
14.	Sulphate as SO4	mg/l	5.2	26.8	43.7	200	400
15.	Fluoride as F	mg/l	0.33	0.57	0.72	1	1.5
16.	Nitrate as NO3-N	mg/l	0.92	0.71	5.04	45	No Relaxation
17.	Iron as Fe	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	1	No Relaxation
18.	Aluminium as Al	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	0.03	0.2
19.	Boron	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	BDL(DL 0.20)	0.5	2.4
20.	Phenolic Compounds	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	0.002
21.	Anionic Detergents as MBAS	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.2	1
22.	Hexa Chromium as Cr+6	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	BDL(DL 0.03)	--	--
23.	Zinc as Zn	mg/l	BDL(DL 0.0005)	BDL(DL 0.0005)	BDL(DL 0.0005)	5	15
24.	Copper as Cu	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	BDL(DL 0.02)	0.05	1.5
25.	Manganese as Mn	mg/l	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	0.1	0.3
26.	Cadmium as Cd	mg/l	BDL (DL 0.002)	BDL (DL 0.002)	BDL (DL 0.002)	0.003	No Relaxation
27.	Lead as Pb	mg/l	BDL(DL 0.008)	BDL(DL 0.008)	BDL(DL 0.008)	0.01	No Relaxation
28.	Selenium as Se	mg/l	BDL(DL 0.005)	BDL(DL 0.005)	BDL(DL 0.005)	0.01	No Relaxation
29.	Arsenic as As	mg/l	BDL(DL 0.002)	BDL(DL 0.002)	BDL(DL 0.002)	0.01	No Relaxation
30.	Mercury as Hg	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001	No Relaxation
31.	Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
32.	Fecal Coliform	MPN/100 ml	Absent	Absent	Absent	--	--

Parameters	Unit	DW4	DW5	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
pH (at 25 °C)	-	7.42	7.62	6.5-8.5	No Relaxation
Colour	Hazen	BDL(DL 1.0)	BDL(DL 1.0)	5	15
Turbidity	NTU	BDL(DL 1.0)	BDL(DL 1.0)	1	5
Odour	-	Agreeable	Agreeable	Agreeable	Agreeable
Taste	-	Agreeable	Agreeable	Agreeable	Agreeable
Total Hardness as CaCO3	mg/l	68.3	157.0	200	600
Calcium as Ca	mg/l	13.5	64.3	75	200
Alkalinity as CaCO3,	mg/l	64.4	118.0	200	600
Chloride as Cl	mg/l	18.78	37.22	250	1000
Residual free Chlorine	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	0.2	1
Cyanide as CN	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	0.05	No Relaxation
Magnesium as Mg	mg/l	8.42	6.46	30	100
Total Dissolved Solids	mg/l	87.0	224.0	500	2000
Sulphate as SO4	mg/l	7.2	18.5	200	400
Fluoride as F	mg/l	0.18	0.53	1	1.5
Nitrate as NO3-N	mg/l	0.64	1.12	45	No Relaxation
Iron as Fe	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	1	No Relaxation
Aluminium as Al	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	0.03	0.2
Boron	mg/l	BDL(DL 0.20)	BDL(DL 0.20)	0.5	2.4
Phenolic Compounds	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	0.001	0.002
Anionic Detergents as MBAS	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	0.2	1
Hexa Chromium as Cr+6	mg/l	BDL(DL 0.03)	BDL(DL 0.03)	--	--
Zinc as Zn	mg/l	BDL(DL 0.0005)	BDL(DL 0.0005)	5	15
Copper as Cu	mg/l	BDL(DL 0.02)	BDL(DL 0.02)	0.05	1.5
Manganese as Mn	mg/l	BDL(DL 0.01)	BDL(DL 0.01)	0.1	0.3
Cadmium as Cd	mg/l	BDL (DL 0.002)	BDL (DL 0.002)	0.003	No Relaxation
Lead as Pb	mg/l	BDL(DL 0.008)	BDL(DL 0.008)	0.01	No Relaxation
Selenium as Se	mg/l	BDL(DL 0.005)	BDL(DL 0.005)	0.01	No Relaxation
Arsenic as As	mg/l	BDL(DL 0.002)	BDL(DL 0.002)	0.01	No Relaxation
Mercury as Hg	mg/l	BDL(DL 0.001)	BDL(DL 0.001)	0.001	No Relaxation
Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent
Fecal Coliform	MPN/100 ml	Absent	Absent	--	--

12.3 PERSONAL DUST MONITORING:

Table 17: March Personal Dust Monitoring

S.No.	Location	Date & Time (Hrs)	Respirable Dust Conc. (mg/m³)	FREE SILICA %	* Limits for Personal dust (mg/m³)
1.	Shovel Operator	15.03.2025 08:30-05:30	1.66	0.60	3.0
2.	Dumper	20.03.2025 08:30-05:30	1.74	0.55	
3.	Loading point	24.03.2025 08:30-05:30	1.69	0.63	

DGMS Circular of 1975, Limits for Respirable dust is 3 mg/m3
NIOSH Manual of Analytical Methods (NMAM) 0500

Table 18: February Personal Dust Monitoring

S.No.	Location	Date & Time (Hrs)	Respirable Dust Conc. (mg/m³)	FREE SILICA %	* Limits for Personal dust (mg/m³)
1.	Shovel Operator	13.02.2025 08:30-05:30	1.64	0.59	3.0
2.	Dumper	14.02.2025 08:30-05:30	1.72	0.54	
3.	Loading point	15.02.2025 08:30-05:30	1.67	0.61	

DGMS Circular of 1975, Limits for Respirable dust is 3 mg/m3
NIOSH Manual of Analytical Methods (NMAM) 0500

Table 19: January Personal Dust Monitoring

S.No.	Location	Date & Time (Hrs)	Respirable Dust Conc. (mg/m³)	FREE SILICA %	* Limits for Personal dust (mg/m³)
1.	Shovel Operator	15.01.2025 08:30-05:30	1.49	0.57	3.0
2.	Dumper	18.01.2025 08:30-05:30	1.63	0.51	
3.	Loading point	20.01.2025 08:30-05:30	1.57	0.59	

DGMS Circular of 1975, Limits for Respirable dust is 3 mg/m3
NIOSH Manual of Analytical Methods (NMAM) 0500

12.6 Static Dust Monitoring

Table 20: March Static Dust Monitoring.

S.No.	Location	Date & Time (Hrs)	Total Dust Conc. (mg/m³)	FREE SILICA %
1.	Near mines Operation	29.03.2025 08:30-05:30	1.56	0.51
2.	Near road Grader area	29.03.2025 08:30-05:30	1.73	0.82
3.	Near Dozing area	31.03.2025 08:30-05:30	1.64	0.55

NIOSH Manual of Analytical Methods (NMAM) 0500

Table 21: February Static Dust Monitoring.

S.No.	Location	Date & Time (Hrs)	Total Dust Conc. (mg/m³)	FREE SILICA %
1.	Near mines Operation	20.02.2025 08:30-05:30	1.62	0.59
2.	Near road Grader area	21.02.2025 08:30-05:30	1.80	0.75
3.	Near Dozing area	22.02.2025 08:30-05:30	1.73	0.55

NIOSH Manual of Analytical Methods (NMAM) 0500

Table 22: January Static Dust Monitoring.

S.No.	Location	Date & Time (Hrs)	Total Dust Conc. (mg/m³)	FREE SILICA %
1.	Near mines Operation	22.01.2025 08:30-05:30	1.41	0.57
2.	Near road Grader area	23.01.2025 08:30-05:30	1.60	0.66
3.	Near Dozing area	25.01.2025 08:30-05:30	1.52	0.45

NIOSH Manual of Analytical Methods (NMAM) 0500

13.0 MINES SOURCE NOISE MONITORING

Table 23: March Mines Source Noise Monitoring Results

S.No.	Sample Code	Date of Monitoring	Location	Noise level dB(A)	
				Noise Level Measured at 1.5 mts away from the equipment	Noise Level Measured inside the cabin
THUMALAPENTA MINES LEASE – 3					
1.	NL2	07.03.2025	Shovel	76.5	59.9
2.	NL3	07.03.2025	Dumper	76.9	58.2
3.	NL4	07.03.2025	Dozer	79.3	56.6
4.	NL6	07.03.2025	Haul Road	77.9	NA

Source: Mines Source Noise Monitoring

Ambient Noise Levels

Table 24: Ambient Noise Quality Results March Month-2025 (CORE ZONE)

S.NO	Locations	Date of Monitoring	Noise Level Leq. dB (A)	
			Day Time	Night Time
1	At Quarry Edge-Mines East	06.03.2025	70.2	52.6
2	Dozing Area	06.03.2025	68.5	51.4
3	Near to bench	13.03.2025	74.6	53.7
4	Near to Road Grader	13.03.2025	71.2	49.5
5	Near to Haul Road	21.03.2025	74.4	54.3
6	Mine West	21.03.2025	70.2	52.1
7	Mine South	28.03.2025	69.3	52.6
8	Mine North	28.03.2025	73.1	50.2

Ambient Noise Levels

Table 25: Mines Ambient Noise Monitoring Results for March Month-2025(Buffer Zone)

S.NO	Locations	Latitude & Longitude	Date of Monitoring	Noise Level Leq. dB (A)	
				Day Time	Night Time
1	Thummalapenta Village	15°04'28.6" N, 78°01'18.4" E	07.03.2025	68.5	50.3
2	Ankireddypalle Village	15°00'36.4" N, 78°01'11.0" E	14.03.2025	67.1	53.2
3	Guruvanipalli Village	15°03'19.0" N, 78°00'53.8" E	21.03.2025	63.9	52.1
4	Bandarlapalle Village	15°05'04.3" N, 78°03'46.0"E	28.03.2025	65.2	50.6
5	Petnikota Village	15°00'43.0" N, 78°03'14.2" E	31.03.2025	62.4	45.8

Source: *Ambient Noise Quality Monitoring*

Table 26: February Mines Source Noise Monitoring Results

S.No.	Sample Code	Date of Monitoring	Location	Noise level dB(A)	
				Noise Level Measured at 1.5 mts away from the equipment	Noise Level Measured inside the cabin
THUMALAPENTA MINES LEASE – 3					
1.	NL2	03.02.2025	Shovel	73.9	57.9
2.	NL3	03.02.2025	Dumper	74.3	56.2
3.	NL4	03.02.2025	Dozer	76.6	54.7
4.	NL6	03.02.2025	Haul Road	75.3	NA

TABLE: 27 Ambient Noise Levels

S.NO	Locations	Date of Monitoring	Noise Level Leq. dB (A)	
			Day Time	Night Time
1	At Quarry Edge-Mines East	03.02.2025	66.5	49.6
2	Dozing Area	03.02.2025	64.7	48.7
3	Near to bench	10.02.2025	68.1	50.5
4	Near to Road Grader	10.02.2025	62.6	47.8
5	Near to Haul Road	17.02.2025	66.4	46.3
6	Mine West	17.02.2025	64.9	50.4
7	Mine South	24.02.2025	65.6	51.6
8	Mine North	24.02.2025	70.3	47.2

Source: Mines Source Noise Monitoring

Table 28: Mines Ambient Noise Monitoring Results for February Month-2025(Buffer Zone)

S.NO	Locations	Latitude & Longitude	Date of Monitoring	Noise Level Leq. dB (A)	
				Day Time	Night Time
1	Thummalapenta Village	15°00'36.4" N, 78°01'11.0" E	12.02.2025	65.4	49.4
2	Ankireddypalle Village	15°03'19.2" N, 78°00'53.8" E	13.02.2025	64.9	51.6
3	Guruvanipalli Village	15°04'28.6" N, 78°01'18.4" E	14.02.2025	62.6	46.7
4	Bandarlapalle Village	15°00'43.0" N, 78°03'14.2" E	15.02.2025	60.5	46.3
5	Petnikota Village	15°00'43.0" N, 78°03'14.2" E	17.02.2025	61.3	45.1

Source: *Ambient Noise Quality Monitoring*

Table 29: January Mines Source Noise Monitoring Results

S.No.	Sample Code	Date of Monitoring	Location	Noise level dB(A)	
				Noise Level Measured at 1.5 mts away from the equipment	Noise Level Measured inside the cabin
THUMALAPENTA MINES LEASE – 3					
1.	NL2	08.01.2025	Shovel	75.9	56.9
2.	NL3	08.01.2025	Dumper	76.3	57.2
3.	NL4	08.01.2025	Dozer	74.6	53.2
4.	NL6	08.01.2025	Haul Road	74.3	NA

Ambient Noise Levels

Table 30: Ambient Noise Quality Results January Month-2025 (CORE ZONE)

S.NO	Locations	Date of Monitoring	Noise Level Leq. dB (A)	
			Day Time	Night Time
1	At Quarry Edge-Mines East	07.01.2025	64.6	47.8
2	Dozing Area	07.01.2025	65.2	49.7
3	Near to bench	15.01.2025	66.1	47.5
4	Near to Road Grader	15.01.2025	60.7	49.8
5	Near to Haul Road	20.01.2025	65.4	46.5
6	Mine West	20.01.2025	63.6	51.3
7	Mine South	27.01.2025	64.1	51.2
8	Mine North	27.01.2025	69.5	46.5

Source: Mines Source Noise Monitoring

Table 31: Mines Ambient Noise Monitoring Results for January Month-2025 (Buffer Zone)

S.NO	Locations	Latitude & Longitude	Date of Monitoring	Noise Level Leq. dB (A)	
				Day Time	Night Time
1	Thummalapenta Village	15°00'36.4" N, 78°01'11.0" E	15.01.2025	66.2	52.1
2	Ankireddypalle Village	15°03'19.2" N, 78°00'53.8" E	15.01.2025	63.5	51.6
3	Guruvanipalli Village	15°04'28.6" N, 78°01'18.4" E	21.01.2025	64.2	47.5
4	Bandarlapalle Village	15°00'43.0" N, 78°03'14.2" E	22.01.2025	60.5	46.9
5	Petnikota Village	15°00'43.0" N, 78°03'14.2" E	24.01.2025	57.4	47.3

Source: *Ambient Noise Quality Monitoring*

13. Fugitive Dust Emission Monitoring

Fugitive emission was monitored at various location, results of fugitive dust emission are furnished below:

Table 32: January to March 2025 Fugitive Dust Emission Monitoring Results

S.No	Location	March - 2025	SPM (µg/m$^{3)}$	February-2025	SPM (µg/m$^{3)}$	January - 2025	SPM (µg/m$^{3)}$
1	Mine East	21.03.2025	790	11.02.2025	772	20.01.2025	732
2	Mine West	21.03.2025	815	11.02.2025	796	20.01.2025	761
3	Mine North	22.03.2025	840	17.02.2025	819	21.01.2025	871
4	Mine South	22.03.2025	854	17.02.2025	821	21.01.2025	821

Note: As per CPCB Guidelines for Prevention and control of Fugitive Emission from Cement Plants – 5000 µg/m3 for coal Stock Pile and 2000 µg/m3 for rest other areas

-:*******:-