ADITYA BIRLA

HINDALCO

The Additional PCCF,
Ministry of Environment, Forests & Climate Change
Regional office (West Central Zone),
Ground Floor, East Wing,
"New Secretary Building"
Civil lines, Nagpur - 440001

28/05/2019

Subject: Compliance Status of Environment Clearance conditions of Durgmanwadi Bauxite Mines

Dear Sir,

Attached please find the compliance condition of the Environment Clearance granted to Durgmanwadi Bauxite Mines on 5th of February 2007 vide clearance No J-11015/239/2006-IA-II (M) under EIA 2006.

Please be informed that, since 17/03/2018, the mining activities at our Durgmanwadi Bauxite Mines have been stopped as per the directions and show cause notice dated 15th March 2018, bearing reference N0.Z-11013/3/2018-IA-II (M), issued by Ministry of Environment Forest & Climate Change. The same is enclosed for your ready reference as Annexure - 1.

Further, it may be noted that Environmental Clearance granted to **Durgmanwadi Bauxite Mines** is kept in abeyance by Ministry of Environment Forest & Climate Change.as per their direction dated: 6th March 2019, bearing reference no. F. No. J-11015/239/2005-IA-II (M).The same is enclosed for your ready reference as Annexure - 2.

We are herewith submitting the compliance against the conditions laid down in the Environment Clearance for the 6 months duration (October'18 to March'19).

Hope you will please find the above in order.

Thanking you,

Yours very truly,

Uday V. Pawar
Head – West Coast Mines
Hindalco Industries Limited.

Encl. A/a
Copy to:
1. The Member Secretary,
Central Pollution Control Board,
Parivesh Bhavan, East Arjun Nagar,
DELHI - 110032

2. The Regional Officer
Maharashtra Pollution Control Board
Udyog Bhawan, KOLHAPUR.

COMPLIANCE STATUS OF ENVIRONMENTAL CLEARANCE CONDITIONS

Environment Clearance Durgmanwadi Bauxite Mines granted on 5th of February 2007 vide clearance No J-11015/239/2006-IA-II (M)

Sr.No.	Conditions	Compliance
Specific Conditions :-		
i)	The mining activity to be restricted to private land only for which the conservation plan has been accepted by the State Government.	Mining activities were restricted to private land only when the mine was operational. Please be informed that, since 17/03/2018, the mining activities at Durgmanwadi Bauxite Mines have stopped as per the MoEF&CC directions and show cause notice dated 15th March 2018.
ii)	Preparation of conservation plan for protection of endangered fauna reported in the study area.	Conservation Plan for protection of endangered species was prepared and submitted to MoEF at the time of grant of Environment clearance.
iii)	Top soil to be stacked properly with proper slope with adequate safeguards & backfilled for reclamation & rehabilitation of mined out area.	The top soil stacked initially in dumps was rehandled and used for mine restoration, when the mine was operational.
iv)	Overburden to be stacked at earmarked dump site(s) only at max height not more than 20 m and slopes not to exceed 28^0. The OB dumps shall be scientifically vegetated with suitable native species to prevent erosion and surface runoff.	All the overburden dumps were backfilled into the mined out voids, when the mine was operational. The backfilled areas have been scientifically vegetated through afforestation.
v)	External OB dumps and other wastes to be stacked at earmarked sites only.	There are no external dumps for overburden stacking.
vi)	Catch drains and siltation ponds of appropriate size to be constructed to arrest silt and sediment flows.	The run-off mine was channelized towards settling tanks and silt check dams. All the natural storm water streams are passed through silt check dams. The mine is not operational since 17th March 2018.
vii)	Drilling and blasting should not be involved.	No drilling & blasting was carried out when the mine was operational.
viii)	Plantation to be raised in an area of 121.50 ha. The density of trees should be around 2000 plants per ha.	The plantation has been carried out every year as per plan. Till date 3,36,999 plants have been planted within & outside the lease area and at feeder road side. The area

		covered with plantation within mine lease area is 74.04 Ha. As Mine is not in operation since 17 March 2018, no reclamation activities were being carried out since then. During the year 2018-19, 25000 saplings and grass seeds have been planted to cover 12 Ha.
ix)	Implement suitable conservation measures to augment ground water resources in the area.	6 No. of water harvesting ponds have been developed in the mined out area when the mine was operational.
x)	Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells.	The ground water quality is monitored on quarterly basis through MoEF approved third party.
xi)	Plan rainwater harvesting measures on long-term basis should be planned and implemented.	6 No. of water harvesting ponds have been developed in the mined out area when the mine was operational which is still exist.
xii)	a) Vehicular emissions to be kept under Control. b) The vehicles should be covered with a tarpaulin and shall not be over loaded. c) Regular water sprinkling arrangements shall be made to control the fugitive dust generation from the haul roads.	There was a system to check the PUC certificates of hired trucks, when the mine was operational. Timely maintenance of all heavy equipment was carried out. All transport vehicles were covered with tarpaulin. The vehicles were weighed within the mines and all the vehicles were carrying bauxite as per RLW, when the mine was operational. Mobile water tankers were used to sprinkle water on haul roads, when the mine was operational.
xiii)	Install sewage treatment plant for colony. ETP should be provided for workshop and waste generation from mining operation.	Not Applicable – There is no colony set up at the mines.
xiv)	A final Mine closer plan along with details of Corpus Fund should be submitted to the MoEF 5 years in advance of final mine closer for approval.	Please be informed that, since 17/03/2018, the mining activities in Durgmanwadi Bauxite Mines has been stopped as per the MoEF&CC directions and show cause notice dated 15th March 2018, bearing reference N0.Z-11013/3/2018-IA-II (M), issued by Ministry of Environment Forest & Climate Change. Final Mine closure plan will be submitted to concerned agency within prescribed time limit and as per the direction received from competent authority.

B	General Conditions.	
i)	No change in mining technology and scope of working without prior approval	Noted and agreed.
ii)	No change in calendar plan including excavation, quantum of mineral ore & waste.	Noted and agreed.
iii)	Conservation measures for protection of flora & fauna in the core & buffer zone to be drawn	Mined out area were scientifically afforested. For this we procured soil, manure, vermi compost, bagasse and press-mud to improve the condition of plantation base. We had engaged experts to implement afforestation activity. Care had been taken to plant mostly local flora along with some exotic species. The working hours were restricted only to day light when mine was operational.
iv)	Establish four ambient air quality monitoring stations in the core zone & buffer zone for RPM, SPM, SO2, NOx. Monitoring.	4 Nos. of Ambient air quality stations have been established in the core and as well as in buffer area.
v)	Regular submission of data on ambient air quality (RPM, SPM, SO2,NOx)	The monitoring is carried out as per the schedule and Data is submitted regularly The Post monsoon and winter season reports are attached.
vi)	Regular control of fugitive dust emissions from all the sources	The dust generated during mining operations was suppressed by atomized water sprinklers and during mining and transportation by mobile water tankers when the mine was operational.
vii)	Take measures for control of noise levels below 85 dBA in the work environment	All the noise generating machineries were enclosed to suppress the noise during operation. The noise level in the work environment was below 85dBA and all the workers engaged during operation of HEMM were provided with ear-plugs / muffs, when the mine was operational.
viii)	Proper collection, treatment of industrial waste water to conform the standards prescribed under GSR 422 (E) dt.19th May, 1993	There was no industrial waste water, as there was no processing was carried out, when the mine was operational.
ix)	Provide adequate training and information on safety & health aspects & provide protective respiratory devices to workers	Regular training to employees on Safety and Health aspects was provided, when mine was in operation. All the employees engaged in operations

<table>
<tr><td></td><td></td><td>were provided with dusk masks & ear-plugs / muffs, when the mine was operational.</td></tr>
<tr><td>x)</td><td>Undertake periodical Occupational health surveillance program of workers</td><td>The heath surveillance was done once in a year for all employees and there were no cases of occupational health hazards.</td></tr>
<tr><td>xi)</td><td>Set-up separate environmental management cell with suitable qualified personnel.</td><td>A qualified person has been employed at the unit level. A full-fledged Environment cell operates at the unit level.</td></tr>
<tr><td>xii)</td><td>The project authority shall inform to the regional office located at Bhopal regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development.</td><td>Please be informed that, since 17/03/2018, the mining activities at our Durgmanwadi Bauxite Mines have been stopped as per the MoEF &CC directions and show cause notice dated 15th March 2018.</td></tr>
<tr><td>xiii)</td><td>The funds earmarked for environmental protection measures shall be kept in separate account and should be diverted for other purposes.</td><td>The separate funds have been allocated for implementation of environmental protection measures along with item-wise breakup such as furnished below.
<table>
<tr><th>SO. NO.</th><th>Shop Order Description</th><th>Expenditure for the year 2018 -19 (Rs.)</th></tr>
<tr><td>1610 & 1611</td><td>Aftercare (watering)</td><td>4,34,560.0</td></tr>
<tr><td>1612</td><td>Environment Monitoring</td><td>7,86,920.0</td></tr>
<tr><td>1613</td><td>Dust suppression</td><td>64,770.0</td></tr>
<tr><td>1614</td><td>Statutory Compliance</td><td>19,743.0</td></tr>
<tr><td>1615</td><td>Environment Others</td><td>1,63,351.0</td></tr>
<tr><td>1616</td><td>ISO – 14001 system</td><td>0.0</td></tr>
<tr><td>3019</td><td>Mine restoration & rehabilitation</td><td>13,57,178.0</td></tr>
</table></td></tr>
<tr><td>xiv)</td><td>The project authority shall inform to the regional office located at Bhopal regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development.</td><td>Please be informed that, since 17/03/2018, the mining activities in Durgmanwadi Bauxite Mines has been stopped as per the MoEF & CC directions and show cause notice dated 15th March 2018, bearing reference N0.Z-11013/3/2018-IA-II (M), issued by Ministry of Environment Forest & Climate Change. Final Mine closure plan will be submitted to concerned agency in a prescribed time limit.</td></tr>
<tr><td>xv)</td><td>The project authorities should extend full cooperation to the officer(s) of the Regional office by furnishing the requisite data/information / monitoring reports.</td><td>Agreed and Noted</td></tr>
</table>

xvi)	A copy of clearance letter will be marked to concern Panchayat.	A copy of clearance letter was marked to concern Panchayat.
xvii)	The project authority should advertise at least in two local news papers within 7 days of the issue of the clearance letter.	The advertisement was published in the local daily news papers "Tarun Bharat" & "Pudari" on 08/02/2007.

Annexure-1

Speed Post

No. Z-11013/3/2018-IA-II (M)
Government of India
Ministry of Environment, Forest and Climate Change
IA-II (Non Coal Mining)

Vayu Wing, 3rd Floor,
Indira Paryavaran Bhavan, Aliganj,
Jor Bagh Road, New Delhi-110 003

Dated: 15th March, 2018

Sub.: Direction to the Unit under section 5 of the Environment (Protection) Act, 1986 – for keeping in abeyance the Environmental Clearance -regarding

Whereas, Environmental Clearance was granted vide letter No J-11015/239/2006-IA.II(M) dated 5.02.2007 for Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited at village Durgmanwadi & Padsill, Taluka: Radhanagri in Kolhapur District in Maharashtra.

Whereas, as per direction of Hon'ble Supreme Court a team constituted by the Ministry visited the mining site of M/s Punthembekar Minerals limited during 10-11th October, 2017 and submitted its report to the Ministry. The matter was thereafter examined in the Ministry and it has found that Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited is located within 1 KM of the Radhanagri Wildlife Sanctuary.

Whereas, the Hon'ble Supreme Court in its order dated 04.08.2006 in IA 1000 W.P. (c) 202 of 1995 (T.N Godavaram vs. Union of India) prohibited the mining activity around protected area as an interim measure and directed that 1 Km safety zone shall be maintained subject to the order that may be made in this I.A. regarding Jamua Ramgarh Sanctuary.

Whereas, as per Ministry O.M. No. J-11013/41/2006-IA (I) dated 02/12/2009, all the development projects/activities for which the environment clearance had been granted prior to 02/12/2009 and were located within 10km radius of National Park/Wildlife Sanctuary were required to obtain wildlife clearance from National Board for Wildlife. In this regard, a public notice was also inserted in newspapers by the Impact Assessment Division of the Ministry in January 2009 asking the Project Proponents to seek wildlife clearance from Standing Committee of National Board for Wildlife by 31st January 2009. But it has been observed that Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited is operating without obtaining wildlife clearance from the Standing Committee of National Board for Wildlife.

Whereas, in exercise of powers vested under Section 5 of Environment (Protection) Act, 1986 you are directed to immediately stop all the mining activity within 1 KM of Radhanagri Wildlife Sanctuary pursuant to Hon'ble Supreme Court order dated 04.08.2006 in IA 1000 W.P. (c) 202 of 1995 (T.N Godavaram vs. Union of India) and to show cause as to why the Environmental Clearance granted vide letter No J-11015/239/2006-IA.II(M) dated 5.02.2007 for Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited should not be revoked for carrying out mining activity since 1994 till 05.02.2007 without obtaining EC, within 1KM of Radhanagri Wildlife Sanctuary in contravention to Hon'ble Supreme Court in its order dated 04.08.2006 in IA 1000 W.P. (c) 202 of 1995 (T.N Godavaram vs. Union of India)and beyond 1KM but within 10 KM from Radhanagri Wildlife Sanctuary without obtaining the Wildlife Clearance from Standing Committee of National Board of Wildlife. You are requested to reply within 15 days of receipt of this letter, along with past production details since inception of mines duly authenticated by Department of Mines & Geology, copy of Consent to Establish (CTE) and Consent to Operate (CTO) issued by State Pollution Control Board from time to time, failing which your EC may be considered for revocation.

Lastly, it may be noted that violation of the direction under Section 5 of Environment (Protection) Act, 1986 shall attract penal action under section 15 of the Environment (Protection) Act, 1986.

This issues with the approval of the Competent Authority.

15/3/18

(Surender Kumar)
Scientist – 'G'
Email: s.kumar1958@gov.in
Phone/Fax: 011-24695340

To,
M/s Hindalco Industries Limited
P.O Radhanagri
Kolhapur, Maharashtra-416212

Copy to:

1) **The Chief Secretary**, Government of Maharashtra, 6th Floor Main Building, Mantralaya, Dr. Madan Cama Road, Fort, Mumbai-400032

2) **The Chairman**, Maharashtra Pollution Control Board, Kalpataru Point, 3rd and 4th floor, Opp. Cine Planet,Sion Circle, Mumbai-400 022.

3) **The Controller General**, Indian Bureau of Mines
2nd Floor, Indira Bhawan, Civil Lines, Nagpur- 440 001
Phone : + 91 712 2560041, Fax : + 91 712 2565073
email : cg@ibm.gov.in

4) **The Director**, Directorate of Geology & Mining,
Government of Maharashtra, "Khanij Bhawan", Plot No 27, Shivaji Nagar, Cement Road, Nagpur-440010

5) **The District Collector** (Kolhapur),
District Collector Office, Kolhapur
New Shahupuri, Kolhapur, Maharashtra 416003

6) **The Additional Principal Chief Conservator of Forests (C),**
Ministry of Environment, Forest and Climate Change, Regional Office (WCZ), Ground Floor, East Wing, New Secretariat Building Civil Lines, Nagpur-440001
Tel.No.0712-2531318, Fax: 0712-2531318
Email: apccfcentral-ngp-mef@gov.in

7) **Mr. Kumar Mangalam Birla,**
Chairman, Hindalco Industries Limited
Birla Centurion, 7th floor
Pandurang Budhkar Road
Worli, Mumbai 400 030

8) MoEFCC Website

9) Guard File

Annexure – 2

By Speed Post/Online

F. No. J-11015/239/2005-IA-II (M)
Government of India
Ministry of Environment, Forest and Climate Change
Impact Assessment Division
***

Indira Paryavaran Bhavan,
Vayu Wing, 3rd Floor, Aliganj,
Jor Bagh Road, New Delhi-110 003

Dated: 6th March, 2019

Sub.: Direction to the Unit under section 5 of the Environment (Protection) Act, 1986- for keeping in abeyance the Environmental Clearance – regarding.

Whereas, Environmental Clearance was granted vide letter No J-11 015/239/2006-1A.II(M) dated 5.02.2007 for Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited, located at Village Durgmanwadi & Padsill, Taluka: Radhanagri in Kolhapur District in Maharashtra.

Whereas, as per direction of Hon'ble Supreme Court a team constituted by the Ministry visited the mining site of M/s Punthembekar Minerals limited during 10-11th October, 2017 and submitted its report to the Ministry. The matter was thereafter examined in the Ministry and it has found that Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited is located within 1 KM of the Radhanagri Wildlife Sanctuary.

Whereas, in exercise of powers vested under Section 5 of Environment (Protection) Act, 1986, directions was issued vide LR No Z -11013/3/2018 dated 15.03.2018 wherein it has mentioned that *"you are directed to immediately stop all the mining activity within 7 KM of Radhanagri Wildlife Sanctuary pursuant to Hon'ble Supreme Court in its order dated 04.08.2006 in IA* 7000 *WP. (c)* 202 *of* 7995 *(T.N Godavaram vs. Union of India) and to showcause as why Environmental Clearance granted No* J-11015/239/2006-IA.II(M) *dated 5.02.2007 for Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited should not be revoked for carrying out mining activity since* 1994 *till 05.02.2007 without obtaining EC, within 7 KM of Radhanagri Wildlife Sanctuary in contravention to Hon'ble Supreme Court in its order dated* 04.08.2006 *in IA* 1000 *W.P. (c)* 202 *of* 1995 *(T.N Godavaram vs. Union of India)andfor remaining area without obtaining the Wildlife Clearance from Standing Committee of National Board of Wildlife. You are requested to reply within* 15 *days of receipt of this letter, along with past production details since inspection of mines duly authenticated by Departmentof Mines &Geology, copy of Consent to Establish (CTE) and Consent to Operate (CTO)*

issuedstate pollution control board from time to time, failing which your EC may be kept inabeyance."

Whereas, the Ministry vide OM No. J-11013/41/2006-IA (I), dated 02/12/2009, all the development projects/activities for which the environment clearance had been granted priorto 02/12/2009 and were located within 10 km radius of National Park/Wildlife Sanctuary were required to obtain wildlife clearance from National Board for Wildlife. In this regard, a public notice was also inserted in newspapers by the Impact Assessment Division of the Ministry in January 2009 asking the Project Proponents to seek wildlife clearance from Standing Committee of National Board for Wildlife by 31st January 2009. The reply submitted by you dated 30.03.2018 & KML file submitted by you on 31.10.2018 was examined in the Ministry and it has found that Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited is falling within 10 KM of the of Radhanagri Wildlife Sanctuaryand operating without obtaining wildlife clearance from the Standing Committee of the National Board for Wildlife.

Whereas, the Hon'ble Supreme Court the in its order dated 02.11.2018 in W.P. 202/1995 in the matter of T.N. Goadvarman Thirumulpad vs Uol& Ors. in I.A 3949 inter-alia mentioned that *'The Chief Secretary has assured* us *that he will look into the matter and see whether any illegal mining has been going on, that is to say,* ***mining without any environmental clearance or without any forest clearance or clearance from the Standing Committee of the National Board for Wildlife. If that is so, necessary steps be taken by the State of Maharashtra to recover the amounts due to illegal mining (if any) under Section 21(5) of the Mines and Minerals (Development and Regulation) Act, 1957."***

Whereas, the Hon'ble NGT in its Judgment dated 25.09.2018 inter-alia mentioned that *"It is clear from above that the order dated 04.08.2006 passed regarding TWPs in Jamuwa Ramgarh Wildlife Sanctuary in Rajasthan was the basis of the case of Goa Foundation (supra)wherein all the mining activities have been prohibited within 1km of the boundaries of National Parks and Sanctuaries. It is therefore amply clear that considering the sensitiveness ofthe National Parks and Sanctuaries* **no *mining activity can be permitted up to 1 km from the boundaries of the National Parks and Sanctuaries anywhere in the country*** *".*

Whereas, the reply submitted by M/s Hindalco Industries Limited vide letter dated 30.03.2018, email dated 31.10.2018, 25.11.2018 and 12.12.2018 was examined in the Ministry and it has found the mining lease is falling within 10 KM of the Radhanagri Wildlife Sanctuary and mining has been carried out without obtaining the Clearance from the Standing Committee of the National Board of Wildlife.

Now, therefore, in exercise of powers vested under Section 5 of Environment (Protection) Act, 1986, **the Environmental Clearance granted vide letter No J-11015/239/2006-1A. II(M) dated 5.02.2007 for Durgaamanwadi Bauxite Mines Project of M/s Hindalco Industries Limited, located at Village Durgmanwadi & Padsill, Taluka: Radhanagri in Kolhapur District in**

Maharashtra is kept in abeyance with immediate effect and untilfurther orders.

Lastly, it may be noted that violation of the direction under Section 5 of Environment (Protection) Act, 1986 shall attract penal action under section 15 of the Environment (Protection) Act, 1986.

This issues with the approval of the Competent Authority.

(Dr. R.B. Lal)
Addl. Director

To,

M/s Hindalco Industries Limited
P.o Radhanagri, Kolhapur,
Maharashtra-416212

Copy to:

1. **The Chief Secretary,** Government of Maharashtra, 6th Floor Main Building, Mantralaya, Dr. Madan Cama Road, Fort, Mumbai-400032- for necessary action.
2. **The Chairman,** Maharashtra Pollution Control Board, Kalpataru Point, 3rd and 4thfloor, Opp. Cine Planet, Sion Circle, Mumbai-400 022- for necessary action.
3. **The Controller General,** Indian Bureau of Mines2nd Floor, Indira Bhawan, Civil Lines, Nagpur- 440 001Phone: + 91 7122560041, Fax: + 91 7122565073email: cg@ibm.gov.in - for necessary action.
4. **The Director,** Directorate of Geology & Mining, Government of Maharashtra, Khanij Bhawan", Plot No 27, Shivaji Nagar, Cement Road, Nagpur-440010- for necessary action.
5. **The District Collector** (Kolhapur), District Collector Office, Kolhapur New Shahupuri, Kolhapur, Maharashtra 416003- for necessary action.
6. **The Additional Principal Chief Conservator of Forests (C),**Ministry of Environment, Forest and Climate Change, Regional Office (WCZ), GroundFloor, East Wing, New Secretariat Building Civil Lines, Nagpur-440001TeI.No.0712-2531318, Fax: 0712-2531318Email: apccfcentral-ngp-mef@gov.in.
7. **Mr. Kumar Mangalam Birla,** Chairman, Hindalco Industries Limited Birla Centurion, 7th floor Pandurang Budhkar Road Worli, Mumbai 400 030.
8. PARIVESH Portal.
9. Guard File.

(Dr. R.B. Lal)
Addl. Director

HINDALCO
DURGMANWADI
16 MAR 2019
ATTN: MC

DURGAMANWADI BAUXITE MINE

RADHANAGARI TALUKA,
KOLHAPUR DISTRICT
MAHARASHTRA

M/S HINDALCO INDUSTRIES LIMITED

ENVIRONMENTAL QUALITY MONITORING REPORT

POST MONSOON 2018
(SEPTEMBER,OCTOBER,NOVEMBER)

IND.BH.41.17.0348/HSR

Bhagavathi Ana Labs Pvt. Ltd.,

7-2-C-14, Industrial Estate,
Sanathnagar, Hyderabad
500 018

CONTENTS

PREFACE

M/S Hindalco Industries Limited entrusted environmental quality monitoring at **Durgmanwadi Bauxite Mine** situated Radhanagari Taluka, Kolhapur district, Maharashtra to **Bhagavathi Ana Labs Pvt. Limited, Hyderabad** during Post Monsoon season of the year 2018.

The environmental monitoring was carried out in core zone and buffer zone during the months of September, October & November 2018 for the following environmental parameters.

- → Micro-meteorology
- → Ambient air quality
- → Ambient noise level quality
- → Water quality

The data obtained was compiled to assess the current environmental status of the mining as well as the surrounding villages in the study area.

Bhagavathi Ana Labs Pvt. Limited, Hyderabad gratefully acknowledges the cooperation extended by management and staff of M/S Hindalco Industries Limited and the village people to the field staff.

EXECUTIVE SUMMARY

Durgamanwadi Bauxite Mine environmental quality monitoring includes the monitoring of ambient air quality, noise level quality, water quality, & micro-meteorology in core zone and buffer zone around the mine lease area.

AMBIENT AIR QUALITY

The scenario of the existing ambient air quality in the study region has been assessed through a network of selected ambient air quality locations. Pre-calibrated respirable and fine particulate dust sampler has been used for monitoring the existing AAQ status. Maximum, minimum, average and percentile values have been computed from the raw data collected at all individual sampling stations to represent the ambient air quality status.

AMBIENT NOISE LEVEL MONITORING

Mining and allied activities usually cause noise pollution. Excessive noise levels will cause adverse effects on human beings and associated environment including domestic animals, wild life, natural ecosystem and structures. To know the ambient noise levels in the study area, noise levels were recorded at mining area and nearby villages using noise level recorder.

WATER QUALITY MONITORING

Water quality monitoring consists of the study of surface and ground water sources and its quality in the core and buffer zone of the lease area. Assessment of water quality in the study area and in the mine area includes the quality assessment of parameters as per the Indian Standard IS 10500 (Drinking water standard). Water samples were collected from selected locations during study period and analyzed in the laboratory as per the standard IS&APHA procedures.

MICROMETEOROLOGY

Meteorological scenario helps to understand the trends of the climatic factors. It also helps in the identification of sampling stations in the study area. Meteorological scenario exerts a critical influence on air quality as the pollution arises from the interaction of atmospheric contaminants with adverse meteorological conditions

MICRO-METEOROLOGY

Meteorological data within the project area during the air quality survey period was assessed.

PRIMARY / BASIC METEOROLOGICAL PARAMETERS

→ Wind Velocity

→ Wind Direction

Since the dispersion and diffusion of pollutants mainly depend on the above factors these factors are considered as primary meteorological parameters.

SECONDARY METEOROLOGICAL PARAMETERS

→ Ambient Temperature

MICRO-METEOROLOGICAL DATA

DATE	TEMPERATURE/HUMIDITY			WIND SPEED Km/h			WIND DIRECTION
	MIN	MAX	AVERAGE HUMIDITY	MIN	MAX	AVERAGE	
04-09-2018	24	29	80	0	5	2.5	N,WNW
06-09-2018	25	30	80	0	6	3.0	SE-NE
10-09-2018	23	30	78	0	3	1.5	SE,NE
12-09-2018	23	30	82	0	5	2.5	NNE-E
18-09-2018	23	32	65	0	4	2.0	N-NNW
20-09-2018	23	30	86	0	5	2.5	N-W
25-09-2018	24	32	77	0	12	6.0	N-SSE
27-09-2018	21	31	75	0	6	3.0	SW-NW

MICRO-METEOROLOGICAL DATA

DATE	TEMPERATURE/HUMIDITY			WIND SPEED Km/h			WIND DIRECTION
	MIN	MAX	AVERAGE HUMIDITY	MIN	MAX	AVERAGE	
03-10-2018	24	35	60	0	4	2.0	NNE-NE
05-10-2018	25	36	70	0	3	1.5	NE-W
10-10-2018	24	33	83	0	5	2.5	E-N
12-10-2018	26	34	67	0	4	2.0	N-NW
15-10-2018	24	35	70	0	6	3.0	N-E
17-10-2018	23	32	68	0	2	1.0	SE-E
23-10-2018	24	33	71	0	1	0.5	N-SE
26-10-2018	24	37	80	0	4	2.0	E-NE

MICRO-METEOROLOGICAL DATA

DATE	TEMPERATURE/HUMIDITY			WIND SPEED Km/h			WIND DIRECTION
	MIN	MAX	AVERAGE HUMIDITY	MIN	MAX	AVERAGE	
02-11-2018	21	35	70	0	2	1.0	SE-NE
05-11-2018	24	36	74	0	4	2.0	E-NE
09-11-2018	23	35	72	0	5	2.5	E-N
13-11-2018	20	36	70	0	6	3.0	E-NW
16-11-2018	21	37	60	0	3	1.5	E-NNE
20-11-2018	24	33	62	0	4	2.0	E-SE
22-11-2018	23	36	67	0	4	2.0	E-NE
26-11-2018	21	35	70	0	7	3.5	ENE-NNE

ENVIRONMENTAL QUALITY

Environmental monitoring includes air, noise, water quality status within core zone and buffer zone around the Durgmanwadi Bauxite Mines Lease area at Radhanagari Taluka, Kolhapur district, Maharashtra.

AMBIENT AIR QUALITY

The ambient air quality monitoring was to assess the existing levels of the air pollution. Air pollution forms an important and critical factor to study the environmental issues in the mining areas. Thus, air quality has to be frequently monitored to know the extent of pollution due to mining and allied activities.

Ambient air quality monitoring stations were set up at eight selected locations, 4 in core zone and 4 in buffer zone.

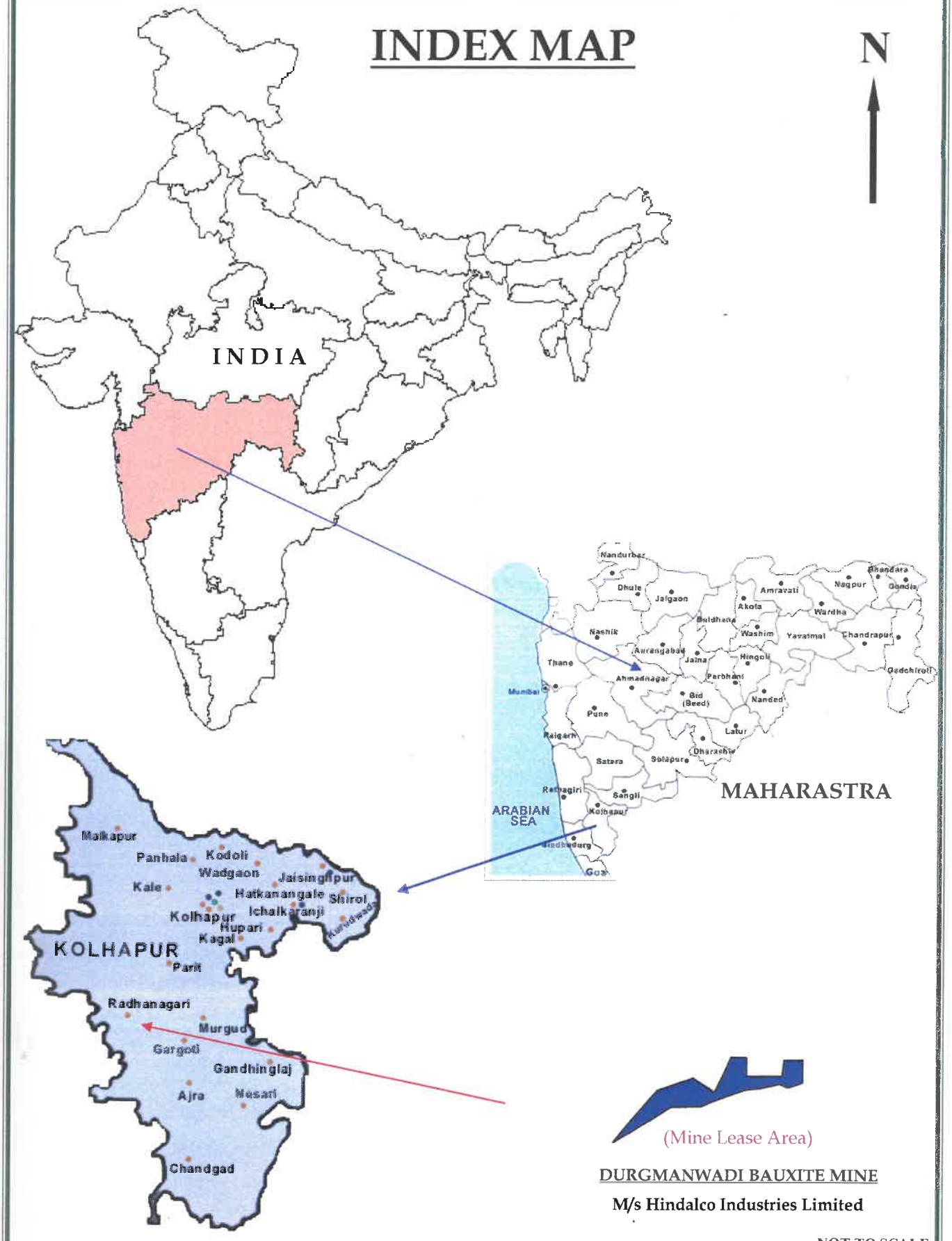
METHOD OF SAMPLING

Ambient air quality monitoring has been carried out with a frequency of two days per week at eight locations for one season (i.e. 24 times at each location in a season). The Monitoring data for air environment is generated for the parameters like Particulate matter (PM10), Fine Particulate Matter (PM2.5) Sulphur Dioxide (SO_2) and Oxides of Nitrogen (NOx), and CO.

AMBIENT AIR QUALITY MONITORING STATIONS

SL. NO	STATION CODE	NAME OF SAMPLING LOCATION	DIRECTION w.r.t MINES
1	A – 1	Core zone	--
2	A – 2	Near Mines office	--
3	A – 3	Near haulage road	--
4	A – 4	Near Weigh Bridge	--
5	A – 5	Padsali village	N
6	A – 6	Durgmanwadi village	E
7	A – 7	Kariwade village	SW
8	A – 8	Chavanwadi village	NE

INDEX MAP

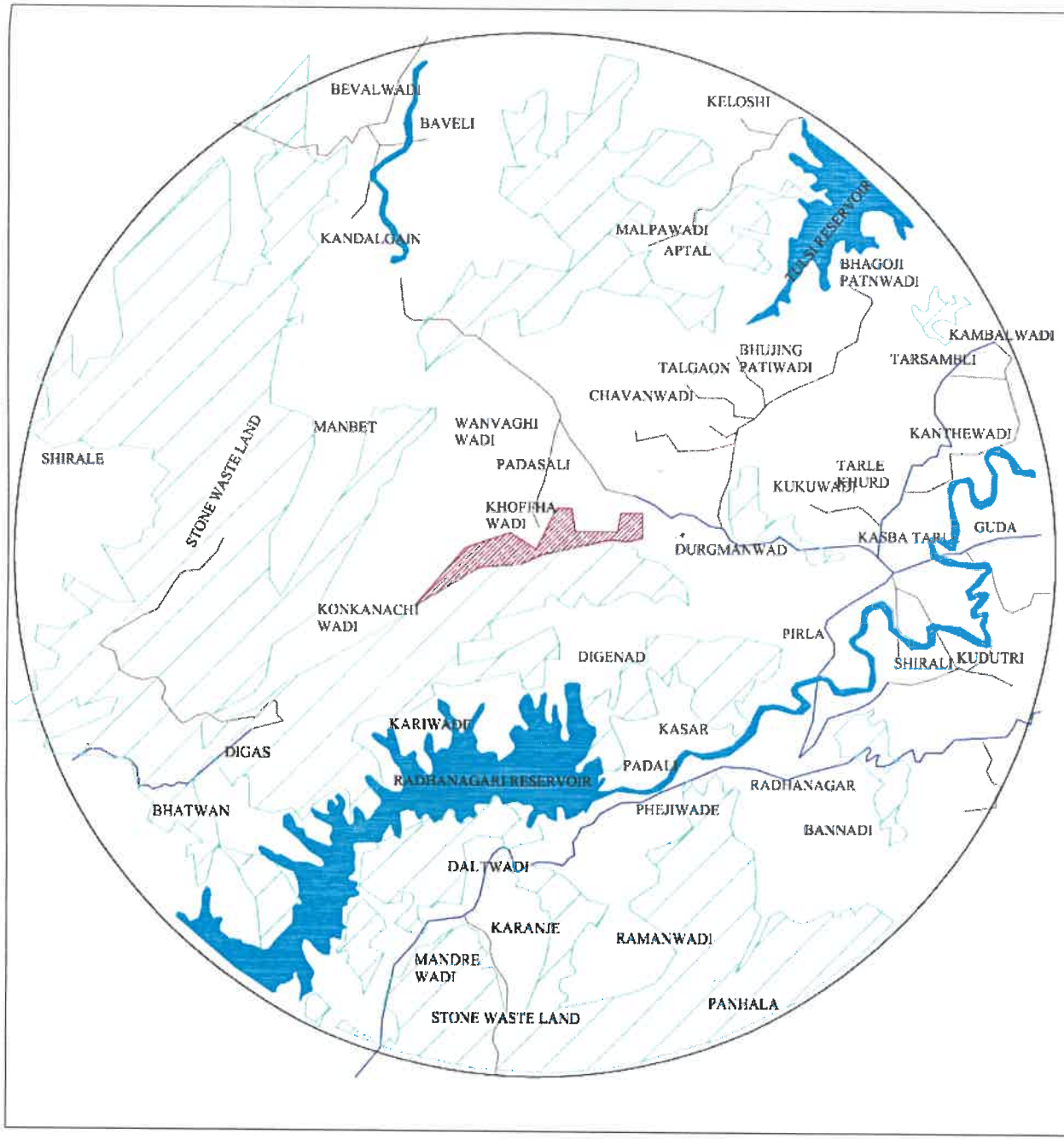


(Mine Lease Area)

DURGMANWADI BAUXITE MINE

M/s Hindalco Industries Limited

NOT TO SCALE



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KEY PLAN

LEGEND

- MINING LEASE
- METAL ROAD
- UNMETAL ROAD
- WATER COURSES
- FOREST AREA

0 1 2 3

PROJECT : DURGAMANWADI BAUXITE MINES

TITLE : KEY PLAN

PREPARED BY

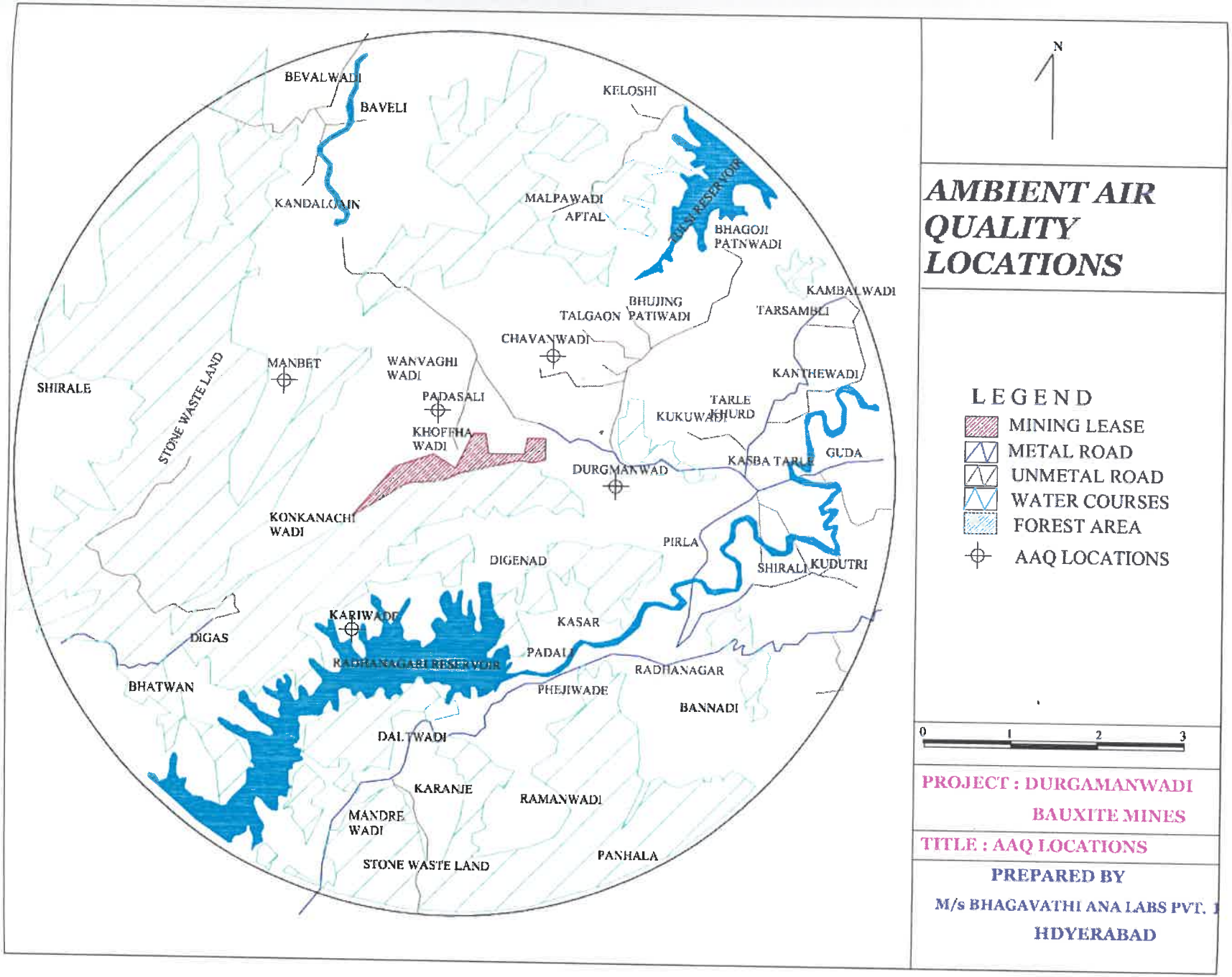
M/s BHAGAVATHI ANA LABS PVT L

HDYERABAD

SUMMARY OF AMBIENT AIR QUALITY RESULTS

Sl. No.	Location		PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_2 (µg/m^3)	CO (Mg/m3) 24 hrs Average
1	Core zone	Min	30.5	10.0	4.5	9.3	<1
		Max	56.8	19.1	7.4	12.0	<1
		Average	45.6	14.6	5.9	10.5	<1
		98th %tile	56.7	18.7	7.4	11.9	<1
2	Near Mine Office	Min	23.0	8.0	4.4	9.5	<1
		Max	56.5	18.3	7.4	12.1	<1
		Average	44.9	14.1	6.0	10.6	<1
		98th %tile	56.3	18.0	7.3	12.0	<1
3	Near Haulage Road	Min	28.8	8.7	4.9	9.8	<1
		Max	56.2	18.2	8.1	12.4	<1
		Average	46.1	14.2	6.4	10.9	<1
		98th %tile	55.8	18.2	8.0	12.4	<1
4	Near Weigh Bridge	Min	31.4	9.5	4.9	9.5	<1
		Max	57.3	19.9	8.2	12.1	<1
		Average	44.8	14.5	6.1	10.6	<1
		98th %tile	57.3	19.4	7.9	12.0	<1
5	Padsali village	Min	24.6	8.9	4.9	9.2	<1
		Max	54.3	17.3	8.0	12.3	<1
		Average	41.7	13.3	6.3	10.6	<1
		98th %tile	52.5	17.2	8.0	12.1	<1
6	Durgamanwadi village	Min	26.3	7.9	4.7	8.9	<1
		Max	53.0	17.1	7.8	12.0	<1
		Average	41.4	13.1	6.3	10.7	<1
		98th %tile	52.1	16.7	7.8	12.0	<1
7	Kariwade village	Min	30.4	9.9	4.3	9.4	<1
		Max	55.8	18.3	8.1	11.5	<1
		Average	43.1	13.9	6.5	10.3	<1
		98th %tile	54.8	17.8	8.1	11.4	<1
8	Chavanwadi village	Min	27.7	8.9	4.4	9.3	<1
		Max	53.5	17.2	7.2	11.6	<1
		Average	42.4	13.1	5.7	10.3	<1
		98th %tile	53.3	16.7	7.1	11.5	<1

NOTE: The results relate only to the condition prevailing at the time of sampling
Method of measurement: As per IS 5182


BEVALWADI
BAVELI
KELOSHI
KANDALGAON
MALPAWADI
APTAL
BHAGOJI PATNWADI
KAMBALWADI
TARSAMBLI
BHUJING PATIWADI
TALGAON
CHAVANWADI
MANBET
WANVAGHI WADI
SHIRALE
STONE WASTE LAND
PADASALI
KANTHEWADI
TARLE KHURD
KUKUWADI
KHOPPHA WADI
GUDA
KASBA TARLE
DURGMANWAD
KONKANACHI WADI
PIRLA
DIGENAD
SHIRALI
KUDUTRI
KARIWADE
KASAR
DIGAS
PADALA
RADHANAGARI RESERVOIR
RADHANAGAR
BHATWAN
PHEJIWADE
BANNADI
DALTWADI
KARANJE
RAMANWADI
MANDRE WADI
PANHALA
STONE WASTE LAND
N
AMBIENT AIR QUALITY LOCATIONS
LEGEND
MINING LEASE
METAL ROAD
UNMETAL ROAD
WATER COURSES
FOREST AREA
AAQ LOCATIONS
0
1
2
3
PROJECT : DURGAMANWADI BAUXITE MINES
TITLE : AAQ LOCATIONS
PREPARED BY
M/s BHAGAVATHI ANA LABS PVT. L
HDYERABAD

AMBIENT NOISE LEVEL QUALITY

Noise is nothing but unwanted sound produced due to various activities. As a part of occupational health and safety measures, certain safeguards have been incorporated to mitigate noise pollution in working environment. So noise level surveys were carried out at 8 selected locations in and around the mine lease area. Noise survey has been conducted in the study area for the period of 24 hr at each location. The noise level results are given below.

AMBIENT NOISE LEVEL MONITORING STATIONS

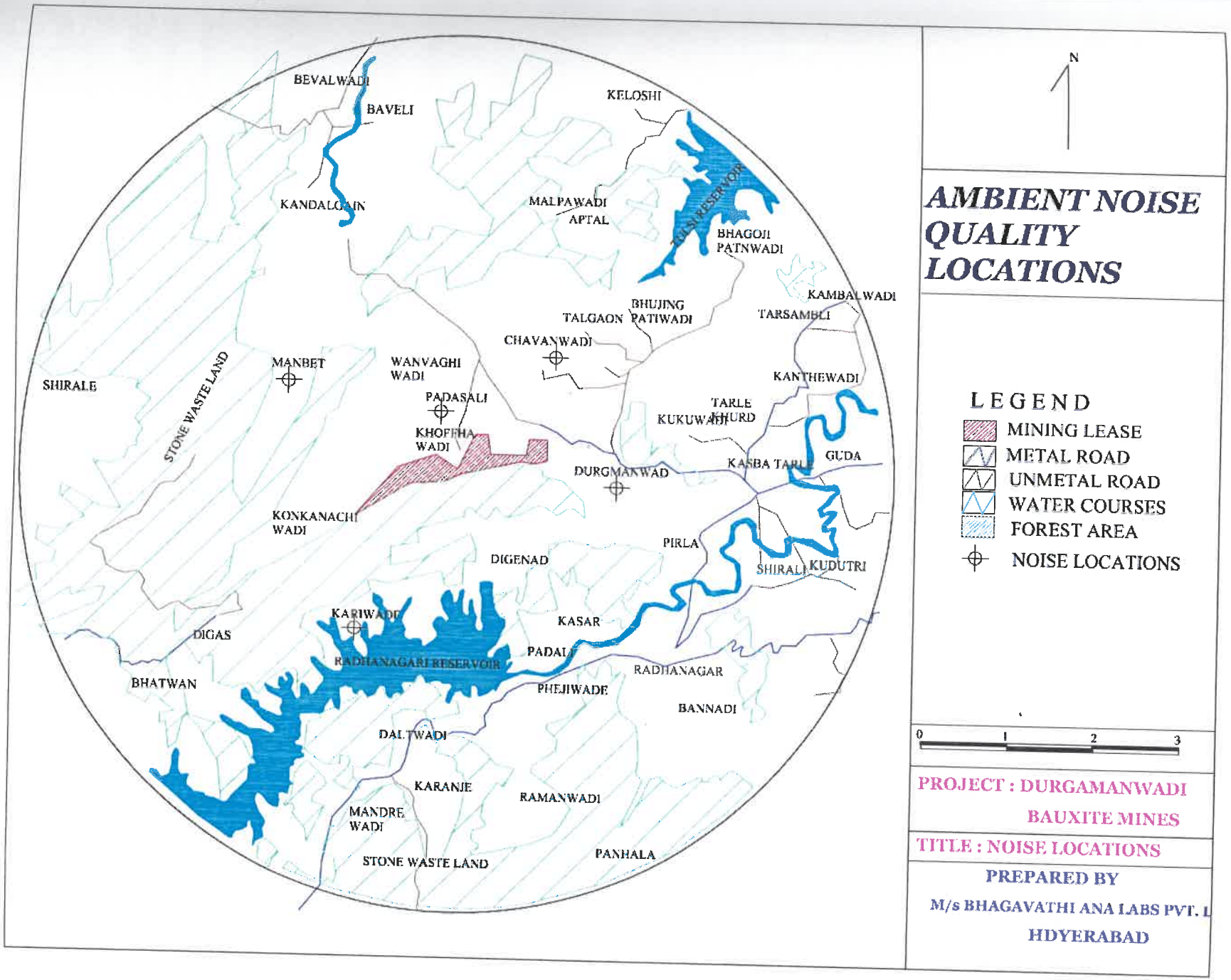
SL. NO	CODE	NAME OF SAMPLING LOCATION	DIRECTION w.r.t. MINES
1	N – 1	Core zone	--
2	N – 2	Near Mines Office	--
3	N – 3	Mines Haulage Road	--
4	N – 4	Near Weigh Bridge	--
5	N – 5	Padsali village	N
6	N – 6	Durgmanwad village	E
7	N – 7	Kariwade village	SW
8	N – 8	Chavanwadi village	NE

NOISE AMBIENT STANDARDS

AREA CODE	CATEGORY OF AREA	LIMIT IN dB (A) Leq	
		DAY TIME	NIGHT TIME
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Area	50	40

Note:

1. **Day time is reckoned in between 6 am and 9 pm.**
2. **Night time is reckoned in between 9 pm and 6 am.**
3. **Silence zone is defined as area upto 100 meters around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the Competent Authority.**
4. **Mixed categories of areas should be declared as "one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.**


BEVALWADI
BAVELI
KANDALGAON
KELOSHI
MALPAWADI
APTAL
TUSI RESERVOIR
BHAGOJI PATNWADI
KAMBALWADI
TARSAMBLI
BHUJING PATIWADI
TALGAON
CHAVANWADI
KANTHEWADI
SHIRALE
STONE WASTE LAND
MANBET
WANVAGHI WADI
PADASALI
KHOPPHA WADI
TARLE KHURD
KUKUWADI
GUDA
KASBA TARLE
DURGMANWAD
KONKANACHI WADI
PIRLA
DIGENAD
SHIRALE
KUDUTRI
KARIWADE
KASAR
DIGAS
PADALE
RADHANAGARI RESERVOIR
RADHANAGAR
BHATWAN
PHEJIWADE
BANNADI
DALTWADI
KARANJE
RAMANWADI
MANDRE WADI
STONE WASTE LAND
PANHALA
N
AMBIENT NOISE QUALITY LOCATIONS
LEGEND
MINING LEASE
METAL ROAD
UNMETAL ROAD
WATER COURSES
FOREST AREA
NOISE LOCATIONS
0
1
2
3
PROJECT : DURGAMANWADI BAUXITE MINES
TITLE : NOISE LOCATIONS
PREPARED BY
M/s BHAGAVATHI ANA LABS PVT. L
HDYERABAD

CORE ZONE NOISE LEVEL MONITORING DATA

Location →	N – 1 CORE ZONE	N – 2 NEAR MINES OFFICE	N – 3 MINES HAULAGE ROAD	N-4 NEAR WEIGH BRIDGE
Time (Hrs) ↓	dB(A)			
06.00	35.4	36.6	39.1	39.4
07.00	36.6	37.4	38.9	39.5
08.00	37.9	39.3	40.5	40.4
09.00	41.5	42.0	42.2	42.3
10.00	44.2	44.5	43.9	45.6
11.00	46.4	47.4	47.3	47.0
12.00	46.5	47.1	46.9	48.1
13.00	46.8	46.8	47.0	48.0
14.00	46.7	47.6	49.0	48.7
15.00	45.0	46.2	46.6	45.8
16.00	50.5	51.0	50.0	49.9
17.00	52.2	52.7	46.9	50.6
18.00	47.5	49.0	48.3	49.7
19.00	43.1	43.1	43.4	44.4
20.00	38.9	39.8	40.1	40.4
21.00	39.1	39.9	39.0	39.9
22.00	38.4	39.7	40.4	40.5
23.00	38.6	39.1	39.2	40.0
24.00	38.5	39.6	40.6	40.7
01.00	38.0	38.1	38.3	39.3
02.00	38.3	38.1	37.8	38.5
03.00	37.9	38.2	38.8	39.6
04.00	38.2	39.0	41.1	40.6
05.00	38.5	39.4	40.2	40.6
Minimum Value: - (L_{Min})	**35.4**	**36.6**	**37.8**	**38.5**
Maximum Value: - (L_{Max})	**52.2**	**52.7**	**50.0**	**50.6**

NOTE: The results relate only to the condition prevailing at the time of sampling

BUFFER ZONE NOISE LEVEL MONITORING DATA

Location →	N – 4 PADSALI VILLAGE	N – 5 DURGAMANWADI VILLAGE	N – 6 KARIWADE VILLAGE	N-8 CHAVAN WADI VILLAGE
Time (Hrs) ↓	dB(A)			
06.00	47.6	49.2	51.7	52.4
07.00	49.2	50.3	52.5	52.1
08.00	51.1	51.8	53.2	53.5
09.00	54.4	55.2	55.1	55.5
10.00	56.6	56.8	57.0	58.7
11.00	59.5	59.7	59.7	60.3
12.00	59.4	60.1	60.4	61.0
13.00	59.8	59.7	59.8	61.0
14.00	59.4	60.6	61.7	61.3
15.00	57.6	58.6	59.0	59.3
16.00	63.0	64.5	62.6	63.4
17.00	64.1	66.2	59.9	63.1
18.00	60.2	61.4	61.3	62.5
19.00	55.9	56.2	56.2	57.5
20.00	52.1	53.0	53.0	53.0
21.00	51.6	52.2	52.0	52.4
22.00	51.9	52.7	53.0	53.4
23.00	51.7	51.3	52.6	53.1
24.00	51.4	52.3	53.9	54.1
01.00	50.6	51.0	51.4	53.0
02.00	50.9	50.6	50.7	51.8
03.00	51.0	50.9	51.9	52.4
04.00	50.9	51.8	53.7	53.6
05.00	50.8	52.1	53.6	53.7
Minimum Value: - (L_{Min})	**47.6**	**49.2**	**50.7**	**51.8**
Maximum Value: - (L_{Max})	**64.1**	**66.2**	**62.6**	**63.4**

RESULT & DISCUSSION

The obtained Ld, Ln noise levels are compared with the ambient noise level standards and are found to be within the limit.

WATER QUALITY

Water quality monitoring consists of the study of water sources and its quality in the core and buffer zone of the lease area. Its study consists of following two important systems of water bodies:

- ➔ Surface water quality.
- ➔ Ground water quality.

The buffer zone is good in ground and surface water source. The rainwater regularly recharges this ground water during rainy season. There are two streams flowing in the study area, which are considered to be good source of water.

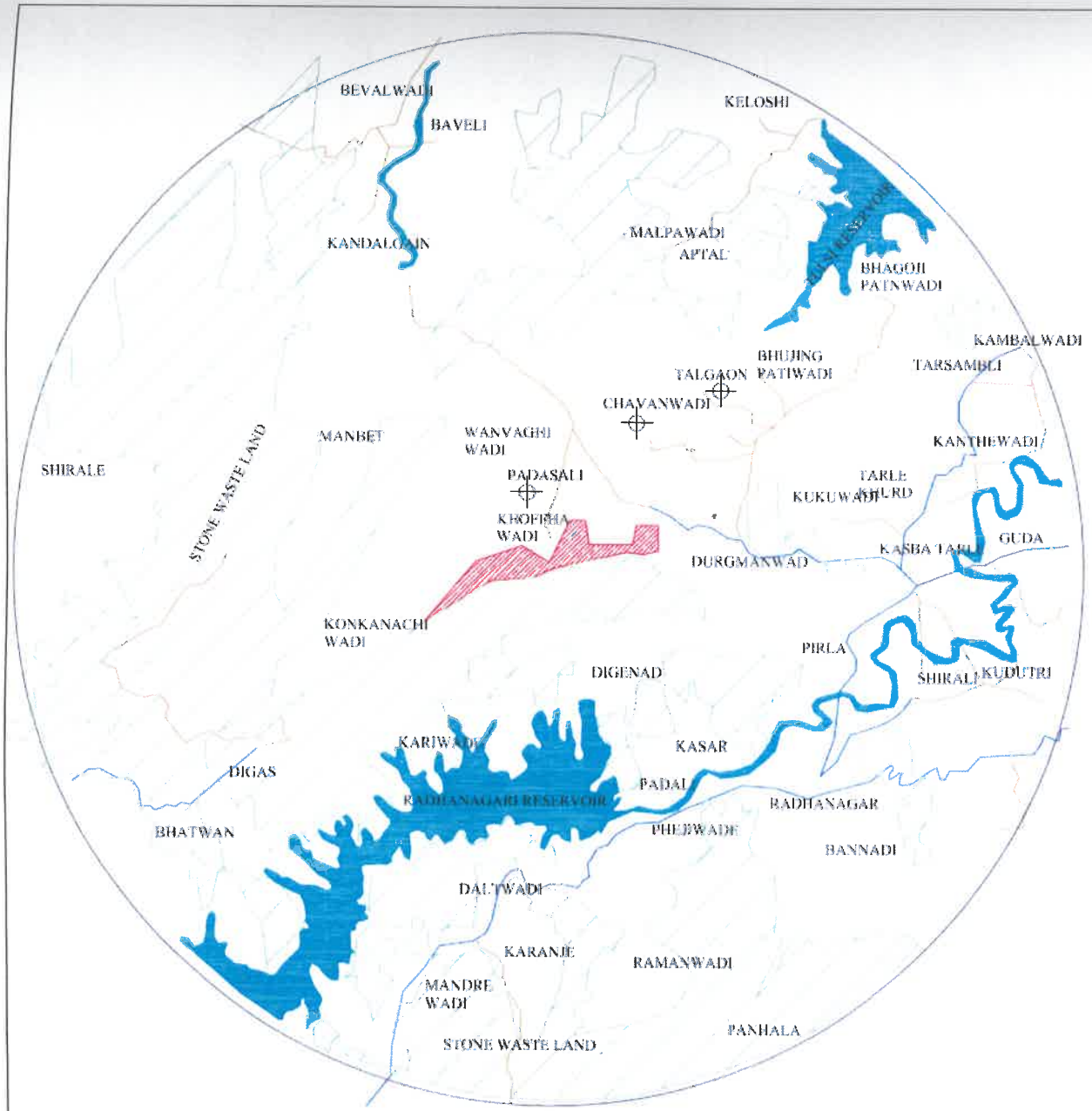
Assessment of water quality in the study area and in the mine area includes the quality assessment of parameters as per the IS 10500 (Drinking Water Standard). A total of 6 quality monitoring stations selected for sample collection in the study area. Location of water quality monitoring stations is given in Table.

WATER QUALITY MONITORING LOCATIONS

Sl. No		Name of Sampling Station	Source of Water
1	W1	Talgaon village	Ground water
2	W2	Durgamanwadi village	Ground water
3	W3	Chavanwadi village	Ground water
4	W4	Padsali village	Surface water
5	W5	Tulsi stream	Surface water
6	W6	Mine Accumulated water	Surface water

SAMPLING DETAILS

The water samples were collected from selected sampling locations, which are coming under core zone and buffer zone around the mine lease area. Samples were collected in the Post Monsoon season as per the prescribed sample collecting methods and analyzed as per the IS & APHA standard procedures. Report of water samples are given below.



N

WATER QUALITY LOCATIONS

LEGEND

- MINING LEASE
- METAL ROAD
- UNMETAL ROAD
- WATER COURSES
- FOREST AREA
- WATER LOCATIONS

0 1 2 3

PROJECT : DURGAMANWADI BAUXITE MINES

TITLE : WATER LOCATIONS

PREPARED BY

M/s BHAGAVATHI ANA LABS PVT L

HDYERABAD

TALGAON VILLAGE

Location Name	:	Talgaon village			
Date	:	22.11.2018	Sample Type	:	Ground water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.54
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	5
7	Total Dissolved Solids	mg/l	137
8	Total Suspended Solids	mg/l	12
9	Alkalinity as $CaCO_3$	mg/l	28.0
10	Total Hardness as $CaCO_3$	mg/l	122.0
11	Nitrates NO_3	mg/l	0.12
12	Phosphates PO_4	mg/l	2.22
13	Chlorides as Cl	mg/l	11.24
14	Sulphates as SO_4^{2-}	mg/l	3
15	Sodium as Na.	mg/l	2.67
16	Potassium as K	mg/l	0.09
17	Calcium as Ca	mg/l	36
18	Magnesium as Mg	mg/l	13
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.03
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.07
26	Fluoride as F	mg/l	0.59
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	3

BDL: Below Detectable Limit mg/l: - Milligram per liter

DURGAMANWADI VILLAGE

Location Name	:	Durgamanwadi village			
Date	:	22.11.2018	**Sample Type**	:	Ground water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.59
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	4.78
7	Total Dissolved Solids	mg/l	123
8	Total Suspended Solids	mg/l	27
9	Alkalinity as $CaCO_3$	mg/l	30
10	Total Hardness as $CaCO_3$	mg/l	90
11	Nitrates NO_3	mg/l	0.21
12	Phosphates PO_4	mg/l	0.07
13	Chlorides as Cl	mg/l	14.55
14	Sulphates as SO_4^{2-}	mg/l	2.47
15	Sodium as Na.	mg/l	3
16	Potassium as K	mg/l	0.11
17	Calcium as Ca	mg/l	29
18	Magnesium as Mg	mg/l	9
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.09
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.12
26	Fluoride as F	mg/l	0.09
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	4.3

BDL: Below Detectable Limit mg/l: - Milligram per liter

CHAVANWADI VILLAGE

Location Name	:	Chavanwadi village			
Date	:	22.11.2018	**Sample Type**	:	Ground water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.67
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	4.59
7	Total Dissolved Solids	mg/l	100
8	Total Suspended Solids	mg/l	17
9	Alkalinity as $CaCO_3$	mg/l	19.0
10	Total Hardness as $CaCO_3$	mg/l	49.0
11	Nitrates NO_3	mg/l	0.16
12	Phosphates PO_4	mg/l	0.03
13	Chlorides as Cl	mg/l	14.56
14	Sulphates as SO_4^{2-}	mg/l	2.11
15	Sodium as Na.	mg/l	0.59
16	Potassium as K	mg/l	0.09
17	Calcium as Ca	mg/l	16.7
18	Magnesium as Mg	mg/l	2.1
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.29
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.16
26	Fluoride as F	mg/l	0.57
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	4

BDL: Below Detectable Limit mg/l: - Milligram per liter

PADSALI VILLAGE

Location Name	:	Padsali village			
Date	:	22.11.2018	**Sample Type**	:	Surface water

Sl. No.	Parameter	Unit	
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.5
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	7.00
7	Total Dissolved Solids	mg/l	144
8	Total Suspended Solids	mg/l	19
9	Alkalinity as $CaCO_3$	mg/l	34
10	Total Hardness as $CaCO_3$	mg/l	57.0
11	Nitrates NO_3	mg/l	0.23
12	Phosphates PO_4	mg/l	0.07
13	Chlorides as Cl	mg/l	14.3
14	Sulphates as SO_4^{2-}	mg/l	4.43
15	Sodium as Na.	mg/l	0.33
16	Potassium as K	mg/l	0.06
17	Calcium as Ca	mg/l	12
18	Magnesium as Mg	mg/l	4.6
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.07
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.14
26	Fluoride as F	mg/l	0.12
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	5

BDL: Below Detectable Limit mg/l: - Milligram per liter

TULSI STREAM

Location Name	:	Tulsi stream			
Date	:	22.11.2018	**Sample Type**	:	Surface Water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.54
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	8
7	Total Dissolved Solids	mg/l	150
8	Total Suspended Solids	mg/l	13
9	Alkalinity as $CaCO_3$	mg/l	45
10	Total Hardness as $CaCO_3$	mg/l	60
11	Nitrates NO_3	mg/l	0.07
12	Phosphates PO_4	mg/l	0.99
13	Chlorides as Cl	mg/l	12.3
14	Sulphates as SO_4^{2-}	mg/l	36
15	Sodium as Na.	mg/l	7
16	Potassium as K	mg/l	9
17	Calcium as Ca	mg/l	30
18	Magnesium as Mg	mg/l	10
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.13
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.22
26	Fluoride as F	mg/l	0.01
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	4.9

BDL: Below Detectable Limit mg/l: - Milligram per liter

MINE ACCUMULATED WATER

Location Name	:	Mine Accumulated Water			
Date	:	22.11.2018	**Sample Type**	:	Surface Water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.50
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	6
7	Total Dissolved Solids	mg/l	58
8	Total Suspended Solids	mg/l	20
9	Alkalinity as $CaCO_3$	mg/l	19
10	Total Hardness as $CaCO_3$	mg/l	44.0
11	Nitrates NO_3	mg/l	0.11
12	Phosphates PO_4	mg/l	0.07
13	Chlorides as Cl	mg/l	13
14	Sulphates as SO_4^{2-}	mg/l	2.33
15	Sodium as Na.	mg/l	0.75
16	Potassium as K	mg/l	0.13
17	Calcium as Ca	mg/l	17
18	Magnesium as Mg	mg/l	3.9
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.09
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.17
26	Fluoride as F	mg/l	0.11
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	5

DOMESTIC EFFLUENT ANALYSIS

Sample Type: **Canteen waste water**

Date of sampling: 22.11.2018

Sl.No	Test	Result
1	**Total Suspended Solids, mg/l**	**37**
2	**Total Dissolved Solids, mg/l**	**69**
3	**COD, mg/l**	**3.2**
4	**BOD for 3 days at 27°C, mg/l**	**5.8**
5	**Total Solids**	**18**
6	**Oil and Grease, mg/l**	**<5**

Sample Type: **Canteen waste water**

Date of sampling: 23.11.2018

Sl.No	Test	Result
1	**Total Suspended Solids, mg/l**	**44**
2	**Total Dissolved Solids, mg/l**	**78**
3	**COD, mg/l**	**4**
4	**BOD for 3 days at 27°C, mg/l**	**7**
5	**Total Solids**	**31**
6	**Oil and Grease, mg/l**	**<5**

RESULTS & DISCUSSION

→ The pH of the study area varies from 6.50 to 6.67 in the study area. The permissible range of pH is 6.5 to 8.5.

→ Dissolved Oxygen content of the study area has been found to be in the range of 4.59 to 8.00.

→ Total Dissolved Solids found to be in the range of 58 to 150 mg/l in the water sample collected in study area. As per IS 10500 standard for drinking water, the desirable limit is 500 mg/l and maximum permissible limit is 2000 mg/l.

→ Alkalinity as $CaCO_3$ is found to be in the range of 19 to 190 in the water sample collected in study area. As per IS 10500 standard for drinking water, the desirable limit is 200 mg/l and maximum permissible limit is 600 mg/l.

→ Total hardness as $CaCO_3$ of the water sample collected in the study area is found to in the range of 44 to 122 mg/l. As per IS 10500 standard for drinking water, the desirable limit is 300 mg/l and maximum permissible limit is 600 mg/l.

→ Chloride content of the water in the study area found to be in the range of 11.24 to 14.56 mg/l. As per IS 10500 standard for drinking water, the desirable limit 250 mg/l and maximum permissible limit is 1000 mg/l.

→ Calcium content of the water in the study area found to be in the range of 12 to 36 mg/l. As per IS 10500 standard for drinking water, the desirable limit 75 mg/l and maximum permissible limit is 200 mg/l.

→ Magnesium content of the water in the study area found to be in the range of 2.1 to 13 mg/l.

→ Iron content of the water in the study area found to be in the range of 0.07 to 0.22 mg/l. As per IS 10500 standard for drinking water, the desirable limit 0.3 mg/l and maximum permissible limit is 1.0 mg/l.

DRINKING WATER STANDARDS AS PER IS: 10500

Sl. NO	PARAMETER	UNIT	DESIRABLE LIMIT AS PER IS: 10500	MAXIMUM PERMISSIBLE LIMIT AS PER IS: 10500
1	Odour		Un-objectionable	
2	Taste		Agreeable	
3	Colour	Hazen Units	5	25
4	pH		6.5 –8.5	
5	Turbidity	NTU	5	10
6	Dissolved Oxygen	mg /l	-----	
7	Total Dissolved Solids	mg /l	500	2000
8	Alkalinity as CaCo3	mg /l	200	600
9	Total hardness as CaCo3	mg /l	300	600
10	Nitrates NO3	mg /l	45	100
11	Phosphates PO4	mg /l	-----	
12	Chlorides as Cl	mg /l	250	1000
13	Sulphates, SO42-	mg /l	200	400
14	Sodium as Na	mg /l	-----	
15	Potassium as K	mg /l	-----	
16	Calcium as Ca	mg /l	75	200
17	Magnesium, Mg	mg /l	30	100
18	Lead (Pb)	mg /l	0.05	0.05
19	Manganese	mg /l	0.1	0.3
20	Cadmium (Cd)	mg /l	0.01	0.01
21	Chromium (Cr)	mg /l	0.05	0.05
22	Copper (Cu)	mg /l	0.05	1.5
23	Zinc (Zn)	mg /l	5	15
24	Iron as Fe	mg /l	0.3	1.0
25	Fluoride as F	mg /l	1	1.5
26	Mercury as Hg	mg /l	0.001	0.001
27	Selenium as se	mg /l	0.01	0.01
28	Arsenic as As	mg /l	0.05	0.05
29	Cyanide as CN	mg/l	0.05	0.05
30	Boron as B	mg/l	1	5

Stack Analysis Report

Name of the unit	DURGAMNWADI BAUXITE MINE
Address	VILLAGE DURGAMNWADI DIST KOLHAPUR
Date	22-11-2018

Stack details

Sack - I attached to	DG (1000KVA) [-I]	I. D. Of stack at port (mtr) D	0.2
crossection of the stack	Round	Stack crossectional area m2	0.0314
Height of stack above ground (mtr)	17	Consumption of fuel (lit/hr)	55
Fuel used	HSD	Load on the ssystem	Approx. 85 %

EMMISSION DETAILS

Particulars		Value	* Permissible limit	Method of analysis
Temperature (°C)	:	200.00	NA	As per IS:11255 (Part 3)-2008
Velocity of flue gas (m/sec)	:	11.82	NA	As per IS:11255 (Part 3)-2008
Gas flow rate at stack condition (m^3/hour)	:	1336	NA	As per IS:11255 (Part 3)-2008
Gas flow rate at NTP (Nm^3/hour)	:	833	NA	As per IS:11255 (Part 3)-2008
Particulate matter	:	14.00	150 mg/day	As per IS:11255 (Part 1)- 1985
SO_2 (Kg/Hr)	:	0.4	10 kg/day	As per IS:11255 (Part 2)-1985
* Permissible Limits	As per the PCB consent			

Details of instrument used - Pollutech model,PEM-SMK 10

Name of instrument	From	Validity
PEM-SMK 10	31-01-2018	30-01-2019

*Recognised by Ministry of Environment & Forests, as "Environmental Laboratory" vide Notification S. O. 428 (E) valid upto Jan , 2019
*The results relate only to the condition prevailing at the time of sampling

Stack Analysis Report

Name of the unit	DURGAMNWADI BAUXITE MINE
Address	VILLAGE DURGAMNWADI DIST KOLHAPUR
Date	22-11-2018

Stack details

Stack - 2 attached to	DG (1000KVA) [-II-]	I. D. Of stack at port (mtr) D	0.2
crossection of the stack	Round	Stack crossectional area m2	0.0314
Height of stack above ground (mtr)	17	Consumption of fuel (lit/hr)	55
Fuel used	HSD	Load on the system	Approx. 85 %

EMMISSION DETAILS

Particulars		Value	* Permissible limit	Method of analysis
Temperature (°C)	:	155.00	NA	As per IS:11255 (Part 3)-2008
Velocity of flue gas (m/sec)	:	8.99	NA	As per IS:11255 (Part 3)-2008
Gas flow rate at stack condition (m^3/hour)	:	1017	NA	As per IS:11255 (Part 3)-2008
Gas flow rate at NTP (Nm^3/hour)	:	702	NA	As per IS:11255 (Part 3)-2008
Particulate matter	:	10.0	150 mg/day	As per IS:11255 (Part I)- 1985
SO_2 (Kg/Hr)	:	0.3	10 kg/day	As per IS:11255 (Part 2)-1985
* Permissible Limits	As per the PCB consent			

Details of instrument used - Pollutech model,PEM-SMK 10

Name of instrument	Calibration date	Validity
PEM-SMK10	31-01-2018	30-01-2019

*Recognised by Ministry of Environment & Forests, as "Environmental Laboratory" vide Notification S. O. 428 (E) valid upto Jan, 2019
*The results relate only to the condition prevailing at the time of sampling

AMBIENT AIR QUALITY

Station: A1, CORE ZONE							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Sep-18	04-09-2018	33.7	11.5	4.5	10.3	<1
2		06-09-2018	38.1	12.9	5.6	9.8	<1
3		10-09-2018	49.9	15.0	BDL	BDL	<1
4		12-09-2018	44.1	13.5	5.2	9.3	<1
5		18-09-2018	46.5	14.0	5.4	9.4	<1
6		20-09-2018	51.6	16.1	6.0	11.8	<1
7		25-09-2018	53.4	17.0	BDL	BDL	<1
8		27-09-2018	30.5	10.0	6.3	11.3	<1
1	Oct-18	03-10-2018	41.6	12.7	BDL	BDL	<1
2		05-10-2018	47.1	14.8	5.9	10.3	<1
3		10-10-2018	50.1	15.6	4.9	9.5	<1
4		12-10-2018	53.8	17.4	5.5	9.4	<1
5		15-10-2018	45.3	13.5	BDL	BDL	<1
6		17-10-2018	56.8	18.1	6.2	11.0	<1
7		23-10-2018	37.9	11.9	7.3	12.0	<1
8		26-10-2018	31.2	10.9	6.7	11.6	<1
1	Nov-18	02-11-2018	51.2	17.1	7.4	11.4	<1
2		05-11-2018	44.3	14.0	BDL	BDL	<1
3		09-11-2018	56.6	19.1	5.9	9.9	<1
4		13-11-2018	40.2	12.2	BDL	BDL	<1
5		16-11-2018	42.5	13.9	6.5	10.8	<1
6		20-11-2018	46.0	15.1	7.0	11.2	<1
7		22-11-2018	49.3	16.0	5.1	10.7	<1
8		26-11-2018	53.6	18.0	5.4	10.1	<1
	Min		30.5	10.0	4.5	9.3	
	Max		56.8	19.1	7.4	12.0	
	Mean		45.6	14.6	5.9	10.5	
	10th percentile		35.0	11.6	5.0	9.4	
	30th percentile		42.4	13.5	5.4	9.9	
	50th percentile		46.3	14.4	5.9	10.5	
	95th percentile		56.2	18.1	7.3	11.8	
	98th percentile		56.7	18.7	7.4	11.9	

BDL: BELOW DETECTABLE LIMIT

AMBIENT AIR QUALITY

Station: A2, NEAR MINES OFFICE							
S.No.	Month	Date	PM 10 ($\mu g/m^3$) 24 hrs Average	PM 2.5 ($\mu g/m^3$) 24 hrs Average	SO_2 ($\mu g/m^3$) 24 hrs Average	NO_x ($\mu g/m^3$) 24 hrs Average	CO (Mg/m^3) 24 hrs Average
1	Sep-18	04-09-2018	54.7	17.0	BDL	BDL	<1
2		06-09-2018	46.2	14.6	5.0	11.5	<1
3		10-09-2018	35.6	10.8	BDL	BDL	<1
4		12-09-2018	23.0	8.0	5.8	10.1	<1
5		18-09-2018	43.3	13.8	6.9	12.1	<1
6		20-09-2018	52.9	16.7	7.1	11.9	<1
7		25-09-2018	50.9	15.3	5.2	10.4	<1
8		27-09-2018	30.2	9.8	6.5	10.3	<1
1	Oct-18	03-10-2018	54.5	16.4	5.5	10.5	<1
2		05-10-2018	42.4	13.3	BDL	BDL	<1
3		10-10-2018	48.9	14.8	5.9	10.1	<1
4		12-10-2018	56.5	17.6	BDL	BDL	<1
5		15-10-2018	35.2	11.3	7.4	10.9	<1
6		17-10-2018	52.9	15.9	6.3	10.4	<1
7		23-10-2018	40.4	12.9	6.7	9.5	<1
8		26-10-2018	31.8	10.2	5.0	10.5	<1
1	Nov-18	02-11-2018	51.3	16.0	5.6	10.1	<1
2		05-11-2018	54.2	17.1	7.2	10.7	<1
3		09-11-2018	47.9	15.8	4.4	9.9	<1
4		13-11-2018	38.9	11.8	BDL	BDL	<1
5		16-11-2018	56.1	18.3	5.8	10.7	<1
6		20-11-2018	43.4	13.4	6.3	10.9	<1
7		22-11-2018	41.0	12.6	BDL	BDL	<1
8		26-11-2018	45.8	14.8	4.9	10.6	<1

Min	23.0	8.0	4.4	9.5	
Max	56.5	18.3	7.4	12.1	
Mean	44.9	14.1	6.0	10.6	
10th percentile	32.8	10.3	5.0	10.1	
30th percentile	41.0	12.9	5.5	10.3	
50th percentile	46.0	14.7	5.9	10.5	
95th percentile	55.8	17.5	7.2	11.9	
98th percentile	56.3	18.0	7.3	12.0	

AMBIENT AIR QUALITY

Station: A3,NEAR HAULAGE ROAD							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Sep-18	04-09-2018	51.1	16.1	8.1	12.4	<1
2		06-09-2018	49.2	15.2	6.3	11.0	<1
3		10-09-2018	47.7	14.4	BDL	BDL	<1
4		12-09-2018	46.2	13.9	BDL	BDL	<1
5		18-09-2018	28.8	8.7	7.0	12.4	<1
6		20-09-2018	52.4	18.1	7.8	11.4	<1
7		25-09-2018	38.0	11.6	5.4	10.1	<1
8		27-09-2018	35.0	10.7	5.1	11.2	<1
1	Oct-18	03-10-2018	51.6	15.5	7.7	11.5	<1
2		05-10-2018	42.4	12.8	5.6	10.9	<1
3		10-10-2018	44.0	13.5	4.9	9.8	<1
4		12-10-2018	52.1	16.4	5.8	10.1	<1
5		15-10-2018	36.1	10.9	BDL	BDL	<1
6		17-10-2018	49.3	14.9	6.4	10.1	<1
7		23-10-2018	54.1	17.4	7.0	11.0	<1
8		26-10-2018	38.6	11.8	BDL	BDL	<1
1	Nov-18	02-11-2018	55.2	17.4	7.3	11.3	<1
2		05-11-2018	41.1	12.4	BDL	BDL	<1
3		09-11-2018	56.2	18.2	5.0	9.9	<1
4		13-11-2018	48.7	14.7	6.9	10.4	<1
5		16-11-2018	53.4	16.3	6.2	11.0	<1
6		20-11-2018	50.6	15.2	6.4	11.1	<1
7		22-11-2018	38.3	11.5	BDL	BDL	<1
8		26-11-2018	46.3	13.9	5.6	10.1	<1

	Min		28.8	8.7	4.9	9.8
	Max		56.2	18.2	8.1	12.4
	Mean		46.1	14.2	6.4	10.9
	10th percentile		36.6	11.1	5.1	10.0
	30th percentile		42.2	12.8	5.6	10.2
	50th percentile		48.2	14.5	6.3	11.0
	95th percentile		55.1	18.0	7.8	12.4
	98th percentile		55.8	18.2	8.0	12.4

AMBIENT AIR QUALITY

Station: A4, Near Weigh Bridge							
S.No.	Month	Date	PM 10 ($\mu g/m^3$) 24 hrs Average	PM 2.5 ($\mu g/m^3$) 24 hrs Average	SO_2 ($\mu g/m^3$) 24 hrs Average	NO_x ($\mu g/m^3$) 24 hrs Average	CO (Mg/m^3) 24 hrs Average
1	Sep-18	04-09-2018	39.2	13.0	BDL	BDL	<1
2		06-09-2018	46.0	15.2	5.6	9.6	<1
3		10-09-2018	31.4	10.9	6.7	11.1	<1
4		12-09-2018	33.9	11.6	4.9	9.5	<1
5		18-09-2018	48.2	16.6	8.2	12.1	<1
6		20-09-2018	35.5	12.1	BDL	BDL	<1
7		25-09-2018	57.3	18.8	5.9	10.0	<1
8		27-09-2018	44.3	14.1	6.1	10.3	<1
1	Oct-18	03-10-2018	46.9	14.6	6.0	10.5	<1
2		05-10-2018	35.0	11.9	5.0	11.0	<1
3		10-10-2018	53.9	16.4	7.3	11.9	<1
4		12-10-2018	55.4	19.9	6.5	9.8	<1
5		15-10-2018	32.8	10.1	BDL	BDL	<1
6		17-10-2018	49.2	15.4	6.6	10.9	<1
7		23-10-2018	57.2	18.5	5.4	9.9	<1
8		26-10-2018	31.6	9.5	BDL	BDL	<1
1	Nov-18	02-11-2018	54.5	17.5	4.9	10.0	<1
2		05-11-2018	40.3	12.4	BDL	BDL	<1
3		09-11-2018	51.5	16.3	6.3	10.9	<1
4		13-11-2018	44.8	13.7	5.8	10.6	<1
5		16-11-2018	47.0	14.9	5.5	10.8	<1
6		20-11-2018	32.5	10.6	6.8	11.2	<1
7		22-11-2018	49.9	15.6	BDL	BDL	<1
8		26-11-2018	57.0	18.7	7.1	11.3	<1

	Min		31.4	9.5	4.9	9.5
	Max		57.3	19.9	8.2	12.1
	Mean		44.8	14.5	6.1	10.6
	10th percentile		32.6	10.7	5.0	9.7
	30th percentile		38.8	12.4	5.6	10.1
	50th percentile		46.4	14.7	6.0	10.7
	95th percentile		57.2	18.8	7.4	12.0
	98th percentile		57.3	19.4	7.9	12.0

AMBIENT AIR QUALITY

Station: A 5, PADSALI VILLAGE							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Sep-18	04-09-2018	39.8	11.9	6.7	9.2	<1
2		06-09-2018	33.6	10.7	BDL	BDL	<1
3		10-09-2018	50.4	16.1	6.1	11.3	<1
4		12-09-2018	44.6	14.0	6.7	11.0	<1
5		18-09-2018	37.5	12.1	8.0	11.8	<1
6		20-09-2018	46.0	15.5	BDL	BDL	<1
7		25-09-2018	24.6	8.9	5.7	12.3	<1
8		27-09-2018	31.4	9.5	BDL	BDL	<1
1	Oct-18	03-10-2018	45.5	15.3	6.8	10.3	<1
2		05-10-2018	40.2	13.3	BDL	BDL	<1
3		10-10-2018	33.9	10.5	6.4	11.1	<1
4		12-10-2018	48.7	16.3	7.8	11.5	<1
5		15-10-2018	42.5	14.0	5.8	9.5	<1
6		17-10-2018	50.3	17.0	5.4	10.1	<1
7		23-10-2018	39.4	12.0	BDL	BDL	<1
8		26-10-2018	35.6	11.0	BDL	BDL	<1
1	Nov-18	02-11-2018	42.9	13.7	5.6	11.4	<1
2		05-11-2018	50.4	16.5	4.9	9.6	<1
3		09-11-2018	49.0	15.7	5.9	10.4	<1
4		13-11-2018	47.6	14.8	6.6	10.2	<1
5		16-11-2018	54.3	17.3	6.8	9.9	<1
6		20-11-2018	35.0	10.4	BDL	BDL	<1
7		22-11-2018	40.2	12.3	5.3	10.6	<1
8		26-11-2018	37.4	11.3	BDL	BDL	<1

Min	24.6	8.9	4.9	9.2	
Max	54.3	17.3	8.0	12.3	
Mean	41.7	13.3	6.3	10.6	
10th percentile	33.7	10.5	5.4	9.5	
30th percentile	37.5	11.8	5.8	10.1	
50th percentile	41.4	13.5	6.2	10.5	
95th percentile	50.4	16.9	7.9	11.9	
98th percentile	52.5	17.2	8.0	12.1	

AMBIENT AIR QUALITY

Station: A6, DURGAMANWADI VILLAGE							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Sep-18	04-09-2018	26.3	7.9	7.4	10.0	<1
2		06-09-2018	33.6	10.9	BDL	BDL	<1
3		10-09-2018	49.8	16.1	6.2	11.5	<1
4		12-09-2018	44.6	15.6	6.8	11.2	<1
5		18-09-2018	37.5	12.1	7.8	11.6	<1
6		20-09-2018	40.5	13.2	BDL	BDL	<1
7		25-09-2018	42.5	14.3	5.6	11.9	<1
8		27-09-2018	31.4	9.5	BDL	BDL	<1
1	Oct-18	03-10-2018	47.8	14.7	5.7	10.9	<1
2		05-10-2018	43.2	12.9	4.7	8.9	<1
3		10-10-2018	32.0	11.8	6.9	11.3	<1
4		12-10-2018	30.6	9.5	BDL	BDL	<1
5		15-10-2018	49.4	15.5	7.1	12.0	<1
6		17-10-2018	34.7	10.6	BDL	BDL	<1
7		23-10-2018	45.2	13.6	5.4	10.6	<1
8		26-10-2018	51.1	16.0	4.8	10.1	<1
1	Nov-18	02-11-2018	45.2	14.4	6.1	10.7	<1
2		05-11-2018	32.4	10.3	BDL	BDL	<1
3		09-11-2018	53.0	17.1	6.5	10.3	<1
4		13-11-2018	43.6	13.1	7.7	11.3	<1
5		16-11-2018	50.9	16.3	6.8	10.2	<1
6		20-11-2018	47.8	15.6	5.5	10.0	<1
7		22-11-2018	39.6	11.9	BDL	BDL	<1
8		26-11-2018	41.6	12.7	6.2	10.1	<1

	Min		26.3	7.9	4.7	8.9
	Max		53.0	17.1	7.8	12.0
	Mean		41.4	13.1	6.3	10.7
	10th percentile		31.6	9.8	5.2	10.0
	30th percentile		37.2	11.9	5.7	10.2
	50th percentile		42.8	13.2	6.2	10.7
	95th percentile		51.1	16.3	7.7	11.9
	98th percentile		52.1	16.7	7.8	12.0

AMBIENT AIR QUALITY

Station: A7, KARIWADE VILLAGE							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Sep-18	04-09-2018	36.1	10.9	7.1	10.1	<1
2		06-09-2018	41.1	13.5	6.7	9.8	<1
3		10-09-2018	30.9	9.9	6.2	9.5	<1
4		12-09-2018	38.1	12.4	BDL	BDL	<1
5		18-09-2018	53.7	17.1	8.1	11.2	<1
6		20-09-2018	50.6	16.5	6.9	10.8	<1
7		25-09-2018	33.5	11.2	BDL	BDL	<1
8		27-09-2018	43.8	14.2	7.5	11.5	<1
1	Oct-18	03-10-2018	41.3	12.4	BDL	BDL	<1
2		05-10-2018	48.6	16.6	5.5	10.5	<1
3		10-10-2018	43.1	14.0	6.0	10.0	<1
4		12-10-2018	46.2	15.5	7.3	10.0	<1
5		15-10-2018	50.6	17.1	8.0	11.0	<1
6		17-10-2018	52.6	18.3	6.7	10.1	<1
7		23-10-2018	30.4	13.3	5.3	9.4	<1
8		26-10-2018	33.0	10.8	BDL	BDL	<1
1	Nov-18	02-11-2018	36.6	11.1	BDL	BDL	<1
2		05-11-2018	39.4	12.2	6.1	10.4	<1
3		09-11-2018	53.6	16.0	5.4	10.3	<1
4		13-11-2018	51.8	15.2	4.3	9.8	<1
5		16-11-2018	55.8	17.2	7.4	11.1	<1
6		20-11-2018	44.5	13.7	6.7	10.6	<1
7		22-11-2018	33.6	9.9	BDL	BDL	<1
8		26-11-2018	46.7	14.4	6.6	10.1	<1

	Min		30.4	9.9	4.3	9.4
	Max		55.8	18.3	8.1	11.5
	Mean		43.1	13.9	6.5	10.3
	10th percentile		33.1	10.8	5.4	9.7
	30th percentile		38.0	12.3	6.1	10.0
	50th percentile		43.5	13.8	6.7	10.2
	95th percentile		53.7	17.2	8.0	11.2
	98th percentile		54.8	17.8	8.1	11.4

AMBIENT AIR QUALITY

Station: A 8, CHAVANWADI VILLAGE							
S.No.	Month	Date	PM 10 ($\mu g/m^3$)	PM 2.5 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Sep-18	04-09-2018	41.4	13.1	4.7	9.7	<1
2		06-09-2018	46.8	14.9	7.2	11.6	<1
3		10-09-2018	29.2	9.5	BDL	BDL	<1
4		12-09-2018	27.7	8.9	BDL	BDL	<1
5		18-09-2018	50.7	16.2	5.1	10.1	<1
6		20-09-2018	47.9	15.4	5.3	10.0	<1
7		25-09-2018	40.0	12.8	6.9	11.3	<1
8		27-09-2018	30.0	9.1	BDL	BDL	<1
1	Oct-18	03-10-2018	32.9	9.9	4.8	9.9	<1
2		05-10-2018	39.9	12.6	BDL	BDL	<1
3		10-10-2018	46.0	14.0	6.8	11.2	<1
4		12-10-2018	42.3	13.0	5.8	10.5	<1
5		15-10-2018	37.6	11.5	5.5	9.9	<1
6		17-10-2018	53.5	16.2	5.0	9.7	<1
7		23-10-2018	36.3	10.9	BDL	BDL	<1
8		26-10-2018	49.2	15.3	6.4	10.4	<1
1	Nov-18	02-11-2018	42.7	12.9	5.7	10.3	<1
2		05-11-2018	47.8	14.8	6.2	10.9	<1
3		09-11-2018	39.4	11.8	BDL	BDL	<1
4		13-11-2018	49.7	15.2	6.1	10.2	<1
5		16-11-2018	51.2	16.3	6.8	10.6	<1
6		20-11-2018	53.2	17.2	4.8	9.3	<1
7		22-11-2018	37.5	9.4	BDL	BDL	<1
8		26-11-2018	45.6	13.7	4.4	9.8	<1
	Min		27.7	8.9	4.4	9.3	
	Max		53.5	17.2	7.2	11.6	
	Mean		42.4	13.1	5.7	10.3	
	10th percentile		30.9	9.4	4.8	9.7	
	30th percentile		39.2	11.8	5.1	9.9	
	50th percentile		42.5	13.0	5.7	10.2	
	95th percentile		52.9	16.3	6.9	11.4	
	98th percentile		53.3	16.7	7.1	11.5	

BDL for SOx-2.0 & NOx-4.5

NOTE: The results relate only to the conditions prevailing at the time of sampling

Method of measurement: As per CPCB Manual & IS 5182

BUREAU VERITAS 828 BHAGAVATHI ANA LABS SGO-401

DURGAMANWADI MINES

WELL DEPTHS OF VILLAGES

S.NO.	LOCATION	NAME OF THE MINE AREA	TOTAL DEPTH IN MTS	WATER LEVEL FROM SURFACE IN MTS
				23.11.2018
1	PADSALI VILLAGE	**DMW**	4.1	0.50
2	CHAVANWADI VILLAGE	**DMW**	2.80	2.00

DURGAMANWADI BAUXITE MINE

RADHANAGARI TALUKA,
KOLHAPUR DISTRICT
MAHARASHTRA

M/S HINDALCO INDUSTRIES LIMITED

ENVIRONMENTAL QUALITY MONITORING REPORT

WINTER 2018-19
(DECEMBER2018,JANAUARY,FEBRUARY 2019)

IND.BH.41.17.0348/HSR

Bhagavathi Ana Labs Pvt. Ltd.,

7-2-C-14, Industrial Estate,
Sanathnagar, Hyderabad
500 018

CONTENTS

PREFACE

M/S Hindalco Industries Limited entrusted environmental quality monitoring at **Durgmanwadi Bauxite Mine** situated Radhanagari Taluka, Kolhapur district, Maharashtra to **Bhagavathi Ana Labs Pvt. Limited, Hyderabad** during Winter season of the year 2018-19.

The environmental monitoring was carried out in core zone and buffer zone during the months of December2018, January & February 2019 for the following environmental parameters.

- → Micro-meteorology
- → Ambient air quality
- → Ambient noise level quality
- → Water quality

The data obtained was compiled to assess the current environmental status of the mining as well as the surrounding villages in the study area.

Bhagavathi Ana Labs Pvt. Limited, Hyderabad gratefully acknowledges the cooperation extended by management and staff of M/S Hindalco Industries Limited and the village people to the field staff.

EXECUTIVE SUMMARY

Durgamanwadi Bauxite Mine environmental quality monitoring includes the monitoring of ambient air quality, noise level quality, water quality, & micro-meteorology in core zone and buffer zone around the mine lease area.

AMBIENT AIR QUALITY

The scenario of the existing ambient air quality in the study region has been assessed through a network of selected ambient air quality locations. Pre-calibrated respirable and fine particulate dust sampler has been used for monitoring the existing AAQ status. Maximum, minimum, average and percentile values have been computed from the raw data collected at all individual sampling stations to represent the ambient air quality status.

AMBIENT NOISE LEVEL MONITORING

Mining and allied activities usually cause noise pollution. Excessive noise levels will cause adverse effects on human beings and associated environment including domestic animals, wild life, natural ecosystem and structures. To know the ambient noise levels in the study area, noise levels were recorded at mining area and nearby villages using noise level Meter.

WATER QUALITY MONITORING

Water quality monitoring consists of the study of surface and ground water sources and its quality in the core and buffer zone of the lease area. Assessment of water quality in the study area and in the mine area includes the quality assessment of parameters as per the Indian Standard IS 10500 (Drinking water standard). Water samples were collected from selected locations during study period and analyzed in the laboratory as per the standard IS&APHA procedures.

MICROMETEOROLOGY

Meteorological scenario helps to understand the trends of the climatic factors. It also helps in the identification of sampling stations in the study area. Meteorological scenario exerts a critical influence on air quality as the pollution arises from the interaction of atmospheric contaminants with adverse meteorological conditions

MICRO-METEOROLOGY

Meteorological data within the project area during the air quality survey period was assessed.

PRIMARY / BASIC METEOROLOGICAL PARAMETERS

→ Wind Velocity

→ Wind Direction

Since the dispersion and diffusion of pollutants mainly depend on the above factors these factors are considered as primary meteorological parameters.

SECONDARY METEOROLOGICAL PARAMETERS

→ Ambient Temperature

MICRO-METEOROLOGICAL DATA

DATE	TEMPERATURE/HUMIDITY			WIND SPEED Km/h			WIND DIRECTION
	MIN	MAX	AVERAGE HUMIDITY	MIN	MAX	AVERAGE	
04-12-2018	21	34	66	0	3	1.5	SSE,SSW
06-12-2018	23	31	67	0	6	3.0	W,N
11-12-2018	16	29	62	0	5	2.5	NW,E
13-12-2018	19	31	58	0	4	2.0	ENE,ESE
18-12-2018	19	32	56	0	3	1.5	WNW.N
20-12-2018	20	30	60	0	5	2.5	NNW,N
26-12-2018	21	29	62	0	3	1.5	NNW,N
28-12-2018	18	32	60	0	6	3.0	ESE,NE

MICRO-METEOROLOGICAL DATA

DATE	TEMPERATURE/HUMIDITY			WIND SPEED Km/h			WIND DIRECTION
	MIN	MAX	AVERAGE HUMIDITY	MIN	MAX	AVERAGE	
02-01-2019	16	32	55	0	5	2.5	NW,N
04-01-2019	18	32	57	0	7	3.5	W,E
09-01-2019	17	32	54	0	6	3.0	WNW,N
11-01-2019	18	30	56	0	7	3.5	N,WNW
16-01-2019	20	32	51	0	9	4.5	NW,N
18-01-2019	19	32	52	0	4	2.0	W,N
23-01-2019	19	29	50	0	3	1.5	WNW,N
25-01-2019	16	28	48	0	5	2.5	NNW,N

MICRO-METEOROLOGICAL DATA

DATE	TEMPERATURE/HUMIDITY			WIND SPEED Km/h			WIND DIRECTION
	MIN	MAX	AVERAGE HUMIDITY	MIN	MAX	AVERAGE	
05-02-2019	20	32	65	0	4	2.0	W,NNE
07-02-2019	18	27	65	0	6	3.0	NNW,NW
12-02-2019	23	31	65	0	5	2.5	W,ENE
14-02-2019	23	30	65	0	4	2.0	NW,N
19-02-2019	19	30	65	0	5	2.5	NW,N
21-02-2019	23	30	65	0	3	1.5	W,NNW
26-02-2019	21	33	65	0	6	3.0	NW,NNW
28-02-2019	18	29	65	0	7	3.5	NE,NW

ENVIRONMENTAL QUALITY

Environmental monitoring includes air, noise, water quality status within core zone and buffer zone around the Durgmanwadi Bauxite Mines Lease area at Radhanagari Taluka, Kolhapur district, Maharashtra.

AMBIENT AIR QUALITY

The ambient air quality monitoring was to assess the existing levels of the air pollution. Air pollution forms an important and critical factor to study the environmental issues in the mining areas. Thus, air quality has to be frequently monitored to know the extent of pollution due to mining and allied activities.

Ambient air quality monitoring stations were set up at eight selected locations, 4 in core zone and 4 in buffer zone.

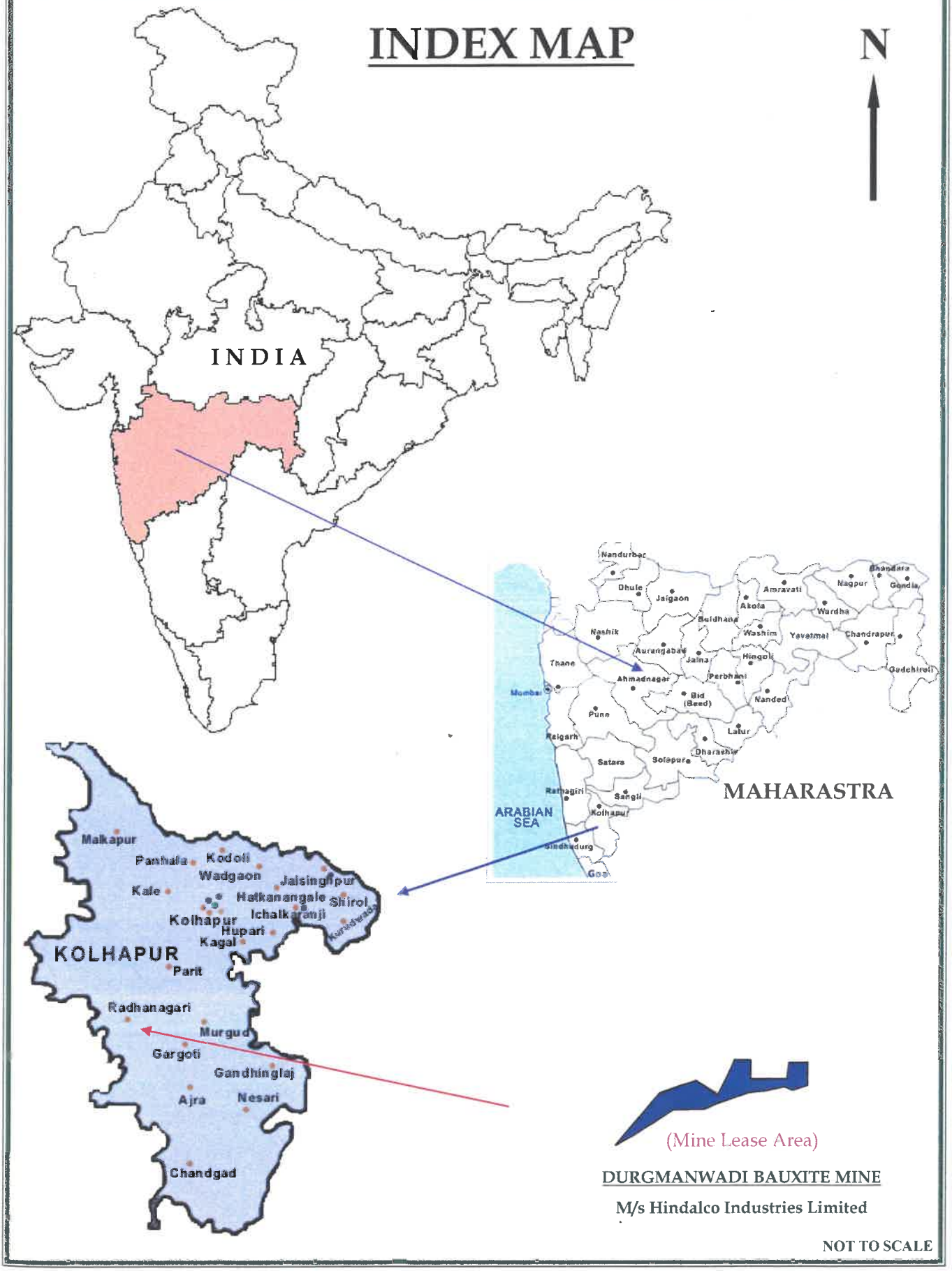
METHOD OF SAMPLING

Ambient air quality monitoring has been carried out with a frequency of two days per week at eight locations for one season (i.e. 24 times at each location in a season). The Monitoring data for air environment is generated for the parameters like Particulate matter (PM10), Fine Particulate Matter (PM2.5) Sulphur Dioxide (SO_2) and Oxides of Nitrogen (NOx), and CO.

AMBIENT AIR QUALITY MONITORING STATIONS

SL. NO	STATION CODE	NAME OF SAMPLING LOCATION	DIRECTION w.r.t MINES
1	A – 1	Core zone	--
2	A – 2	Near Mines office	--
3	A – 3	Near haulage road	--
4	A – 4	Near Weigh Bridge	--
5	A – 5	Padsali village	N
6	A – 6	Durgmanwadi village	E
7	A – 7	Kariwade village	SW
8	A – 8	Chavanwadi village	NE

INDEX MAP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INDIA
Nandurbar
Dhule
Jalgaon
Amravati
Bhandara
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Akola
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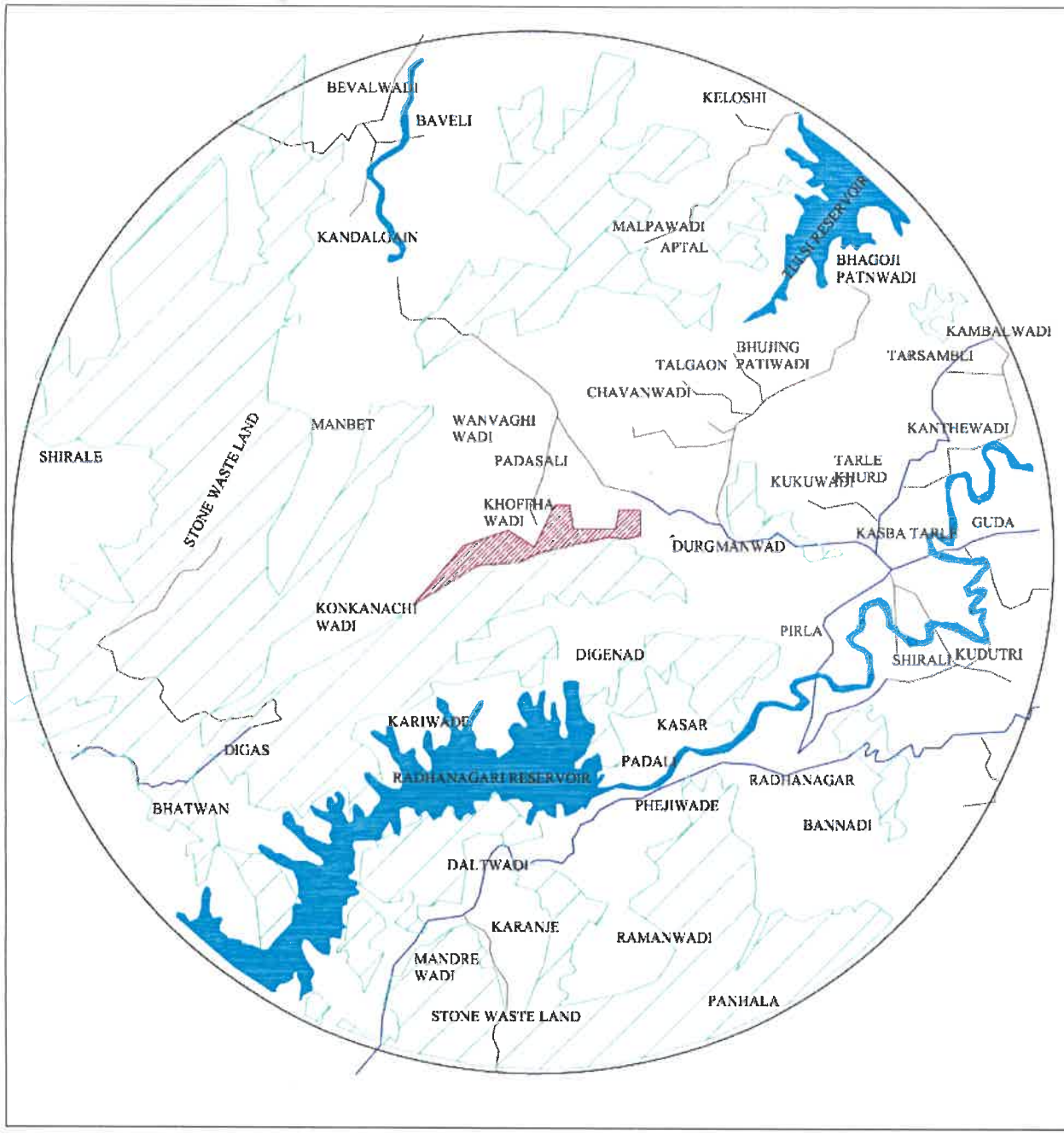
Buldhana
Washim
Yavatmal
Chandrapur
Nashik
Aurangabad
Jalna
Hingoli
Thane
Ahmadnagar
Parbhani
Gadchiroli
Mumbai
Bid (Beed)
Nanded
Pune
Latur
Raigarh
Dharashiv
Satara
Solapure
Ratnagiri
Sangli
ARABIAN SEA
Kolhapur
Sindhudurg
Goa
MAHARASTRA
Malkapur
Panhala
Kodoli
Wadgaon
Jaisingpur
Kale
Halkanangale
Shirol
Kolhapur
Ichalkaranji
Hupari
Kagal
KOLHAPUR
Parit
Radhanagari
Murgud
Gargoti
Gandhinglaj
Ajra
Nesari
Chandgad
(Mine Lease Area)
DURGMANWADI BAUXITE MINE
M/s Hindalco Industries Limited
NOT TO SCALE



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KEY PLAN

LEGEND

- MINING LEASE
- METAL ROAD
- UNMETAL ROAD
- WATER COURSES
- FOREST AREA

0 1 2 3

PROJECT : DURGAMANWADI BAUXITE MINES

TITLE : KEY PLAN

PREPARED BY

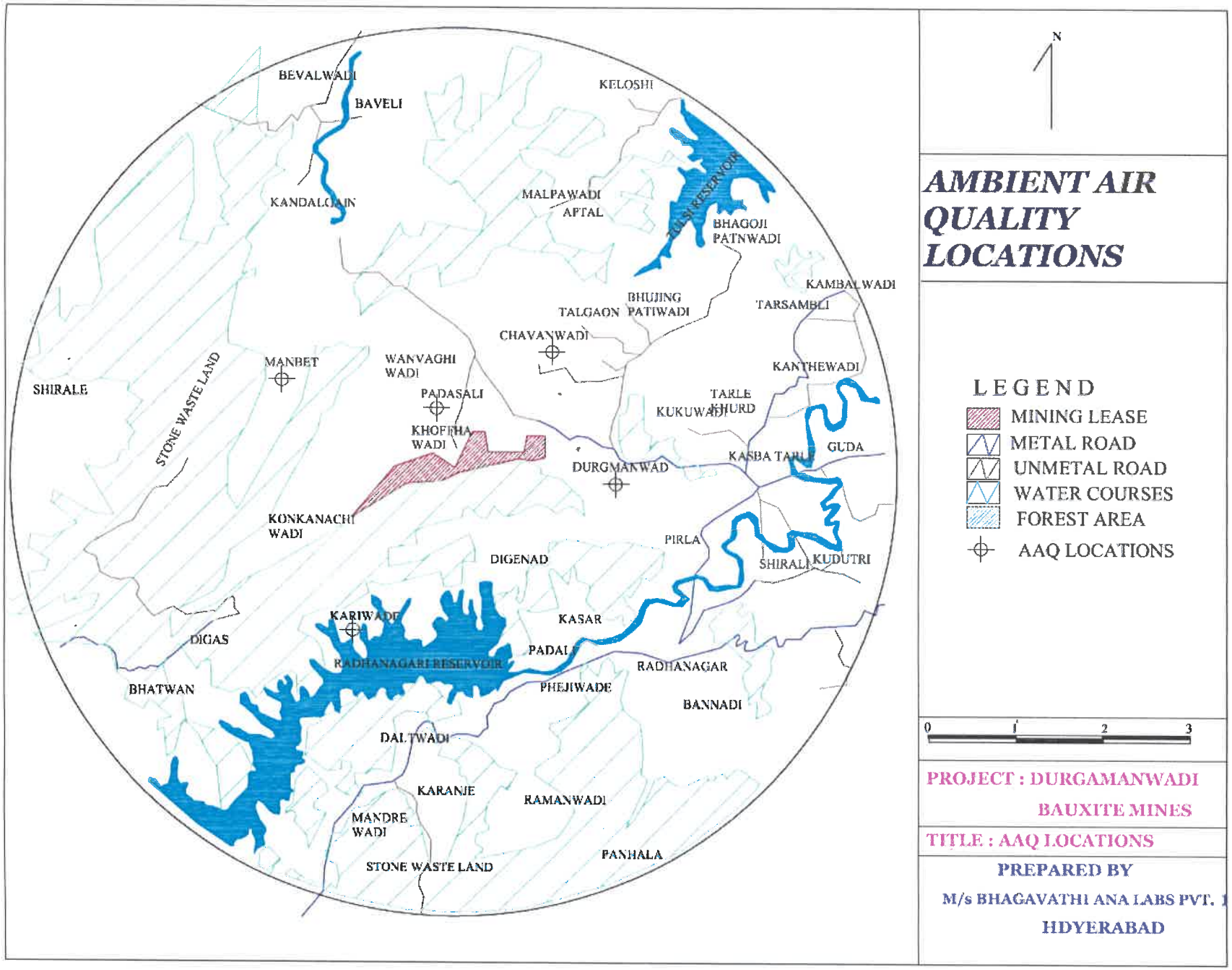
M/s BHAGAVATHI ANA LABS PVT L

HDYERABAD

SUMMARY OF AMBIENT AIR QUALITY RESULTS

Sl. No.	Location		PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_2 (µg/m^3)	CO (Mg/m3) 24 hrs Average
1	Core zone	Min	38.2	11.6	5.0	9.2	<1
		Max	59.8	19.0	7.7	12.3	<1
		Average	47.7	15.1	6.2	10.8	<1
		98th %tile	58.7	18.8	7.6	12.2	<1
2	Near Mine Office	Min	34.4	10.0	5.0	9.4	<1
		Max	57.4	18.4	8.8	11.9	<1
		Average	46.0	14.4	6.3	10.6	<1
		98th %tile	56.3	18.3	8.4	11.8	<1
3	Near Haulage Road	Min	36.0	10.7	4.9	9.8	<1
		Max	57.2	18.4	7.7	12.0	<1
		Average	47.5	14.5	6.3	11.2	<1
		98th %tile	56.8	18.4	7.7	12.0	<1
4	Near Weigh Bridge	Min	31.0	9.5	5.0	9.4	<1
		Max	58.3	19.6	8.0	12.1	<1
		Average	47.0	14.7	6.4	11.0	<1
		98th %tile	57.0	19.2	7.9	12.1	<1
5	Padsali village	Min	32.7	9.4	8.8	9.2	<1
		Max	56.7	18.0	12.7	12.3	<1
		Average	46.5	14.2	10.8	10.6	<1
		98th %tile	56.3	17.8	12.5	12.1	<1
6	Durgamanwadi village	Min	30.3	9.5	4.6	9.1	<1
		Max	58.2	18.5	6.9	12.0	<1
		Average	47.0	14.3	5.6	10.7	<1
		98th %tile	57.9	18.3	6.8	12.0	<1
7	Kariwade village	Min	31.9	9.3	5.0	9.3	<1
		Max	58.3	18.6	7.2	11.8	<1
		Average	46.1	14.2	6.1	10.3	<1
		98th %tile	56.9	18.6	7.2	11.8	<1
8	Chavanwadi village	Min	31.5	9.1	5.0	9.2	<1
		Max	60.0	19.0	7.2	12.0	<1
		Average	46.8	14.5	6.0	10.5	<1
		98th %tile	58.0	18.8	7.2	12.0	<1

NOTE: The results relate only to the condition prevailing at the time of sampling
Method of measurement: As per IS 5182


BEVALWADI
BAVELI
KELOSHI
KANDALGAON
MALPAWADI
APTAL
TULSI RESERVOIR
BHAGOJI PATNWADI
KAMBALWADI
TARSAMBLI
BHUJING PATIWADI
TALGAON
CHAVANWADI
KANTHEWADI
MANBET
WANVAGHI WADI
SHIRALE
STONE WASTE LAND
PADASALI
TARLE KHURD
KUKUWADI
KHOPERA WADI
GUDA
KASBA TARLE
DURGMANWAD
KONKANACHI WADI
PIRLA
DIGENAD
SHIRALE
KUDUTRI
KARIWADE
KASAR
DIGAS
PADAL
RADHANAGARI RESERVOIR
RADHANAGAR
BHATWAN
PHEJIWADE
BANNADI
DALTWADI
KARANJE
RAMANWADI
MANDRE WADI
PANHALA
STONE WASTE LAND
N
AMBIENT AIR QUALITY LOCATIONS
LEGEND
MINING LEASE
METAL ROAD
UNMETAL ROAD
WATER COURSES
FOREST AREA
AAQ LOCATIONS
0
1
2
3
PROJECT : DURGAMANWADI BAUXITE MINES
TITLE : AAQ LOCATIONS
PREPARED BY
M/s BHAGAVATHI ANA LABS PVT. L
HDYERABAD

AMBIENT NOISE LEVEL QUALITY

Noise is nothing but unwanted sound produced due to various activities. As a part of occupational health and safety measures, certain safeguards have been incorporated to mitigate noise pollution in working environment. So noise level surveys were carried out at 8 selected locations in and around the mine lease area. Noise survey has been conducted in the study area for the period of 24 hr at each location. The noise level results are given below.

AMBIENT NOISE LEVEL MONITORING STATIONS

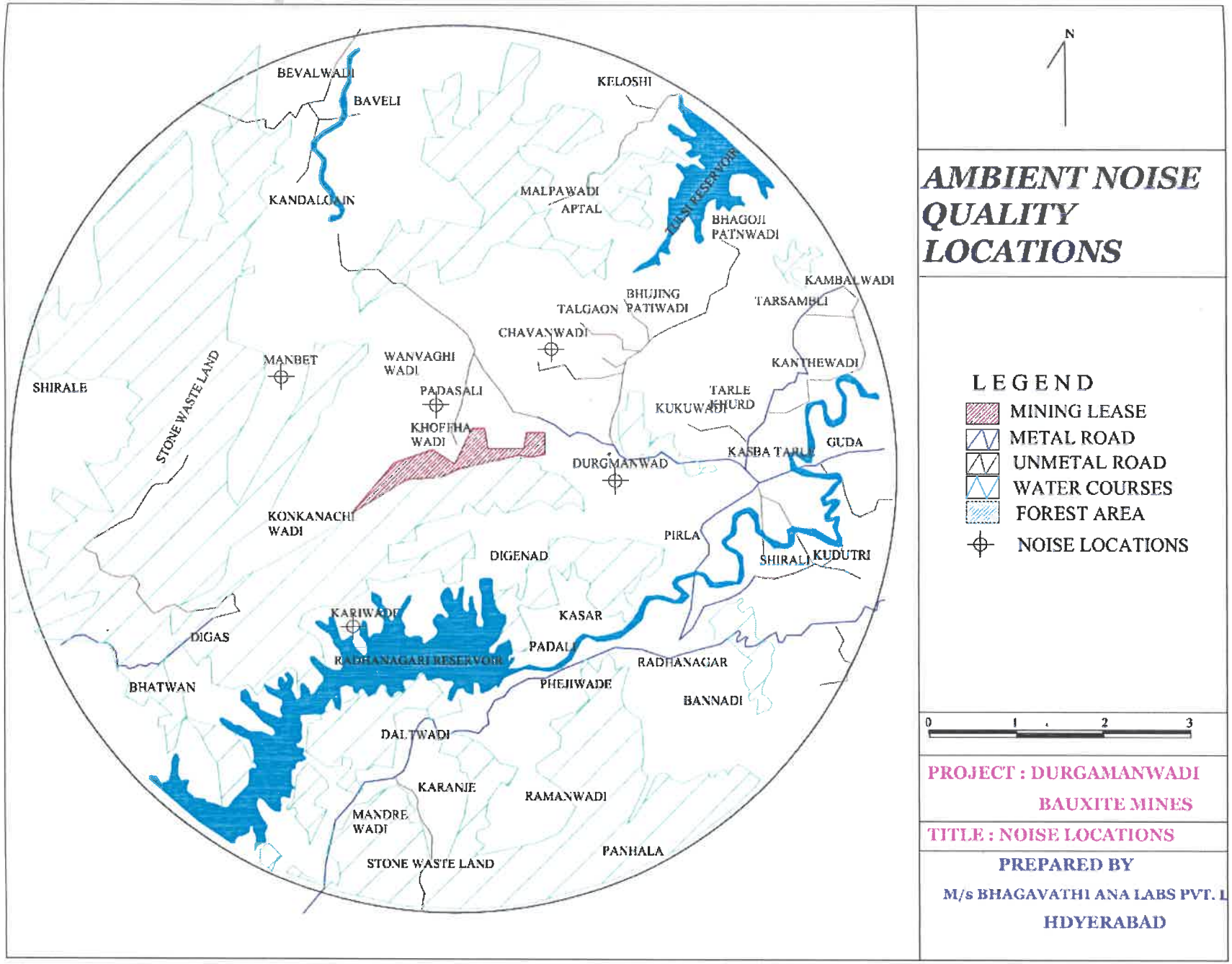
SL. NO	CODE	NAME OF SAMPLING LOCATION	DIRECTION w.r.t. MINES
1	N – 1	Core zone	--
2	N – 2	Near Mines Office	--
3	N – 3	Mines Haulage Road	--
4	N – 4	Near Weigh Bridge	--
5	N – 5	Padsali village	N
6	N – 6	Durgmanwad village	E
7	N – 7	Kariwade village	SW
8	N – 8	Chavanwadi village	NE

NOISE AMBIENT STANDARDS

AREA CODE	CATEGORY OF AREA	LIMIT IN dB (A) Leq	
		DAY TIME	NIGHT TIME
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Area	50	40

Note:

1. **Day time is reckoned in between 6 am and 9 pm.**
2. **Night time is reckoned in between 9 pm and 6 am.**
3. **Silence zone is defined as area upto 100 meters around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the Competent Authority.**
4. **Mixed categories of areas should be declared as "one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.**


BEVALWADI
BAVELI
KELOSHI
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MALPAWADI
APTAL
BHAGOJI PATNWADI
KAMBALWADI
TARSAMBLI
BHUJING PATIWADI
TALGAON
CHAVANWADI
MANBET
WANVAGHI WADI
KANTHEWADI
SHIRALE
STONE WASTE LAND
PADASALI
TARLE KHURD
KUKUWADI
KHOPHA WADI
GUDA
KASBA TARLE
DURGMANWAD
KONKANACHI WADI
PIRLA
DIGENAD
SHIRALI
KUDUTRI
KARIWADE
KASAR
DIGAS
PADALI
RADHANAGARI RESERVOIR
RADHANAGAR
BHATWAN
PHEJIWADE
BANNADI
DALTWADI
KARANJE
RAMANWADI
MANDRE WADI
PANHALA
STONE WASTE LAND
N
AMBIENT NOISE QUALITY LOCATIONS
LEGEND
MINING LEASE
METAL ROAD
UNMETAL ROAD
WATER COURSES
FOREST AREA
NOISE LOCATIONS
0
1
2
3
PROJECT : DURGAMANWADI BAUXITE MINES
TITLE : NOISE LOCATIONS
PREPARED BY
M/s BHAGAVATHI ANA LABS PVT. L
HDYERABAD

CORE ZONE NOISE LEVEL MONITORING DATA

Location →	N – 1 CORE ZONE	N – 2 NEAR MINES OFFICE	N – 3 MINES HAULAGE ROAD	N-4 NEAR WEIGH BRIDGE
Time (Hrs) ↓	dB(A)			
06.00	42.1	43.0	43.6	43.9
07.00	49.3	50.4	50.4	51.3
08.00	50.8	52.3	52.9	53.6
09.00	53.4	54.8	55.0	55.9
10.00	55.4	56.8	57.0	57.8
11.00	62.8	63.7	64.2	65.0
12.00	63.5	64.5	65.3	66.1
13.00	62.0	63.1	63.8	64.9
14.00	62.1	63.2	63.3	64.6
15.00	60.2	61.7	62.1	62.7
16.00	59.3	60.3	60.9	61.3
17.00	58.5	58.8	59.5	60.0
18.00	57.3	57.6	58.7	58.9
19.00	56.6	57.2	58.1	58.5
20.00	51.9	52.3	53.6	53.9
21.00	50.6	51.5	52.7	52.9
22.00	45.3	46.1	47.2	47.2
23.00	44.3	45.6	46.4	46.5
24.00	44.3	45.4	46.1	46.2
01.00	44.6	46.0	46.3	46.2
02.00	45.2	46.9	46.9	46.9
03.00	45.9	47.3	47.9	47.6
04.00	41.3	42.2	42.6	42.5
05.00	41.2	41.5	42.3	42.5
Minimum Value: - (L_{Min})	**41.2**	**41.5**	**42.3**	**42.5**
Maximum Value: - (L_{Max})	**63.5**	**64.5**	**65.3**	**66.1**

NOTE: The results relate only to the condition prevailing at the time of sampling

BUFFER ZONE NOISE LEVEL MONITORING DATA

Location →	N – 4 PADSALI VILLAGE	N – 5 DURGAMANWADI VILLAGE	N – 6 KARIWADE VILLAGE	N-8 CHAVAN WADI VILLAGE
Time (Hrs) ↓	dB(A)			
06.00	45.3	47.0	48.0	49.0
07.00	46.8	47.3	48.7	48.8
08.00	48.3	48.5	50.0	50.4
09.00	51.5	51.7	50.5	51.3
10.00	53.6	54.2	53.9	54.7
11.00	56.1	57.4	56.0	56.4
12.00	56.5	57.1	55.8	57.0
13.00	57.3	56.8	56.7	57.5
14.00	56.1	57.6	57.8	58.0
15.00	55.7	56.0	55.2	55.8
16.00	60.9	60.9	59.0	59.5
17.00	62.0	62.8	55.9	59.7
18.00	57.3	58.7	58.0	59.6
19.00	53.3	53.1	52.4	54.4
20.00	49.3	49.7	49.1	50.1
21.00	48.6	49.4	48.3	48.9
22.00	48.4	49.5	49.7	49.5
23.00	49.0	48.8	48.4	49.3
24.00	48.6	48.9	50.3	50.8
01.00	47.6	47.9	47.9	48.7
02.00	47.6	47.6	47.4	47.8
03.00	48.5	48.0	48.1	49.0
04.00	47.9	49.0	50.3	50.1
05.00	47.8	48.5	49.6	50.6
Minimum Value: - (L_{Min})	**45.3**	**47.0**	**47.4**	**47.8**
Maximum Value: - (L_{Max})	**62.0**	**62.8**	**59.0**	**59.7**

RESULT & DISCUSSION

The obtained Ld, Ln noise levels are compared with the ambient noise level standards and are found to be within the limit.

WATER QUALITY

Water quality monitoring consists of the study of water sources and its quality in the core and buffer zone of the lease area. Its study consists of following two important systems of water bodies:

- Surface water quality.
- Ground water quality.

The buffer zone is good in ground and surface water source. The rainwater regularly recharges this ground water during rainy season. There are two and more streams flowing in the study area, which are considered to be good source of water.

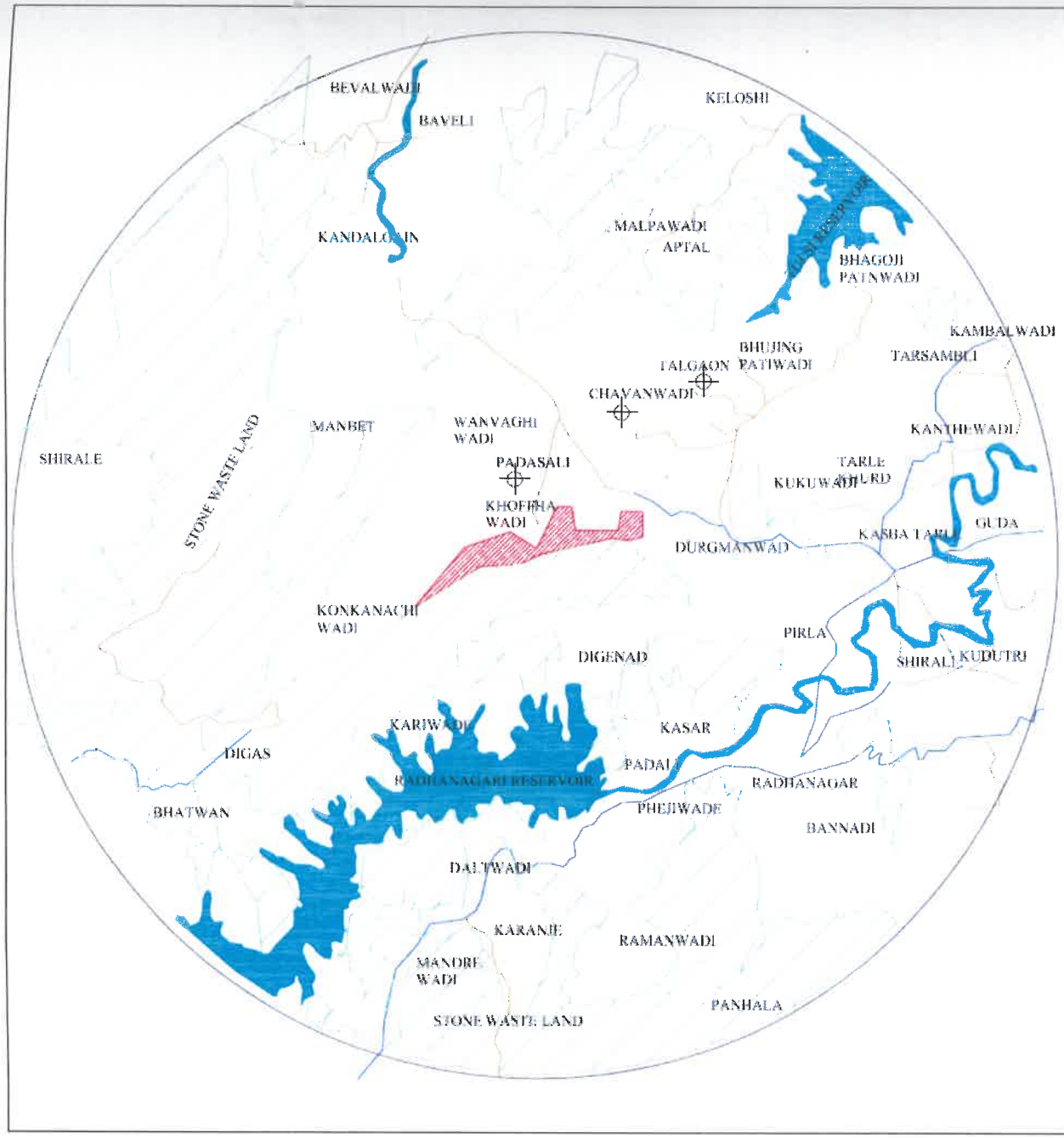
Assessment of water quality in the study area and in the mine area includes the quality assessment of parameters as per the IS 10500 (Drinking Water Standard). A total of 6 quality monitoring stations selected for sample collection in the study area. Location of water quality monitoring stations is given in Table.

WATER QUALITY MONITORING LOCATIONS

Sl. No		Name of Sampling Station	Source of Water
1	W1	Talgaon village	Ground water
2	W2	Durgamanwadi village	Ground water
3	W3	Chavanwadi village	Ground water
4	W4	Padsali village	Surface water
5	W5	Tulsi stream	Surface water
6	W6	Mine Accumulated water	Surface water

SAMPLING DETAILS

The water samples were collected from selected sampling locations, which are coming under core zone and buffer zone around the mine lease area. Samples were collected in the winter season as per the prescribed sample collecting methods and analyzed as per the IS & APHA standard procedures. Report of water samples are given below.



N

WATER QUALITY LOCATIONS

LEGEND

- MINING LEASE
- METAL ROAD
- UNMETAL ROAD
- WATER COURSES
- FOREST AREA
- WATER LOCATIONS

0 1 2 3

PROJECT : DURGAMANWADI BAUXITE MINES

TITLE : WATER LOCATIONS

PREPARED BY

M/s BHAGAVATHI ANA LABS PVT L

HDYERABAD

MINE ACCUMULATED WATER

Location Name	:	Mine Accumulated Water			
Date	:	26.2.2019	**Sample Type**	:	Surface Water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.84
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	6.80
7	Total Dissolved Solids	mg/l	80
8	Total Suspended Solids	mg/l	7
9	Alkalinity as $CaCO_3$	mg/l	13
10	Total Hardness as $CaCO_3$	mg/l	74.0
11	Nitrates NO_3	mg/l	0.26
12	Phosphates PO_4	mg/l	0.01
13	Chlorides as Cl	mg/l	14.5
14	Sulphates as SO_4^{2-}	mg/l	7.2
15	Sodium as Na.	mg/l	6.62
16	Potassium as K	mg/l	5.12
17	Calcium as Ca	mg/l	17.6
18	Magnesium as Mg	mg/l	7.2
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.03
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.13
26	Fluoride as F	mg/l	0.14
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	1.6

TULSI STREAM

Location Name	:	Tulsi stream			
Date	:	26.2.2019	**Sample Type**	:	Surface Water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.92
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	6.70
7	Total Dissolved Solids	mg/l	104
8	Total Suspended Solids	mg/l	11
9	Alkalinity as $CaCO_3$	mg/l	33
10	Total Hardness as $CaCO_3$	mg/l	82.0
11	Nitrates NO_3	mg/l	0.29
12	Phosphates PO_4	mg/l	0.03
13	Chlorides as Cl	mg/l	9.67
14	Sulphates as SO_4^{2-}	mg/l	0.85
15	Sodium as Na.	mg/l	2.32
16	Potassium as K	mg/l	4.26
17	Calcium as Ca	mg/l	24.8
18	Magnesium as Mg	mg/l	4.84
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.03
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.10
26	Fluoride as F	mg/l	0.33
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN.	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	4

BDL: Below Detectable Limit

mg/l: - Milligram per liter

PADSALI VILLAGE

Location Name	:	Padsali village			
Date	:	26.2.2019	Sample Type	:	Surface water

Sl. No.	Parameter	Unit	
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.77
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	4.60
7	Total Dissolved Solids	mg/l	30
8	Total Suspended Solids	mg/l	7
9	Alkalinity as $CaCO_3$	mg/l	8
10	Total Hardness as $CaCO_3$	mg/l	8.0
11	Nitrates NO_3	mg/l	0.15
12	Phosphates PO_4	mg/l	0.02
13	Chlorides as Cl	mg/l	9.36
14	Sulphates as SO_4^{2-}	mg/l	3.29
15	Sodium as Na.	mg/l	2.62
16	Potassium as K	mg/l	9
17	Calcium as Ca	mg/l	1.6
18	Magnesium as Mg	mg/l	0.92
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.27
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.17
26	Fluoride as F	mg/l	0.10
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	1.1

BDL: Below Detectable Limit mg/l: - Milligram per liter

CHAVANWADI VILLAGE

Location Name	:	Chavanwadi village			
Date	:	26.2.2019	**Sample Type**	:	Ground water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.63
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	5.00
7	Total Dissolved Solids	mg/l	37
8	Total Suspended Solids	mg/l	7
9	Alkalinity as $CaCO_3$	mg/l	16.0
10	Total Hardness as $CaCO_3$	mg/l	24.0
11	Nitrates NO_3	mg/l	0.25
12	Phosphates PO_4	mg/l	0.02
13	Chlorides as Cl	mg/l	19.34
14	Sulphates as SO_4^{2-}	mg/l	1.91
15	Sodium as Na.	mg/l	0.48
16	Potassium as K	mg/l	0.08
17	Calcium as Ca	mg/l	7.2
18	Magnesium as Mg	mg/l	1.4
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.12
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.13
26	Fluoride as F	mg/l	0.38
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	1.3

BDL: Below Detectable Limit

mg/l: - Milligram per liter

DURGAMANWADI VILLAGE

Location Name	:	Durgamanwadi village			
Date	:	26.2.2019	**Sample Type**	:	Ground water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.60
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	4.80
7	Total Dissolved Solids	mg/l	82
8	Total Suspended Solids	mg/l	5
9	Alkalinity as $CaCO_3$	mg/l	24
10	Total Hardness as $CaCO_3$	mg/l	62.0
11	Nitrates NO_3	mg/l	0.18
12	Phosphates PO_4	mg/l	0.02
13	Chlorides as Cl	mg/l	10.63
14	Sulphates as SO_4^{2-}	mg/l	0.64
15	Sodium as Na.	mg/l	12.65
16	Potassium as K	mg/l	2.86
17	Calcium as Ca	mg/l	16.8
18	Magnesium as Mg	mg/l	4.9
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.03
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.06
26	Fluoride as F	mg/l	0.20
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	1.9

BDL: Below Detectable Limit mg/l: - Milligram per liter

TALGAON VILLAGE

Location Name	:	Talgaon village			
Date	:	26.2.2019	Sample Type	:	Ground water

Sl. No.	Parameter	Unit	Result
1	Odour		Un-objectionable
2	Taste		Agreeable
3	Colour	Hazen Units	<5
4	pH		6.58
5	Turbidity	NTU	<5
6	Dissolved Oxygen	mg/l	4.6
7	Total Dissolved Solids	mg/l	122
8	Total Suspended Solids	mg/l	7
9	Alkalinity as $CaCO_3$	mg/l	29.0
10	Total Hardness as $CaCO_3$	mg/l	80.0
11	Nitrates NO_3	mg/l	0.66
12	Phosphates PO_4	mg/l	2.39
13	Chlorides as Cl	mg/l	17
14	Sulphates as SO_4^{2-}	mg/l	4
15	Sodium as Na.	mg/l	5
16	Potassium as K	mg/l	0.17
17	Calcium as Ca	mg/l	27
18	Magnesium as Mg	mg/l	7
19	Lead (Pb)	mg/l	BDL
20	Manganese as Mn	mg/l	0.01
21	Cadmium (Cd)	mg/l	BDL
22	Chromium (Cr)	mg/l	BDL
23	Copper (Cu)	mg/l	BDL
24	Zinc (Zn)	mg/l	BDL
25	Iron as Fe	mg/l	0.06
26	Fluoride as F	mg/l	0.34
27	Mercury as (Hg)	mg/l	BDL
28	Selenium as Se	mg/l	BDL
29	Arsenic as As	mg/l	BDL
30	Cyanide as CN	mg/l	BDL
31	Boron as B	mg/l	BDL
32	B.O.D (3 days 27°C)	mg/l	2.1

BDL: Below Detectable Limit mg/l: - Milligram per liter

DOMESTIC EFFLUENT ANALYSIS

Sample Type: **Canteen waste water**

Date of sampling: 26.2.2019

Sl.No	Test	Result
1	**Total Suspended Solids, mg/l**	**24**
2	**Total Dissolved Solids, mg/l**	**50**
3	**COD, mg/l**	**4**
4	**BOD for 3 days at 27°C, mg/l**	**2.6**
5	**Total Solids**	**16**
6	**Oil and Grease, mg/l**	**<5**

Sample Type: **Canteen waste water**

Date of sampling: 27.2.2019

Sl.No	Test	Result
1	**Total Suspended Solids, mg/l**	**33**
2	**Total Dissolved Solids, mg/l**	**45**
3	**COD, mg/l**	**3.6**
4	**BOD for 3 days at 27°C, mg/l**	**5**
5	**Total Solids**	**19**
6	**Oil and Grease, mg/l**	**<5**

RESULTS & DISCUSSION

→ The pH of the study area varies from 6.58 to 6.92 in the study area. The permissible range of pH is 6.5 to 8.5.

→ Dissolved Oxygen content of the study area has been found to be in the range of 4.55 to 6.80.

→ Total Dissolved Solids found to be in the range of 30 to 122 mg/l in the water sample collected in study area. As per IS 10500 standard for drinking water, the desirable limit is 500 mg/l and maximum permissible limit is 2000 mg/l.

→ Alkalinity as $CaCO_3$ is found to be in the range of 8 to 33 in the water sample collected in study area. As per IS 10500 standard for drinking water, the desirable limit is 200 mg/l and maximum permissible limit is 600 mg/l.

→ Total hardness as $CaCO_3$ of the water sample collected in the study area is found to in the range of 8 to 82 mg/l. As per IS 10500 standard for drinking water, the desirable limit is 300 mg/l and maximum permissible limit is 600 mg/l.

→ Chloride content of the water in the study area found to be in the range of 9.36 to 19.34 mg/l. As per IS 10500 standard for drinking water, the desirable limit 250 mg/l and maximum permissible limit is 1000 mg/l.

→ Calcium content of the water in the study area found to be in the range of 6 to 27 mg/l. As per IS 10500 standard for drinking water, the desirable limit 75 mg/l and maximum permissible limit is 200 mg/l.

→ Magnesium content of the water in the study area found to be in the range of .92 to 7.20 mg/l.

→ Iron content of the water in the study area found to be in the range of 0.06 to 0.17 mg/l. As per IS 10500 standard for drinking water, the desirable limit 0.3 mg/l and maximum permissible limit is 1.0 mg/l.

DRINKING WATER STANDARDS AS PER IS: 10500

Sl. NO	PARAMETER	UNIT	DESIRABLE LIMIT AS PER IS: 10500	MAXIMUM PERMISSIBLE LIMIT AS PER IS: 10500
1	**Odour**		Un-objectionable	
2	**Taste**		Agreeable	
3	**Colour**	Hazen Units	5	25
4	**pH**		6.5 –8.5	
5	**Turbidity**	NTU	5	10
6	**Dissolved Oxygen**	mg /l	-----	
7	**Total Dissolved Solids**	mg /l	500	2000
8	**Alkalinity as CaCo3**	mg /l	200	600
9	**Total hardness as CaCo3**	mg /l	300	600
10	**Nitrates NO3**	mg /l	45	100
11	**Phosphates PO4**	mg /l	-----	
12	**Chlorides as Cl**	mg /l	250	1000
13	**Sulphates, SO42-**	mg /l	200	400
14	**Sodium as Na**	mg /l	-----	
15	**Potassium as K**	mg /l	-----	
16	**Calcium as Ca**	mg /l	75	200
17	**Magnesium, Mg**	mg /l	30	100
18	**Lead (Pb)**	mg /l	0.05	0.05
19	**Manganese**	mg /l	0.1	0.3
20	**Cadmium (Cd)**	mg /l	0.01	0.01
21	**Chromium (Cr)**	mg /l	0.05	0.05
22	**Copper (Cu)**	mg /l	0.05	1.5
23	**Zinc (Zn)**	mg /l	5	15
24	**Iron as Fe**	mg /l	0.3	1.0
25	**Fluoride as F**	mg /l	1	1.5
26	**Mercury as Hg**	mg /l	0.001	0.001
27	**Selenium as se**	mg /l	0.01	0.01
28	**Arsenic as As**	mg /l	0.05	0.05
29	**Cyanide as CN**	mg/l	0.05	0.05
30	**Boron as B**	mg/l	1	5

Name of the unit	DURGAMNWADI BAUXITE MINE
Address	VILLAGE DURGAMNWADI DIST KOLHAPUR
Date	26-02-2019

Stack details

Sack - I attached to	DG (1000KVA) [-I]		I. D. Of stack at port (mtr) D	0.2
crossection of the stack	Round		Stack crossectional area m2	0.0314
Height of stack above ground (mtr)	17		Consumption of fuel (lit/hr)	55
Fuel used	HSD		Load on the ssystem	Approx. 85 %

EMMISSION DETAILS

Particulars		Value	* Permissible limit	Method of analysis
Temperature (°C)	:	173.00	NA	As per IS:11255 (Part 3)-2008
Velocity of flue gas (m/sec)	:	12.23	NA	As per IS:11255 (Part 3)-2008
Gas flow rate at stack condition (m^3/hour)	:	1383	NA	As per IS:11255 (Part 3)-2008
Gas flow rate at NTP (Nm^3/hour)	:	914	NA	As per IS:11255 (Part 3)-2008
Particulate matter	:	30.17	150 mg/day	As per IS:11255 (Part 1)- 1985
SO_2 (Kg/Hr)	:	0.9	10 kg/day	As per IS:11255 (Part 2)-1985
* Permissible Limits	As per the MPCB consent			

Details of instrument used - Pollutech model,PEM-SMK 10

*Recognised by Ministry of Environment & Forests, as "Environmental Laboratory" vide Notification S. O. 428 (E) valid upto Jan , 2019
*The results relate only to the condition prevailing at the time of sampling

Stack Analysis Report				
Name of the unit	DURGAMNWADI BAUXITE MINE			
Address	VILLAGE DURGAMNWADI DIST KOLHAPUR			
Date	26-02-2019			
Stack details				
Stack - 2 attached to	DG (1000KVA) [-II-]		I. D. Of stack at port (mtr) D	0.2
crossection of the stack	Round		Stack crossectional area m2	0.0314
Height of stack above ground (mtr)	17		Consumption of fuel (lit/hr)	55
Fuel used	HSD		Load on the system	Approx. 85 %

EMMISSION DETAILS

Particulars		Value	* Permissible limit	Method of analysis
Temperature (°C)	:	150.00	NA	As per IS:11255 (Part 3)-2008
Velocity of flue gas (m/sec)	:	7.88	NA	As per IS:11255 (Part 3)-2008
Gas flow rate at stack condition (m^3/hour)	:	891	NA	As per IS:11255 (Part 3)-2008
Gas flow rate at NTP (Nm^3/hour)	:	622	NA	As per IS:11255 (Part 3)-2008
Particulate matter	:	23.7	150 mg/day	As per IS:11255 (Part I)- 1985
SO_2 (Kg/Hr)	:	0.5	10 kg/day	As per IS:11255 (Part 2)-1985
* Permissible Limits	As per the PCB consent			

Details of instrument used - Pollutech model,PEM-SMK 10

*Recognised by Ministry of Environment & Forests, as "Environmental Laboratory" vide Notification S. O. 428 (E) valid upto Jan, 2019
*The results relate only to the condition prevailing at the time of sampling

DURGAMANWADI MINES

WELL DEPTHS OF VILLAGES

S.NO.	LOCATION	NAME OF THE MINE AREA	TOTAL DEPTH IN MTS	WATER LEVEL FROM SURFACE IN MTS
				27.2.2019
1	PADSALI VILLAGE	DMW	4.1	0.50
2	CHAVANWADI VILLAGE	DMW	2.80	2.10

AMBIENT AIR QUALITY

Station: A1, CORE ZONE							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Dec-18	12/4/2018	39.0	11.8	7.7	11.4	<1
2		12/6/2018	55.5	18.3	6.2	10.8	<1
3		12/11/2018	43.7	13.6	BDL	BDL	<1
4		12/13/2018	48.9	15.4	5.8	10.7	<1
5		12/18/2018	46.6	14.3	6.9	10.5	<1
6		12/20/2018	52.1	17.2	7.1	12.1	<1
7		12/26/2018	41.4	12.8	BDL	BDL	<1
8		12/28/2018	50.4	16.2	6.4	11.6	<1
1	Jan-19	1/2/2019	57.2	18.6	5.1	9.7	<1
2		1/4/2019	52.5	16.4	6.2	10.9	<1
3		1/9/2019	54.4	17.0	6.7	10.3	<1
4		1/11/2019	46.8	14.2	7.4	12.3	<1
5		1/16/2019	42.5	12.5	BDL	BDL	<1
6		1/18/2019	44.0	13.4	5.0	9.2	<1
7		1/23/2019	40.1	12.8	BDL	BDL	<1
8		1/25/2019	59.8	19.0	5.5	9.9	<1
1	Feb-19	2/5/2019	38.2	11.6	6.0	10.5	<1
2		2/7/2019	47.7	15.6	7.1	12.1	<1
3		2/12/2019	55.4	16.9	BDL	BDL	<1
4		2/14/2019	40.8	12.6	5.1	9.6	<1
5		2/19/2019	44.8	14.9	6.5	11.2	<1
6		2/21/2019	51.2	17.1	BDL	BDL	<1
7		2/26/2019	42.6	13.3	5.6	10.4	<1
8		2/28/2019	49.2	16.5	5.0	10.5	<1

	Min		38.2	11.6	5.0	9.2	
	Max		59.8	19.0	7.7	12.3	
	Mean		47.7	15.1	6.2	10.8	
	10th percentile		40.3	12.5	5.1	9.7	
	30th percentile		43.6	13.4	5.6	10.4	
	50th percentile		47.2	15.2	6.2	10.6	
	95th percentile		57.0	18.5	7.4	12.1	
	98th percentile		58.7	18.8	7.6	12.2	

BDL: BELOW DETECTABLE LIMIT

AMBIENT AIR QUALITY

Station: A2, NEAR MINES OFFICE							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Dec-18	12/4/2018	42.2	13.3	BDL	BDL	<1
2		12/6/2018	50.8	15.5	8.8	11.2	<1
3		12/11/2018	52.9	17.5	5.5	10.6	<1
4		12/13/2018	46.3	18.4	6.3	10.4	<1
5		12/18/2018	39.4	11.2	BDL	BDL	<1
6		12/20/2018	47.9	14.1	7.7	11.7	<1
7		12/26/2018	53.7	16.2	5.9	11.0	<1
8		12/28/2018	40.4	12.9	6.6	10.1	<1
1	Jan-19	1/2/2019	48.4	15.0	5.6	10.2	<1
2		1/4/2019	41.9	12.5	BDL	BDL	<1
3		1/9/2019	52.0	16.4	6.2	10.0	<1
4		1/11/2019	46.2	13.4	5.0	9.4	<1
5		1/16/2019	35.6	10.3	BDL	BDL	<1
6		1/18/2019	47.8	14.0	6.7	10.6	<1
7		1/23/2019	57.4	18.1	5.5	10.8	<1
8		1/25/2019	54.9	17.4	5.1	10.7	<1
1	Feb-19	2/5/2019	34.4	10.0	6.5	11.9	<1
2		2/7/2019	52.2	17.0	5.8	10.0	<1
3		2/12/2019	35.2	11.1	7.2	11.1	<1
4		2/14/2019	48.4	15.0	BDL	BDL	<1
5		2/19/2019	43.9	14.1	5.0	9.7	<1
6		2/21/2019	51.0	16.3	6.7	11.4	<1
7		2/26/2019	39.0	12.6	7.7	9.6	<1
8		2/28/2019	41.9	13.1	BDL	BDL	<1

	Min		34.4	10.0	5.0	9.4
	Max		57.4	18.4	8.8	11.9
	Mean		46.0	14.4	6.3	10.6
	10th percentile		36.6	11.1	5.1	9.7
	30th percentile		41.9	13.1	5.7	10.1
	50th percentile		47.1	14.1	6.2	10.6
	95th percentile		54.8	18.0	7.9	11.8
	98th percentile		56.3	18.3	8.4	11.8

AMBIENT AIR QUALITY

Station: A3,NEAR HAULAGE ROAD							
S.No.	Month	Date	PM 10 (µg/m^3) 24 hrs Average	PM 2.5 (µg/m^3) 24 hrs Average	SO_2 (µg/m^3) 24 hrs Average	NO_x (µg/m^3) 24 hrs Average	CO (Mg/m^3) 24 hrs Average
1	Dec-18	04-12-2018	43.2	13.0	BDL	BDL	<1
2		06-12-2018	46.9	14.5	7.7	12.0	<1
3		11-12-2018	52.7	16.0	6.2	11.5	<1
4		13-12-2018	56.2	18.4	7.0	11.4	<1
5		18-12-2018	56.5	17.3	5.7	10.6	<1
6		20-12-2018	38.6	11.7	6.1	9.8	<1
7		26-12-2018	50.7	15.1	6.6	10.3	<1
8		28-12-2018	41.3	12.6	BDL	BDL	<1
1	Jan-19	02-01-2019	48.4	15.6	5.5	11.1	<1
2		04-01-2019	40.7	12.7	BDL	BDL	<1
3		09-01-2019	38.7	11.7	5.1	10.5	<1
4		11-01-2019	52.5	16.3	6.1	11.6	<1
5		16-01-2019	56.2	18.3	6.7	10.8	<1
6		18-01-2019	56.1	17.1	7.7	12.0	<1
7		23-01-2019	45.7	14.3	7.0	11.4	<1
8		25-01-2019	42.7	13.3	BDL	BDL	<1
1	Feb-19	05-02-2019	43.4	12.3	5.0	10.6	<1
2		07-02-2019	44.6	13.4	6.0	11.7	<1
3		12-02-2019	55.9	16.0	6.7	11.5	<1
4		14-02-2019	46.5	14.9	BDL	BDL	<1
5		19-02-2019	57.2	17.2	7.3	11.9	<1
6		21-02-2019	36.0	10.7	5.5	10.8	<1
7		26-02-2019	37.7	11.2	4.9	12.0	<1
8		28-02-2019	51.4	15.2	BDL	BDL	<1

	Min		**36.0**	**10.7**	**4.9**	**9.8**
	Max		**57.2**	**18.4**	**7.7**	**12.0**
	Mean		**47.5**	**14.5**	**6.3**	**11.2**
	10th percentile		**38.6**	**11.7**	**5.1**	**10.4**
	30th percentile		**43.1**	**12.9**	**5.7**	**10.8**
	50th percentile		**46.7**	**14.7**	**6.2**	**11.4**
	95th percentile		**56.4**	**18.1**	**7.7**	**12.0**
	98th percentile		**56.8**	**18.4**	**7.7**	**12.0**

AMBIENT AIR QUALITY

Station: A4, Near Weigh Bridge							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Dec-18	04-12-2018	44.4	14.0	6.0	10.6	<1
2		06-12-2018	40.6	12.3	BDL	BDL	<1
3		11-12-2018	50.1	16.0	7.1	11.3	<1
4		13-12-2018	55.1	19.6	7.6	11.9	<1
5		18-12-2018	38.0	10.9	BDL	BDL	<1
6		20-12-2018	49.2	15.8	8.0	10.8	<1
7		26-12-2018	54.3	17.3	7.8	12.1	<1
8		28-12-2018	52.4	18.7	5.6	9.6	<1
1	Jan-19	02-01-2019	42.6	12.7	BDL	BDL	<1
2		04-01-2019	55.6	17.3	5.6	10.1	<1
3		09-01-2019	47.9	15.4	7.0	11.7	<1
4		11-01-2019	58.3	18.5	7.5	11.5	<1
5		16-01-2019	54.4	16.0	5.1	9.8	<1
6		18-01-2019	40.1	12.1	6.2	9.4	<1
7		23-01-2019	45.7	14.0	BDL	BDL	<1
8		25-01-2019	38.6	11.2	7.1	11.9	<1
1	Feb-19	05-02-2019	53.6	17.0	5.1	11.0	<1
2		07-02-2019	50.7	15.3	BDL	BDL	<1
3		12-02-2019	41.8	12.7	6.5	10.6	<1
4		14-02-2019	45.4	13.9	7.1	11.3	<1
5		19-02-2019	51.3	16.2	5.2	10.6	<1
6		21-02-2019	48.6	14.4	BDL	BDL	<1
7		26-02-2019	31.0	9.5	6.4	11.2	<1
8		28-02-2019	39.0	11.5	5.0	12.1	<1

	Min		31.0	9.5	5.0	9.4
	Max		58.3	19.6	8.0	12.1
	Mean		47.0	14.7	6.4	11.0
	10th percentile		38.7	11.3	5.1	9.7
	30th percentile		42.5	12.7	5.7	10.6
	50th percentile		48.2	14.9	6.5	11.1
	95th percentile		55.5	18.7	7.8	12.1
	98th percentile		57.0	19.2	7.9	12.1

AMBIENT AIR QUALITY

Station: A 5, PADSALI VILLAGE							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Dec-18	12/4/2018	38.3	11.9	BDL	9.2	<1
2		12/6/2018	43.9	12.8	10.1	BDL	<1
3		12/11/2018	54.9	17.6	10.5	11.3	<1
4		12/13/2018	45.9	13.3	11.2	11.0	<1
5		12/18/2018	53.3	16.3	11.5	11.8	<1
6		12/20/2018	47.3	14.0	9.1	BDL	<1
7		12/26/2018	50.7	15.5	8.8	12.3	<1
8		12/28/2018	36.7	10.6	BDL	BDL	<1
1	Jan-19	1/2/2019	49.8	16.0	9.9	10.3	<1
2		1/4/2019	38.8	11.4	BDL	BDL	<1
3		1/9/2019	50.1	15.0	11.4	11.1	<1
4		1/11/2019	51.0	17.1	11.7	11.5	<1
5		1/16/2019	43.3	13.2	BDL	9.5	<1
6		1/18/2019	41.5	12.1	11.3	10.1	<1
7		1/23/2019	46.4	14.0	10.9	BDL	<1
8		1/25/2019	54.8	18.0	10.6	BDL	<1
1	Feb-19	2/5/2019	40.5	12.6	10.1	11.4	<1
2		2/7/2019	56.7	17.7	11.2	9.6	<1
3		2/12/2019	47.1	14.3	12.1	10.4	<1
4		2/14/2019	45.6	13.6	BDL	10.2	<1
5		2/19/2019	32.7	9.4	10.4	9.9	<1
6		2/21/2019	37.6	11.7	BDL	BDL	<1
7		2/26/2019	55.8	16.2	11.6	10.6	<1
8		2/28/2019	52.4	15.5	12.7	BDL	<1

	Min		**32.7**	**9.4**	**8.8**	**9.2**
	Max		**56.7**	**18.0**	**12.7**	**12.3**
	Mean		**46.5**	**14.2**	**10.8**	**10.6**
	10th percentile		**37.8**	**11.5**	**9.7**	**9.5**
	30th percentile		**43.1**	**12.8**	**10.4**	**10.1**
	50th percentile		**46.8**	**14.0**	**11.1**	**10.5**
	95th percentile		**55.6**	**17.7**	**12.2**	**11.9**
	98th percentile		**56.3**	**17.8**	**12.5**	**12.1**

AMBIENT AIR QUALITY

Station: A6, DURGAMANWADI VILLAGE							
S.No.	Month	Date	PM 10 (µg/m^3) 24 hrs Average	PM 2.5 (µg/m^3) 24 hrs Average	SO_2 (µg/m^3) 24 hrs Average	NO_x (µg/m^3) 24 hrs Average	CO (Mg/m^3) 24 hrs Average
1	Dec-18	12/4/2018	39.3	12.2	5.5	10.6	<1
2		12/6/2018	51.5	15.1	4.6	9.9	<1
3		12/11/2018	38.4	11.7	BDL	BDL	<1
4		12/13/2018	58.2	17.1	6.1	12.0	<1
5		12/18/2018	31.8	9.5	BDL	BDL	<1
6		12/20/2018	46.8	13.3	5.0	9.4	<1
7		12/26/2018	57.5	16.1	4.7	9.1	<1
8		12/28/2018	49.8	14.8	6.5	10.3	<1
1	Jan-19	1/2/2019	55.1	18.0	5.6	10.2	<1
2		1/4/2019	50.0	15.3	5.0	9.4	<1
3		1/9/2019	56.1	17.0	6.1	10.6	<1
4		1/11/2019	48.2	14.4	BDL	BDL	<1
5		1/16/2019	55.7	16.2	5.7	12.0	<1
6		1/18/2019	36.4	10.3	4.6	11.6	<1
7		1/23/2019	44.1	12.2	5.3	9.6	<1
8		1/25/2019	42.7	13.2	BDL	BDL	<1
1	Feb-19	2/5/2019	48.2	14.7	BDL	BDL	<1
2		2/7/2019	55.5	18.5	6.9	10.7	<1
3		2/12/2019	51.2	16.5	5.6	11.6	<1
4		2/14/2019	30.3	9.8	6.0	12.0	<1
5		2/19/2019	53.5	17.6	BDL	BDL	<1
6		2/21/2019	38.0	11.4	6.5	10.3	<1
7		2/26/2019	49.5	15.0	5.5	11.1	<1
8		2/28/2019	40.8	12.3	6.1	11.9	<1

	Min		30.3	9.5	4.6	9.1
	Max		58.2	18.5	6.9	12.0
	Mean		47.0	14.3	5.6	10.7
	10th percentile		36.9	10.6	4.6	9.4
	30th percentile		42.5	12.3	5.3	10.2
	50th percentile		48.9	14.7	5.6	10.6
	95th percentile		57.3	18.0	6.6	12.0
	98th percentile		57.9	18.3	6.8	12.0

AMBIENT AIR QUALITY

Station: A7, KARIWADE VILLAGE							
S.No.	Month	Date	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SO_2 (µg/m^3)	NO_x (µg/m^3)	CO (Mg/m^3)
			24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average	24 hrs Average
1	Dec-18	12/4/2018	50.4	14.8	6.2	9.3	<1
2		12/6/2018	36.7	10.7	BDL	BDL	<1
3		12/11/2018	49.1	14.4	5.5	9.3	<1
4		12/13/2018	44.2	13.6	6.5	9.4	<1
5		12/18/2018	55.3	16.4	7.2	10.5	<1
6		12/20/2018	43.4	12.7	BDL	BDL	<1
7		12/26/2018	31.9	9.3	6.6	10.0	<1
8		12/28/2018	47.8	13.7	5.2	9.7	<1
1	Jan-19	1/2/2019	42.9	13.2	BDL	BDL	<1
2		1/4/2019	39.7	11.6	5.1	9.6	<1
3		1/9/2019	50.5	16.7	5.5	10.2	<1
4		1/11/2019	38.3	11.3	6.1	9.5	<1
5		1/16/2019	44.8	14.3	BDL	BDL	<1
6		1/18/2019	49.9	15.1	6.8	11.0	<1
7		1/23/2019	53.7	17.4	7.2	10.2	<1
8		1/25/2019	58.3	18.6	6.8	9.8	<1
1	Feb-19	2/5/2019	36.7	11.4	BDL	BDL	<1
2		2/7/2019	54.7	18.5	5.1	10.4	<1
3		2/12/2019	48.0	14.0	5.6	11.6	<1
4		2/14/2019	52.5	17.1	6.1	10.7	<1
5		2/19/2019	49.1	15.3	5.0	11.0	<1
6		2/21/2019	43.7	13.6	BDL	BDL	<1
7		2/26/2019	50.9	16.8	6.9	10.9	<1
8		2/28/2019	34.7	10.7	6.4	11.8	<1

	Min		**31.9**	**9.3**	**5.0**	**9.3**
	Max		**58.3**	**18.6**	**7.2**	**11.8**
	Mean		**46.1**	**14.2**	**6.1**	**10.3**
	10th percentile		**36.7**	**10.9**	**5.1**	**9.4**
	30th percentile		**43.4**	**13.1**	**5.5**	**9.7**
	50th percentile		**47.9**	**14.1**	**6.1**	**10.2**
	95th percentile		**55.2**	**18.4**	**7.2**	**11.7**
	98th percentile		**56.9**	**18.6**	**7.2**	**11.8**

AMBIENT AIR QUALITY

Station: A 8, CHAVANWADI VILLAGE							
S.No.	Month	Date	PM 10 (µg/m^3) 24 hrs Average	PM 2.5 (µg/m^3) 24 hrs Average	SO_2 (µg/m^3) 24 hrs Average	NO_x (µg/m^3) 24 hrs Average	CO (Mg/m^3) 24 hrs Average
1	Dec-18	12/4/2018	49.2	14.7	5.5	11.0	<1
2		12/6/2018	44.8	13.2	6.2	11.2	<1
3		12/11/2018	39.5	11.5	BDL	BDL	<1
4		12/13/2018	43.1	12.5	BDL	BDL	<1
5		12/18/2018	48.7	14.2	7.1	10.7	<1
6		12/20/2018	54.4	16.2	6.9	10.5	<1
7		12/26/2018	49.7	15.2	7.2	12.0	<1
8		12/28/2018	55.7	18.1	6.1	10.3	<1
1	Jan-19	1/2/2019	55.6	19.0	6.1	10.0	<1
2		1/4/2019	55.7	18.5	5.7	9.4	<1
3		1/9/2019	43.3	15.8	5.0	9.6	<1
4		1/11/2019	36.7	12.0	BDL	BDL	<1
5		1/16/2019	47.4	14.3	6.2	12.0	<1
6		1/18/2019	52.0	17.1	6.7	11.8	<1
7		1/23/2019	49.6	16.4	5.2	9.7	<1
8		1/25/2019	41.7	13.2	BDL	BDL	<1
1	Feb-19	2/5/2019	60.0	17.4	5.5	10.6	<1
2		2/7/2019	35.2	10.4	5.0	9.9	<1
3		2/12/2019	42.4	12.8	6.4	9.2	<1
4		2/14/2019	49.3	14.9	BDL	BDL	<1
5		2/19/2019	55.7	16.6	5.2	9.7	<1
6		2/21/2019	44.8	13.3	6.3	11.3	<1
7		2/26/2019	31.5	9.1	6.0	10.3	<1
8		2/28/2019	37.0	11.1	BDL	BDL	<1

	Min		31.5	9.1	5.0	9.2
	Max		60.0	19.0	7.2	12.0
	Mean		46.8	14.5	6.0	10.5
	10th percentile		36.8	11.2	5.1	9.6
	30th percentile		43.0	13.2	5.5	9.9
	50th percentile		48.0	14.5	6.1	10.4
	95th percentile		55.7	18.4	7.1	12.0
	98th percentile		58.0	18.8	7.2	12.0

BDL for SOx-2.0 & NOx-4.5

NOTE: The results relate only to the conditions prevailing at the time of sampling

Method of measurement: As per CPCB Manual & IS 5182

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