



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

21/11/2019

Subject: Compliance Status of Environment Clearance No J-11015/239/2006-IA-II (M) conditions of Durgmanwadi Bauxite Mines (M. L. area 182.23 Ha.)

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 NO.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 (**April'19 to September'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.

Hindalco Industries Limited

Durgmanwadi Mines: PO Radhanagari - 416 212, Dist. Kolhapur, Maharashtra, T: +91 02321 202072, 202178, 133,

Kolhapur Office: T:+91 0231 2661458, 2666621, 2021461, 2021462

Registered Office: Ahura Centre, 1st Floor, B-Wing, Mahakali Caves Road, Andheri (East), Mumbai - 400 093, India

T: +91 22 6691 7000 | Fax: +91 22 6691 7001 | E: hindalco@adityabirla.com | W: www.hindalco.com | Corporate ID No.: L27020MH1958PLC011238

**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 ^o . 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 were passed through silt check dams. The mine is not operational since 17 th 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 3,38,999 plants have been planted within & outside the lease

		<p>area and at feeder road side. The area covered with plantation within mine lease area is 76.04 Ha. As Mine is not in operation since 17 March 2018, no reclamation activities were being carried out since then.</p> <p>During the year 2019-20, 2000 saplings have been planted to cover about 2 Ha.</p>
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)	<p>a) Vehicular emissions to be kept under Control.</p> <p>b) The vehicles should be covered with a tarpaulin and shall not be over loaded.</p> <p>c) Regular water sprinkling arrangements shall be made to control the fugitive dust generation from the haul roads.</p>	<p>There was a system to check the PUC certificates of hired trucks, when the mine was operational.</p> <p>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.</p> <p>Mobile water tankers were used to sprinkle water on haul roads, when the mine was operational.</p>
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 NO.Z-11013/3/2018-IA-II (M), issued by Ministry of Environment Forest & Climate Change.
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, SO ₂ , NO _x . 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, SO ₂ ,NO _x)	The monitoring is carried out as per the schedule and Data is submitted regularly The summer and monsoon season reports are attached as annexure 3.
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.19 th 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 were provided with dusk masks & ear-plugs / muffs, when the mine was operational.
x)	Undertake periodical Occupational health surveillance program of workers	The heath surveillence was done once in a year for all employees and there were no cases of occupational health hazards.

xi)	Set-up separate environmental management cell with suitable qualified personnel.	A qualified person has been employed at the unit level. A full-fledged Environment cell operates at the unit level.																								
xii)	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.	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.																								
xiii)	The funds earmarked for environmental protection measures shall be kept in separate account and should be diverted for other purposes.	<p>The separate funds have been allocated for implementation of environmental protection measures along with item-wise breakup such as furnished below (From Apr-2019 to Sep-2019).</p> <table border="1" data-bbox="901 739 1476 1344"> <thead> <tr> <th>SO. NO.</th> <th>Shop Order Description</th> <th>Expenditure for the year 2019 -20 (Rs.) (upto Sep-19)</th> </tr> </thead> <tbody> <tr> <td>1610 & 1611</td> <td>Aftercare (watering)</td> <td>94,620.0</td> </tr> <tr> <td>1612</td> <td>Environment Monitoring</td> <td>2,25,000.0</td> </tr> <tr> <td>1613</td> <td>Dust suppression</td> <td>0.0</td> </tr> <tr> <td>1614</td> <td>Statutory Compliance</td> <td>0.0</td> </tr> <tr> <td>1615</td> <td>Environment Others</td> <td>0.0</td> </tr> <tr> <td>3019</td> <td>Mine restoration & rehabilitation</td> <td>24,700.0</td> </tr> <tr> <td colspan="2">TOTAL</td> <td>3,44,320.0</td> </tr> </tbody> </table> <p>The mine is not operational since 17th March 2018.</p>	SO. NO.	Shop Order Description	Expenditure for the year 2019 -20 (Rs.) (upto Sep-19)	1610 & 1611	Aftercare (watering)	94,620.0	1612	Environment Monitoring	2,25,000.0	1613	Dust suppression	0.0	1614	Statutory Compliance	0.0	1615	Environment Others	0.0	3019	Mine restoration & rehabilitation	24,700.0	TOTAL		3,44,320.0
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xv)	The project authorities should extend full cooperation to the officer(s) of the Regional office by furnishing the requisite data/information / monitoring reports.	Agreed and Noted																								
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.																								

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.


(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

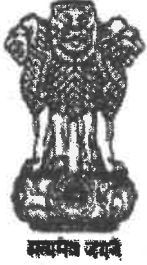
6) **The Additional Principal Chief Conservator of Forests (C)**,
Ministry of Environment, Forest and Climate Change, Regional Office (WCZ), Ground Floor,
East Wing, New Secretariat Building Civil Lines, Nagpur-440001
Tel.No.0712-2531318, Fax: 0712-2531318
Email: apccfcentral-ngp-mef@gov.in

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

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) and for 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 Department of Mines & Geology, copy of Consent to Establish (CTE) and Consent to Operate (CTO)

issued state pollution control board from time to time, failing which your EC may be kept in abeyance."

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 prior to 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 Sanctuary and operating without obtaining wildlife clearance from the Standing Committee of the National Board for Wildlife.

Whereas, the Hon'ble Supreme Court in its order dated 02.11.2018 in W.P. 202/1995 in the matter of T.N. Goadvarman Thirumulpad vs UoI & 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 of the 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 until further 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

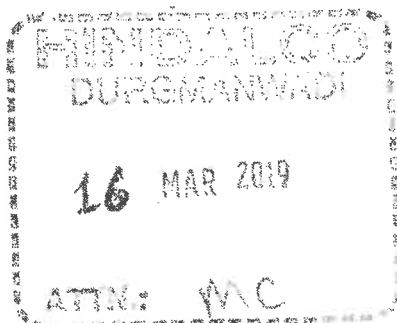
To,


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 4th floor, Opp. Cine Planet, Sion Circle, Mumbai-400 022- for necessary action.
3. **The Controller General**, Indian Bureau of Mines 2nd Floor, Indira Bhawan, Civil Lines, Nagpur- 440 001 Phone: + 91 7122560041, Fax: + 91 7122565073 email: 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), Ground Floor, East Wing, New Secretariat Building Civil Lines, Nagpur-440001 TeI.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. PARIVESH Portal.
9. Guard File.


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



M-246-HINDURGAM-MAJORMINERALS-42019

DURGAMANWADI BAUXITE MINE

TAHSIL: RADHANAGARI , DISTRICT: KOLHAPUR
STATE: MAHARASHTRA

OF

M/s. HINDALCO INDUSTRIES LTD.

ENVIRONMENTAL QUALITY MONITORING REPORT

SEASON - SUMMER 2019

MARCH, APRIL, MAY

PREPARED BY



EQUINOX ENVIRONMENTS (I) PVT. LTD.,

ENVIRONMENTAL, CIVIL & CHEMICAL ENGINEERS, CONSULTANTS & ANALYSTS,
KOLHAPUR (MS)

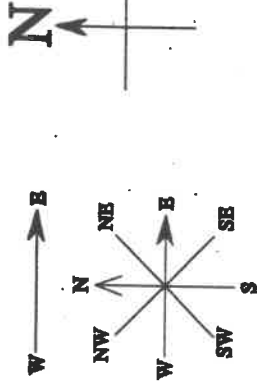
E-mail: lab@equinoxenvi.com, enquiry@equinoxenvi.com

An ISO 9001:2015 & QCI NABET ACCREDITED ORGANIZATION



2019 - 2020

PREDOMINANT WIND DIRECTION



S.No	Village Name	Population
1	Manbet	968
2	Talgaon	2036
3	Chavanwadi	850
4	Padisali	1238
5	Durgmanwadi	1476
6	Kariwad	175

●	A-4	Air monitoring Station
●	N-5	Noise monitoring Station
●	W-1	Water monitoring Station
○		5 km Buffer Zone

THIS PLAN AND PREPARED BASED ON THE DATA SUPPLIED BY THE STATE GOVERNMENT. THIS IS TO CERTIFY THAT THE INFORMATION GIVEN IN THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE.

TECHNICAL STAFF

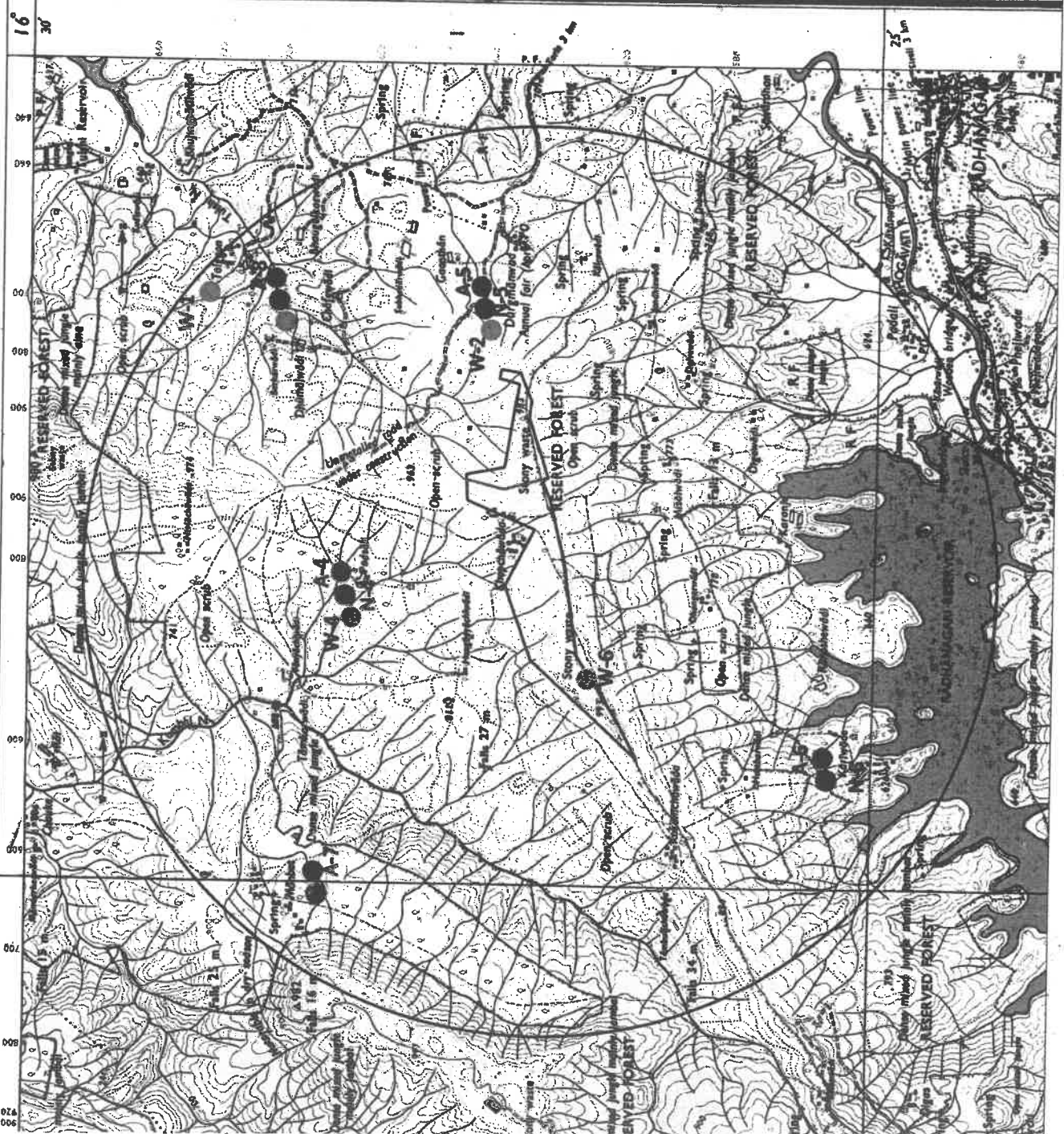
PLATE NO: 18

DURGMANWADI BAUXITE MINES
(Village: Durgmanwad, Padisali)

OWNER: M/s HINDALCO INDUSTRIES LIMITED

PURPOSE: **KEY PALN**

M.L.NO. MNM-1087/K1954/7586/DSM-4/10.2.2000 TOPO SHEET NO. - 47 H / 1 S.
TOTAL M.L.AREA - 192.28 Ha. (4000 FOREST 141.18 Ha. FOREST - 41.08 Ha.)
SCALE - 1:50000 DATE OF SURVEY - 04/11/2017



Recognised by Ministry of Environment, Forest & Climate Change (MoEF) Govt. of India and ISO/IEC 17025:2005 (NABL), ISO 9001:2015 and OHSAS 18001:2007 Certified Company

Ambient Air Quality Monitoring Report

Report No-	GESEC/PRO/2019-20/06/1-24	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt- Ltd-, Kolhapur, Maharashtra		
Project Name & Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected and Analyzed by	Green Envirosafe Engineers & Consultant Pvt- Ltd, Pune, Maharashtra		
Name Of Instrument & Calibration Details	Make	Date of calibration	Calibration Due Date
Ambient Fine Dust	Instrumex	08/02/2019	07/02/2020
Calibration Certificate No- IPM-FDS/18-19/368-1			

NAME OF LOCATION- Station: A1, CORE ZONE

Sampling Date	Date of Sample Registration	Parameter	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
		Limit	100 (µg/m ³)	60 (µg/m ³)	80 (µg/m ³)	80 (µg/m ³)	04 (mg/m ³)
Analysis Method			IS: 5181 (Part-23)	IS: 5181 (Part-23)	(Modified West & Gaeke	(Jacob & Hocheiser's	IS: 5181 (Part-23)
March – 2019							
04-03-2019	11.03.2019	Week-2	46.5	13.2	12.4	15.2	0.15
05-03-2019	11.03.2019	Week-2	61.7	20.4	11.7	16.8	0.17
11-03-2019	18.03.2019	Week-3	51.7	15.3	13.7	15.2	0.10
12-03-2019	18.03.2019	Week-3	53.5	17.4	10.7	16.1	0.08
18-03-2019	25.03.2019	Week-4	49.7	19.2	14.7	17.9	0.06
19-03-2019	25.03.2019	Week-4	50.3	16.8	13.2	15.7	0.08
25-03-2019	01.04.2019	Week-5	55.6	14.8	15.1	16.5	0.05
26-03-2019	01.04.2019	Week-5	48.8	15.8	11.8	17.0	0.07
April – 2019							
01-04-2019	08.04.2019	Week-1	65.7	18.3	10.4	16.7	0.15
02-04-2019	08.04.2019	Week-1	59.4	13.8	11.4	17.3	0.07
08-04-2019	15.04.2019	Week-2	61.5	16.4	11.8	16.9	0.09
09-04-2019	15.04.2019	Week-2	57.9	19.0	10.6	17.5	0.06
15-04-2019	22.04.2019	Week-3	50.4	15.7	12.1	17.9	0.08
16-04-2019	22.04.2019	Week-3	53.6	17.3	12.7	15.2	0.08
22-04-2019	29.04.2019	Week-4	55.4	19.5	10.0	16.0	0.05
23-04-2019	29.04.2019	Week-4	58.1	20.1	13.3	15.4	0.08
May – 2019							
06-05-2019	13.05.2019	Week-2	48.5	13.8	11.0	15.2	0.09
07-05-2019	13.05.2019	Week-2	53.7	17.3	12.2	16.3	0.08
13-05-2019	20.05.2019	Week-3	60.4	18.1	11.9	15.7	0.07
14-05-2019	20.05.2019	Week-3	49.3	14.3	10.1	16.2	0.08
20-05-2019	27.05.2019	Week-4	56.1	16.4	12.0	15.7	0.09
21-05-2019	27.05.2019	Week-4	59.5	19.2	11.4	15.2	0.14
27-05-2019	31.05.2019	Week-5	51.9	15.7	12.6	17.7	0.09
28-05-2019	31.05.2019	Week-5	53.1	18.5	10.3	17.5	0.08

Remark: All Parameters are within NAAQS Standards.



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Ambient Air Quality Monitoring Report

Report No-	GESEC/PRO/2019-20/06/25-48	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt- Ltd-, Kolhapur, Maharashtra		
Project Name & Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected and Analyzed by	Green EnviroSafe Engineers & Consultant Pvt- Ltd, Pune, Maharashtra-		

Name Of Instrument & Calibration Details	Make	Date of calibration	Calibration Due Date	Calibration Certificate No-
Ambient Fine Dust	Instrumex	08/02/2019	07/02/2020	IPM-FDS/18-19/368-2

NAME OF LOCATION- Station: A2, NEAR MINES OFFICE

Sampling Date	Date of Sample Registration	Parameter	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
		Limit	100 (µg/m ³) IS: 5181 (Part-23)	60 (µg/m ³) IS: 5181 (Part-23)	80 (µg/m ³) (Modified West & Gaeke	80 (µg/m ³) (Jacob & Hocheiser's	04 (mg/m ³) IS: 5181 (Part-23)

March - 2019

04-03-2019	11.03.2019	Week-2	50.7	15.3	12.8	15.3	0.11
05-03-2019	11.03.2019	Week-2	59.1	17.3	14.2	15.2	0.13
11-03-2019	18.03.2019	Week-3	60.5	19.7	13.7	16.5	0.10
12-03-2019	18.03.2019	Week-3	53.4	17.5	10.5	15.8	0.12
18-03-2019	25.03.2019	Week-4	55.3	16.9	11.6	16.1	0.09
19-03-2019	25.03.2019	Week-4	59.7	16.1	12.7	17.2	0.08
25-03-2019	01.04.2019	Week-5	49.5	18.5	13.1	17.5	0.14
26-03-2019	01.04.2019	Week-5	53.7	14.3	15.0	16.7	0.09

April - 2019

01-04-2019	08.04.2019	Week-1	54.2	17.2	13.5	15.3	0.09
02-04-2019	08.04.2019	Week-1	56.8	14.5	11.3	16.7	0.07
08-04-2019	15.04.2019	Week-2	60.1	18.3	12.1	16.9	0.11
09-04-2019	15.04.2019	Week-2	55.8	15.2	10.0	17.7	0.10
15-04-2019	22.04.2019	Week-3	53.7	12.4	12.1	17.3	0.12
16-04-2019	22.04.2019	Week-3	61.2	16.2	11.3	16.1	0.10
22-04-2019	29.04.2019	Week-4	52.6	20.1	10.7	15.4	0.12
23-04-2019	29.04.2019	Week-4	54.3	19.3	10.3	16.0	0.11

May - 2019

06-05-2019	13.05.2019	Week-2	44.7	15.3	11.7	17.5	0.12
07-05-2019	13.05.2019	Week-2	48.2	19.0	12.1	15.7	0.11
13-05-2019	20.05.2019	Week-3	51.7	13.8	10.9	16.1	0.09
14-05-2019	20.05.2019	Week-3	47.3	17.3	12.5	17.9	0.09
20-05-2019	27.05.2019	Week-4	54.3	16.4	13.0	16.5	0.12
21-05-2019	27.05.2019	Week-4	55.8	18.7	11.5	15.2	0.15
27-05-2019	31.05.2019	Week-5	47.3	14.5	12.4	16.7	0.13
28-05-2019	31.05.2019	Week-5	49.7	15.1	13.7	16.3	0.14

Remark: All Parameters are within NAAQS Standards.

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Ambient Air Quality Monitoring Report

Report No-	GESEC/PRO/2019-20/06/49-72	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt- Ltd-, Kolhapur, Maharashtra		
Project Name & Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected and Analyzed by	Green Envirosafe Engineers & Consultant Pvt- Ltd, Pune, Maharashtra-		
Name Of Instrument & Calibration Details	Make	Date of calibration	Calibration Due Date
Ambient Fine Dust	Instrumex	08/02/2019	07/02/2020
			Calibration Certificate No-
			IPM-FDS/18-19/367-1

NAME OF LOCATION- Station: A3, NEAR HAULAGE ROAD

Sampling Date	Date of Sample Registration	Parameter	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
		Limit	100 (µg/m ³)	60 (µg/m ³)	80 (µg/m ³)	80 (µg/m ³)	04 (mg/m ³)
Analysis Method			IS: 5181 (Part-23)	IS: 5181 (Part-23)	(Modified West & Gaeke	(Jacob & Hocheiser's	NDIR Method
March – 2019							
04-03-2019	11.03.2019	Week-2	51.2	15.0	12.2	18.0	0.10
05-03-2019	11.03.2019	Week-2	54.7	16.3	11.7	16.7	0.07
11-03-2019	18.03.2019	Week-3	56.2	18.0	12.0	15.7	0.09
12-03-2019	18.03.2019	Week-3	60.8	20.4	14.1	16.5	0.10
18-03-2019	25.03.2019	Week-4	55.9	19.5	11.7	15.3	0.11
19-03-2019	25.03.2019	Week-4	53.8	13.6	12.4	16.8	0.13
25-03-2019	01.04.2019	Week-5	57.3	17.3	10.9	16.5	0.10
26-03-2019	01.04.2019	Week-5	54.5	14.3	11.6	16.2	0.12
April – 2019							
01-04-2019	08.04.2019	Week-1	56.3	16.5	10.5	15.3	0.13
02-04-2019	08.04.2019	Week-1	58.2	18.2	13.1	15.5	0.10
08-04-2019	15.04.2019	Week-2	60.7	19.8	11.7	16.8	0.12
09-04-2019	15.04.2019	Week-2	54.5	16.7	10.7	16.3	0.13
15-04-2019	22.04.2019	Week-3	53.4	17.5	12.5	15.0	0.14
16-04-2019	22.04.2019	Week-3	57.8	19.2	11.3	17.7	0.16
22-04-2019	29.04.2019	Week-4	60.0	15.4	12.1	16.3	0.13
23-04-2019	29.04.2019	Week-4	55.1	17.3	13.0	17.4	0.15
May – 2019							
06-05-2019	13.05.2019	Week-2	51.5	14.2	10.8	18.0	0.10
07-05-2019	13.05.2019	Week-2	55.7	15.3	12.6	16.6	0.07
13-05-2019	20.05.2019	Week-3	53.9	18.6	13.1	15.8	0.09
14-05-2019	20.05.2019	Week-3	60.0	16.4	11.9	16.8	0.10
20-05-2019	27.05.2019	Week-4	57.9	19.2	12.9	16.9	0.11
21-05-2019	27.05.2019	Week-4	56.6	12.7	11.5	15.7	0.13
27-05-2019	31.05.2019	Week-5	55.7	13.5	11.3	17.2	0.10
28-05-2019	31.05.2019	Week-5	58.2	17.2	13.0	16.4	0.12

Remark: All Parameters are within NAAQS Standards.



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Ambient Air Quality Monitoring Report

Report No-	GESEC/PRO/2019-20/06/73-96	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt- Ltd-, Kolhapur, Maharashtra		
Project Name & Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected and Analyzed by	Green EnviroSAFE Engineers & Consultant Pvt- Ltd, Pune, Maharashtra-		
Name Of Instrument & Calibration Details	Make	Date of calibration	Calibration Due Date
Ambient Fine Dust	Instrumex	08/02/2019	07/02/2020
Calibration Certificate No- IPM-FDS/18-19/367-2			

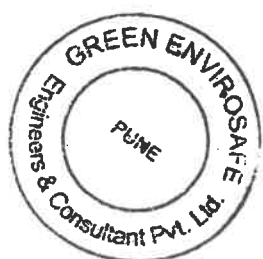
NAME OF LOCATION- Station: A4, NEAR WEIGH BRIDGE

Sampling Date	Date of Sample Registration	Parameter	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
		Limit	100 (µg/m ³)	60 (µg/m ³)	80 (µg/m ³)	80 (µg/m ³)	04 (mg/m ³)
Analysis Method			IS: 5181 (Part-23)	IS: 5181 (Part-23)	(Modified West & Gaeke	(Jacob & Hocheiser's	NDIR Method
March – 2019							
06-03-2019	11.03.2019	Week-2	52.7	17.4	10.7	15.5	0.14
07-03-2019	11.03.2019	Week-2	55.2	18.0	12.5	16.9	0.11
13-03-2019	18.03.2019	Week-3	59.6	16.5	11.9	15.8	0.13
14-03-2019	18.03.2019	Week-3	54.2	15.9	11.2	16.2	0.14
20-03-2019	25.03.2019	Week-4	60.0	18.2	10.8	16.0	0.15
21-03-2019	25.03.2019	Week-4	53.7	17.8	13.1	17.1	0.16
27-03-2019	01.04.2019	Week-5	56.1	19.5	12.5	17.7	0.14
28-03-2019	01.04.2019	Week-5	59.1	20.7	12.2	16.3	0.16
April – 2019							
03-04-2019	08.04.2019	Week-1	49.5	17.3	12.5	15.0	0.12
04-04-2019	08.04.2019	Week-1	52.7	20.0	13.1	16.5	0.09
10-04-2019	15.04.2019	Week-2	48.3	16.9	12.2	17.3	0.11
11-04-2019	15.04.2019	Week-2	55.6	14.3	11.9	16.6	0.12
17-04-2019	22.04.2019	Week-3	53.8	13.4	10.8	15.2	0.13
18-04-2019	22.04.2019	Week-3	47.3	15.8	14.3	17.8	0.14
24-04-2019	29.04.2019	Week-4	59.3	19.5	13.7	17.2	0.12
25-04-2019	29.04.2019	Week-4	50.7	14.1	12.5	16.3	0.14
May – 2019							
08-05-2019	13.05.2019	Week-2	59.2	19.0	12.0	17.0	0.13
09-05-2019	13.05.2019	Week-2	56.7	17.5	14.3	19.1	0.10
15-05-2019	20.05.2019	Week-3	60.1	14.3	11.9	18.3	0.12
16-05-2019	20.05.2019	Week-3	54.3	15.7	12.5	17.6	0.13
22-05-2019	27.05.2019	Week-4	51.8	18.4	13.4	16.8	0.14
23-05-2019	27.05.2019	Week-4	57.5	16.2	12.2	16.2	0.15
29-05-2019	31.05.2019	Week-5	55.8	11.5	14.7	15.8	0.13
30-05-2019	31.05.2019	Week-5	48.3	13.2	13.7	18.4	0.15

Remark: All Parameters are within NAAQS Standards.

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Ambient Air Quality Monitoring Report

Report No-	GESEC/PRO/2019-20/06/97-120	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt- Ltd-, Kolhapur, Maharashtra		
Project Name & Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected and Analyzed by	Green Envirosafe Engineers & Consultant Pvt- Ltd, Pune, Maharashtra-		
Name Of Instrument& Calibration Details	Make	Date of calibration	Calibration Due Date
Ambient Fine Dust	Instrumex	08/02/2019	07/02/2020
Calibration Certificate No- IPM-FDS/18-19/368-1			

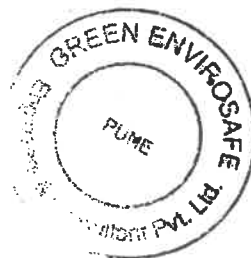
NAME OF LOCATION- Station: A 5, PADSALI VILLAGE

Sampling Date	Date of Sample Registration	Parameter	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
		Limit	100 (µg/m ³)	60 (µg/m ³)	80 (µg/m ³)	80 (µg/m ³)	04 (mg/m ³)
Analysis Method			IS: 5181 (Part-23)	IS: 5181 (Part-23)	(Modified West & Gaeke	(Jacob & Hocheiser's	NDIR Method
March – 2019							
06-03-2019	11.03.2019	Week-2	46.2	16.3	12.7	15.0	0.09
07-03-2019	11.03.2019	Week-2	50.5	15.4	14.2	16.9	0.06
13-03-2019	18.03.2019	Week-3	59.7	14.3	11.5	16.7	0.08
14-03-2019	18.03.2019	Week-3	55.8	19.5	13.8	17.3	0.09
20-03-2019	25.03.2019	Week-4	53.4	12.7	14.3	17.6	0.10
21-03-2019	25.03.2019	Week-4	58.3	14.9	12.5	16.8	0.11
27-03-2019	01.04.2019	Week-5	60.4	13.4	11.9	15.2	0.09
28-03-2019	01.04.2019	Week-5	49.5	15.2	17.6	16.7	0.11
April – 2019							
03-04-2019	08.04.2019	Week-1	56.1	14.0	13.0	15.2	0.09
04-04-2019	08.04.2019	Week-1	56.7	12.7	11.8	15.8	0.09
10-04-2019	15.04.2019	Week-2	60.1	14.9	12.5	16.5	0.11
11-04-2019	15.04.2019	Week-2	54.3	13.4	13.9	17.2	0.10
17-04-2019	22.04.2019	Week-3	51.8	15.2	11.9	16.8	0.09
18-04-2019	22.04.2019	Week-3	53.4	13.0	12.7	17.7	0.12
24-04-2019	29.04.2019	Week-4	58.3	12.5	14.1	15.0	0.13
25-04-2019	29.04.2019	Week-4	55.2	14.2	13.2	16.8	0.12
May – 2019							
08-05-2019	13.05.2019	Week-2	51.2	19.0	13.2	15.1	0.12
09-05-2019	13.05.2019	Week-2	60.5	17.9	12.7	16.4	0.14
15-05-2019	20.05.2019	Week-3	54.7	15.9	14.2	15.9	0.13
16-05-2019	20.05.2019	Week-3	49.8	14.9	12.9	16.2	0.15
22-05-2019	27.05.2019	Week-4	51.3	16.5	13.5	17.7	0.14
23-05-2019	27.05.2019	Week-4	53.8	14.8	11.9	17.1	0.12
29-05-2019	31.05.2019	Week-5	55.3	16.8	13.0	16.5	0.13
30-05-2019	31.05.2019	Week-5	52.9	18.1	12.8	17.0	0.15

Remark: All Parameters are within NAAQS Standards.



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Ambient Air Quality Monitoring Report

Report No-	GESEC/PRO/2019-20/06/121-144	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt- Ltd-, Kolhapur, Maharashtra		
Project Name & Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected and Analyzed by	Green EnviroSafe Engineers & Consultant Pvt- Ltd, Pune, Maharashtra-		

Name Of Instrument & Calibration Details	Make	Date of calibration	Calibration Due Date	Calibration Certificate No-
Ambient Fine Dust	Instrumex	08/02/2019	07/02/2020	IPM-FDS/18-19/368-2

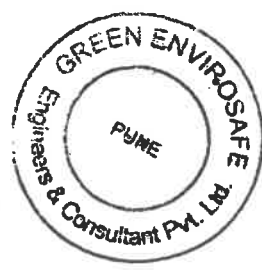
NAME OF LOCATION- Station: A6, DURGAMANWADI VILLAGE

Sampling Date	Date of Sample Registration	Parameter	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
		Limit	100 (µg/m ³) IS: 5181 (Part-23)	60 (µg/m ³) IS: 5181 (Part-23)	80 (µg/m ³) (Modified West & Gaeke	80 (µg/m ³) (Jacob & Hocheiser's	04 (mg/m ³) NDIR Method
March – 2019							
06-03-2019	11.03.2019	Week-2	52.7	13.1	12.7	15.9	0.13
07-03-2019	11.03.2019	Week-2	48.3	19.5	13.2	15.9	0.12
13-03-2019	18.03.2019	Week-3	55.6	12.7	14.3	16.4	0.12
14-03-2019	18.03.2019	Week-3	53.8	14.9	12.5	17.6	0.11
20-03-2019	25.03.2019	Week-4	47.3	13.4	11.9	17.5	0.11
21-03-2019	25.03.2019	Week-4	58.2	12.8	17.6	16.9	0.13
27-03-2019	01.04.2019	Week-5	60.0	13.0	14.0	16.0	0.10
28-03-2019	01.04.2019	Week-5	54.3	11.9	13.9	15.8	0.11
April – 2019							
03-04-2019	08.04.2019	Week-1	53.7	11.9	12.0	15.9	0.09
04-04-2019	08.04.2019	Week-1	60.1	19.5	13.9	16.3	0.08
10-04-2019	15.04.2019	Week-2	54.3	12.7	11.9	16.6	0.09
11-04-2019	15.04.2019	Week-2	51.8	14.9	12.7	16.8	0.10
17-04-2019	22.04.2019	Week-3	57.5	13.4	14.1	15.2	0.11
18-04-2019	22.04.2019	Week-3	55.8	12.2	13.5	17.0	0.10
24-04-2019	29.04.2019	Week-4	48.3	13.8	11.9	17.5	0.10
25-04-2019	29.04.2019	Week-4	49.8	14.0	13.0	17.5	0.12
May – 2019							
08-05-2019	13.05.2019	Week-2	56.2	19.0	13.2	15.9	0.12
09-05-2019	13.05.2019	Week-2	59.4	16.5	11.5	15.5	0.12
15-05-2019	20.05.2019	Week-3	51.8	17.7	14.0	17.6	0.13
16-05-2019	20.05.2019	Week-3	57.5	16.9	12.7	17.8	0.14
22-05-2019	27.05.2019	Week-4	54.9	15.8	12.1	15.2	0.15
23-05-2019	27.05.2019	Week-4	60.1	20.1	13.5	15.0	0.14
29-05-2019	31.05.2019	Week-5	54.3	19.5	11.6	16.0	0.13
30-05-2019	31.05.2019	Week-5	55.9	17.8	13.0	16.1	0.12

Remark: All Parameters are within NAAQS Standards.

M. White

Lab Chemist



V. Francis

Authorized Signatory

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Ambient Air Quality Monitoring Report

Report No-	GESEC/PRO/2019-20/06/145-168	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt- Ltd-, Kolhapur, Maharashtra		
Project Name & Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected and Analyzed by	Green Envirosafe Engineers & Consultant Pvt- Ltd, Pune, Maharashtra-		
Name Of Instrument & Calibration Details	Make	Date of calibration	Calibration Due Date
Ambient Fine Dust	Instrumex	08/02/2019	07/02/2020
			IPM-FDS/18-19/367-1

NAME OF LOCATION- Station: A7, KARIWADE VILLAGE

Sampling Date	Date of Sample Registration	Parameter	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
		Limit	100 (µg/m ³)	60 (µg/m ³)	80 (µg/m ³)	80 (µg/m ³)	04 (mg/m ³)
Analysis Method			IS: 5181 (Part-23)	IS: 5181 (Part-23)	(Modified West & Gaeke	(Jacob & Hocheiser's	NDIR Method
March – 2019							
08-03-2019	11.03.2019	Week-2	56.1	12.5	13.0	16.0	0.14
09-03-2019	11.03.2019	Week-2	60.5	13.7	12.8	16.5	0.12
15-03-2019	18.03.2019	Week-3	54.7	15.9	12.5	16.2	0.13
16-03-2019	18.03.2019	Week-3	49.8	14.9	11.9	17.8	0.11
22-03-2019	25.03.2019	Week-4	51.3	16.5	17.6	17.7	0.10
23-03-2019	25.03.2019	Week-4	55.9	14.8	14.0	15.0	0.11
29-03-2019	01.04.2019	Week-5	55.6	12.9	13.5	16.7	0.09
30-03-2019	01.04.2019	Week-5	53.7	13.1	12.9	15.9	0.08
April – 2019							
05-04-2019	08.04.2019	Week-1	57.5	15.5	13.8	15.7	0.12
06-04-2019	08.04.2019	Week-1	59.1	16.8	14.4	16.3	0.13
12-04-2019	15.04.2019	Week-2	62.3	20.0	17.3	17.0	0.12
13-04-2019	15.04.2019	Week-2	70.4	18.4	18.5	15.5	0.13
19-04-2019	22.04.2019	Week-3	55.4	15.7	16.5	16.9	0.14
20-04-2019	22.04.2019	Week-3	60.8	13.6	17.0	16.5	0.15
26-04-2019	29.04.2019	Week-4	53.7	15.4	15.8	17.7	0.14
27-04-2019	29.04.2019	Week-4	59.1	14.4	14.5	17.9	0.12
May – 2019							
03-05-2019	13.05.2019	Week-1	46.8	16.2	13.1	15.7	0.08
04-05-2019	13.05.2019	Week-1	59.7	18.5	14.7	16.2	0.09
10-05-2019	20.05.2019	Week-2	57.3	19.4	12.7	17.5	0.10
11-05-2019	20.05.2019	Week-2	67.9	18.3	14.1	17.8	0.09
17-05-2019 ^a	27.05.2019	Week-3	61.3	17.7	13.5	16.3	0.09
18-05-2019	27.05.2019	Week-3	47.6	20.4	14.4	16.9	0.10
24-05-2019	31.05.2019	Week-4	65.1	15.3	17.3	17.1	0.11
25-05-2019	31.05.2019	Week-4	55.7	17.2	18.5	15.0	0.11

Remark: All Parameters are within NAAQS Standards.



Lab Chemist




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Ambient Air Quality Monitoring Report

Report No-	GESEC/PRO/2019-20/06/169-192	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt- Ltd-, Kolhapur, Maharashtra		
Project Name & Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected and Analyzed by	Green EnviroSAFE Engineers & Consultant Pvt- Ltd, Pune, Maharashtra-		

Name Of Instrument & Calibration Details	Make	Date of calibration	Calibration Due Date	Calibration Certificate No-
Ambient Fine Dust	Instrumex	08/02/2019	07/02/2020	IPM-FDS/18-19/368-2

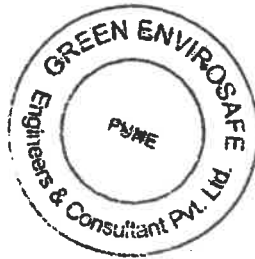
NAME OF LOCATION- Station: A 8, CHAVANWADI VILLAGE

Sampling Date	Date of Sample Registration	Parameter	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
		Limit	100 (µg/m ³) IS: 5181 (Part-23)	60 (µg/m ³) IS: 5181 (Part-23)	80 (µg/m ³) (Modified West & Gaeke	80 (µg/m ³) (Jacob & Hocheiser's	04 (mg/m ³) NDIR Method
March - 2019							
08-03-2019	11.03.2019	Week-2	55.5	12.5	13.1	16.0	0.14
09-03-2019	11.03.2019	Week-2	52.7	13.0	12.8	15.5	0.11
15-03-2019	18.03.2019	Week-3	55.8	14.1	14.5	15.8	0.12
16-03-2019	18.03.2019	Week-3	50.6	12.7	12.2	16.6	0.11
22-03-2019	25.03.2019	Week-4	58.4	18.6	13.7	17.1	0.12
23-03-2019	25.03.2019	Week-4	60.3	17.3	12.9	16.8	0.13
29-03-2019	01.04.2019	Week-5	67.4	14.5	11.8	17.2	0.12
30-03-2019	01.04.2019	Week-5	60.0	16.6	14.0	16.5	0.11
April - 2019							
05-04-2019	08.04.2019	Week-1	62.0	17.7	11.2	17.9	0.14
06-04-2019	08.04.2019	Week-1	59.2	18.2	13.5	15.8	0.15
12-04-2019	15.04.2019	Week-2	53.7	19.7	12.8	17.2	0.14
13-04-2019	15.04.2019	Week-2	51.5	20.1	11.9	16.8	0.13
19-04-2019	22.04.2019	Week-3	60.8	17.9	14.2	17.7	0.14
20-04-2019	22.04.2019	Week-3	53.2	18.5	12.4	16.4	0.12
26-04-2019	29.04.2019	Week-4	55.7	20.7	11.3	16.8	0.13
27-04-2019	29.04.2019	Week-4	52.8	21.5	13.5	15.5	0.11
May - 2019							
03-05-2019	13.05.2019	Week-2	61.5	15.0	12.2	15.3	0.09
04-05-2019	13.05.2019	Week-2	45.2	19.1	11.8	16.0	0.08
10-05-2019	20.05.2019	Week-3	48.8	13.7	12.5	16.5	0.09
11-05-2019	20.05.2019	Week-3	51.2	12.2	13.1	17.4	0.10
17-05-2019	27.05.2019	Week-4	53.7	14.0	10.8	15.0	0.11
18-05-2019	27.05.2019	Week-4	45.0	12.8	12.1	16.8	0.10
24-05-2019	31.05.2019	Week-5	49.2	11.9	14.0	17.8	0.10
25-05-2019	31.05.2019	Week-5	53.2	13.4	11.4	15.4	0.12

Remark: All Parameters are within NAAQS Standards.

Neelkanti

Lab Chemist



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Authorized Signatory

**Ambient Noise Monitoring Report**

Report No.	GESEC/PRO/2019-20/06/193-200	Date of Report	10/06/2019
Name of Client	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.		
Project Name and Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected By	Green EnviroSafe Engineers & Consultant Pvt. Ltd, Pune, Maharashtra.		
Date of Sampling	May-2019		
Name Of Instrument & Calibration Details	Date of calibration	Calibration Due Date	Calibration Certificate No.
Sound Level meter	22/06/2018	22/06/2019	S.No.081202677
Analysis Method	IS: 4758-1968 Reaff.2002.		

Date	06-05-2019	07-05-2019	13-05-2019	14-05-2019	20-05-2019	21-05-2019	27-05-2019	28-05-2019
Location	Core Zone	Near Mines Office	Mines Haulage Road	Near Weigh Bridge	Padsali village	Durgaman wadi village	Karivade village	Chavanwadi village
Time	N1	N2	N3	N4	N5	N6	N7	N8
6.00	42.6	47.0	44.2	44.7	41.8	42.6	43.1	44.5
7.00	50.2	48.0	50.1	50.2	38.6	39.4	39.7	40.9
8.00	51.9	50.1	51.9	52.4	39.6	41.0	41.3	42.2
9.00	55.0	52.5	48.0	48.0	46.4	44.9	45.7	46.6
10.00	57.0	54.4	49.9	50.2	47.4	47.4	49.2	49.1
11.00	64.5	54.9	51.0	51.0	43.9	49.9	50.8	52.2
12.00	65.8	49.0	51.5	53.1	43.4	50.2	51.7	51.9
13.00	63.9	54.4	49.7	50.7	43.7	50.1	51.7	51.7
14.00	63.9	54.0	49.1	50.2	44.2	51.3	51.8	53.9
15.00	62.0	52.7	47.4	48.4	43.3	49.4	49.7	51.4
16.00	60.3	51.2	46.3	47.0	48.0	52.5	53.2	54.4
17.00	59.3	49.3	46.0	45.8	50.0	49.4	53.4	51.7
18.00	58.4	48.3	51.5	51.4	45.6	51.8	53.3	53.2
19.00	57.8	47.1	50.4	51.0	40.1	46.4	48.1	48.3
20.00	53.2	42.3	45.8	46.3	37.1	43.6	43.9	44.9
21.00	47.3	45.0	48.8	48.9	39.4	38.8	39.3	40.3
22.00	41.6	39.4	42.8	42.3	39.9	39.2	39.6	40.4
L10	45.4	43.9	45.2	45.4	39.1	39.3	39.7	40.7
L50	57.8	49.3	49.1	50.2	43.4	47.4	49.2	49.1
L90	64.1	54.4	51.5	51.8	47.6	51.5	53.2	53.5
Lday	63.6	51.1	49.8	50.9	44.6	49.9	52.3	51.8
23.00	40.9	38.5	42.1	41.8	38.3	38.6	39.5	39.8
24.00	40.6	38.9	42.5	42.0	38.0	39.4	39.6	40.8
1.00	40.8	38.9	42.8	42.5	38.6	37.5	38.8	40.0
2.00	41.8	39.1	43.5	42.8	37.9	37.3	37.8	38.7
3.00	41.8	39.9	44.1	43.2	37.8	37.3	38.9	39.7
4.00	37.4	35.2	38.9	38.6	39.4	40.0	40.4	42.1
5.00	36.9	34.6	38.8	38.4	38.5	39.4	41.6	41.6
L10	37.2	35.0	38.9	38.5	37.9	37.3	39.3	39.3
L50	40.8	38.9	42.5	42.0	38.3	38.6	40.0	40.0





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L90	41.8	39.4	43.7	43.0	38.9	39.6	40.3	41.8
Lnight	41.2	39.2	42.9	42.3	38.3	38.7	39.6	40.1
Ldn	61.7	50.5	51.2	51.5	46.4	49.5	51.4	51.3
Avg L10	41.3	39.4	42.0	41.9	38.5	38.3	39.0	40.0
Avg L 50	49.3	44.1	45.8	46.1	40.9	43.0	44.4	44.6
Avg L 90	53.0	46.9	47.6	47.4	43.3	45.6	46.8	47.6

M. White

LAB ANALYZED -



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Surface Water Analysis Reports

Client Name:		Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.		Report Number		GESEC/PRO/2019- 20/06/204-206	
Project Name and Address:				Date of Report		10.06.2019	
M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.				Sample Details:		Surface Water	
				Date of Sampling:		20.05.2019	
				Date of Sample Received		21.05.2019	
				Date of Analysis Started		22.05.2019	
Sample Collected & Analyzed By: Green EnviroSAFE Engineers & Consultant Pvt- Ltd, Pune, Maharashtra				Location			
Sr. No.	Parameter	Unit (s)	Mine accumulated water	Tulsi Stream	Padsali Village		
1.	Odor	--	Un-objectionable	Un-objectionable	Un-objectionable		
2.	Taste	--	Agreeable	Agreeable	Agreeable		
3.	Color	Hazen	<5	<5	<5		
4.	pH	--	8.02	7.52	7.57		
5.	Turbidity	NTU	<5	<5	<5		
6.	DO	mg/lit	1.20	5.70	5.30		
7.	TDS	mg/lit	284.84	102.45	116.64		
8.	TSS	mg/lit	28.35	4.23	7.48		
9.	BOD:3 days at 27°C	mg/lit	10.26	3.95	4.69		
10.	Alkalinity as CaCO ₃	mg/lit	53.62	10.96	12.74		
11.	Total Hardness as CaCO ₃	mg/lit	159.855	31.07	39.505		
12.	Nitrate as NO ₃	mg/lit	33.65	7.46	9.08		
13.	Phosphorous as PO ₄	mg/lit	1.42	0.56	0.75		
14.	Chlorides as Cl	mg/lit	38.12	4.35	5.32		
15.	Sulphates as SO ₄	mg/lit	18.95	1.36	3.95		
16.	Sodium as Na	mg/lit	10.41	0.53	3.11		
17.	Potassium as K	mg/lit	9.46	1.35	2.87		
18.	Calcium as Ca	mg/lit	39.03	8.63	10.69		
19.	Magnesium as Mg	mg/lit	13.84	2.11	2.84		
20.	Lead as Pb	mg/lit	BDL	BDL	BDL		
21.	Manganese as Mn	mg/lit	BDL	BDL	BDL		
22.	Cadmium as Cd	mg/lit	BDL	BDL	BDL		
23.	Chromium as Cr	mg/lit	BDL	BDL	BDL		
24.	Copper as Cu	mg/lit	BDL	BDL	BDL		
25.	Zinc as Zn	mg/lit	BDL	BDL	BDL		
26.	Iron as Fe	mg/lit	0.27	0.12	0.20		
27.	Fluorides as F	mg/lit	0.84	0.02	0.08		





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CIN No. : U74900PN2013PTC149666

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28.	Mercury as Hg	mg/lit	BDL	BDL	BDL
29.	Selenium as Se	mg/lit	BDL	BDL	BDL
30.	Arsenic as As	mg/lit	BDL	BDL	BDL
31.	Cyanide as CN	mg/lit	BDL	BDL	BDL
32.	Boron as B	mg/lit	BDL	BDL	BDL

Lab Analyzed



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Ground Water Analysis Reports

Client Name:	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.		Report Number	GESEC/PRO/2019-20/06/201-203	
Project Name and Address: M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.			Date of Report	10.06.2019	
			Sample Details	Ground water	
			Date of Sampling	20.05.2019	
			Date of Sample Received	21.05.2019	
			Date of Analysis Started	22.05.2019	
Sample Collected & Analyzed By : Green EnviroSAFE Engineers & Consultant Pvt- Ltd, Pune, Maharashtra.			Location		
SR. NO.	PARAMETER	UNIT(S)	CHAVANWADI VILLAGE	DURGAMANWADI VILLAGE	TALEGAON VILLAGE
1.	Odor	--	Un-objectionable	Un-objectionable	Un-objectionable
2.	Taste	--	Agreeable	Agreeable	Agreeable
3.	Color	Hazen	<5	<5	<5
4.	pH	--	7.63	7.66	7.83
5.	Turbidity	NTU	<5	<5	<5
6.	DO	mg/lit	4.80	4.50	4.30
7.	TDS	mg/lit	133.96	156.52	175.53
8.	TSS	mg/lit	7.53	9.11	9.82
9.	BOD:3 days at 27°C	mg/lit	4.96	5.11	6.25
10.	Alkalinity as CaCO ₃	mg/lit	20.36	28.93	32.05
11.	Total Hardness as CaCO ₃	mg/lit	47.72	59.115	75.445
12.	Nitrate as NO ₃	mg/lit	11.24	13.98	15.98
13.	Phosphorous as PO ₄	mg/lit	0.83	0.74	0.65
14.	Chlorides as Cl ⁻	mg/lit	7.38	10.63	13.95
15.	Sulphates as SO ₄	mg/lit	5.03	6.98	9.47
16.	Sodium as Na	mg/lit	3.72	4.97	6.83
17.	Potassium as K	mg/lit	3.06	4.17	4.63
18.	Calcium as Ca	mg/lit	13.76	16.05	20.98
19.	Magnesium as Mg	mg/lit	2.96	4.22	5.11
20.	Lead as Pb	mg/lit	BDL	BDL	BDL
21.	Manganese as Mn	mg/lit	BDL	BDL	BDL
22.	Cadmium as Cd	mg/lit	BDL	BDL	BDL
23.	Chromium as Cr	mg/lit	BDL	BDL	BDL
24.	Copper as Cu	mg/lit	BDL	BDL	BDL
25.	Zinc as Zn	mg/lit	BDL	BDL	BDL
26.	Iron as Fe	mg/lit	0.21	0.24	0.26
27.	Fluorides as F ⁻	mg/lit	0.25	0.36	0.31
28.	Mercury as Hg	mg/lit	BDL	BDL	BDL





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29.	Selenium as Se	mg/lit	BDL	BDL	BDL
30.	Arsenic as As	mg/lit	BDL	BDL	BDL
31.	Cyanide as CN	mg/lit	BDL	BDL	BDL
32.	Boron as B	mg/lit	BDL	BDL	BDL

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TEST CERTIFICATE

Report No: GESEC/PRO/2019-20/06/213	Date of Report	30.04.2019
Client Name and Address: M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.	Date of Sampling	15.04.2019
	Start Date of Analysis	16.04.2019
	End Date of Analysis	17.04.2019
	Sample Details	Canteen waste Analysis water
	Nature of sample	Liquid
Name of Client	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.	
Sample Collected By	Green EnviroSafe Engineers & Consultant Pvt. Ltd, Pune	

Water Analysis Report

Sr. No.	Parameter	Result	MPCB Limits	Unit(s)	Standard Method
1.	Total Suspended Solids	54.58	100	mg/lit	APHA 2540-D
2.	Total Dissolved Solids	659.81	2100	mg/lit	APHA 2540-C-D
3.	COD	43.21	250	mg/lit	APHA 5210 B
4.	BOD for 3 days at 27°C	18.97	100	mg/lit	APHA 5220 B
5.	Total Solids	714.39	-----	mg/lit	APHA 2540-C
6.	Oil and Grease	<5	10	mg/lit	APHA 5520 B

Remark(s): All parameters are within the MPCB limit.

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M. White

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Instrument Calibration Details for waste Water

1.	Name Of Instrument	µP ^H System	Date Of Calibration	15/04/2019
	Calibration Certificate No.	SYS/04_18/53_04	Due Date Of Calibration	14/05/2019
2.	Name Of Instrument	Water Bath	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180131/523/006	Due Date Of Calibration	29/01/2020
3.	Name Of Instrument	DIG WEIGHING BALANCE	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180201/103/001	Due Date Of Calibration	29/01/2020
4.	Name Of Instrument	BOD Incubator	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180131/523/005	Due Date Of Calibration	29/01/2020
5.	Name Of Instrument	HOT AIR OVEN	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180131/523/012	Due Date Of Calibration	29/01/2020
6.	Name Of Instrument	COD	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180131/523/002	Due Date Of Calibration	29/01/2020
7.	Name Of Instrument	UV Visible Spectra	Due Date Of Calibration	02/06/2019

Terms and conditions

- The report is refer only to the sample tested and not applies to the bulk.
- The results shown in this test report may differ based on various factors including temperature, humidity, pressure, retention time etc.
- The test report cannot be reproduced wholly or in part and cannot be used for promotional or publicity purpose without the written consent of laboratory, GESEC.
- Samples will be retained for a period of seven (7) days after completion of analysis. Longer retention periods can be arranged, on request of the customer.
- We strictly maintain the confidentiality of all test result of sample(s) collected by us/ supplied by customer and not revel to third party unless required by the statutory or legal requirement.
- MoEF approved Lab by Govt. of India. From date. 09/02/2017 to 08/02/2022.





Recognised by Ministry of Environment, Forest & Climate Change (MoEF.) Govt. of India and ISO/IEC 17025:2005 (NABL), ISO 9001:2015 and OHSAS 18001:2007 Certified Company

TEST CERTIFICATE

Report No: GESEC/PRO/2019-20/06/214	Date of Report	10.06.2019
Client Name and Address: M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.	Date of Sampling	27.05.2019
	Start Date of Analysis	28.05.2019
	End Date of Analysis	29.05.2019
	Sample Details	Canteen waste Analysis water
	Nature of sample	Liquid
Name of Client	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.	
Sample Collected By	Green EnviroSafe Engineers & Consultant Pvt. Ltd, Pune	

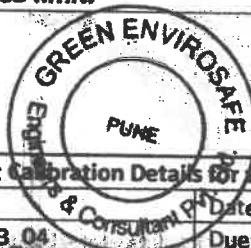
Water Analysis Report

Sr. No.	Parameter	Result	MPCB Limits	Unit(s)	Standard Method
1.	Total Suspended Solids	58.01	100	mg/lit	APHA 2540-D
2.	Total Dissolved Solids	701.95	2100	mg/lit	APHA 2540-C-D
3.	COD	49.51	250	mg/lit	APHA 5210 B
4.	BOD for 3 days at 27°C	20.39	100	mg/lit	APHA 5220 B
5.	Total Solids	759.96	---	mg/lit	APHA 2540-C
6.	Oil and Grease	<5	10	mg/lit	APHA 5520 B

Remark(s): All parameters are within the MPCB limit.

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White



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Pande!

Instrument Calibration Details for Waste Water

1.	Name Of Instrument	µP ^H System	Date Of Calibration	15/05/2019
	Calibration Certificate No.	SYS/04_18/53_04	Due Date Of Calibration	14/06/2019
2.	Name Of Instrument	Water Bath	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180131/523/006	Due Date Of Calibration	29/01/2020
3.	Name Of Instrument	DIG WEIGHING BALANCE	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180201/103/001	Due Date Of Calibration	29/01/2020
4.	Name Of Instrument	BOD Incubator	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180131/523/005	Due Date Of Calibration	29/01/2020
5.	Name Of Instrument	HOT AIR OVEN	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180131/523/012	Due Date Of Calibration	29/01/2020
6.	Name Of Instrument	COD	Date Of Calibration	30/01/2019
	Calibration Certificate No.	UI/180131/523/002	Due Date Of Calibration	29/01/2020
7.	Name Of Instrument	UV Visible Spectra	Due Date Of Calibration	02/06/2019

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- Samples will be retained for a period of seven (7) days after completion of analysis. Longer retention periods can be arranged, on request of the customer.
- We strictly maintain the confidentiality of all test result of sample(s) collected by us/ supplied by customer and not reveal to third party unless required by the statutory or legal requirement.
- MoEF approved Lab by Govt. of India. From date. 09/02/2017 to 08/02/2022.

Client Name:	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.	Report Number	GESEC/PRO/2019-20/06/207-212
Project Name and Address: M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		Date of Report	10.06.2019
		Sample Details	Soil
		Date of Sampling	20.05.2019
		Date of Sample Received	21.05.2019
		Date of Start Analysis	21.05.2019

Sample Collected & Analyzed By :

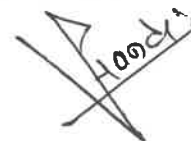
Green Envirosafe Engineers & Consultant Pvt- Ltd, Pune, Maharashtra.

Sr.No.	Test Parameters	Locations						Analysis Method
		S1- Top Soil Dump	S2- Non mineralized a forestation area	S3- Float area	S4- Rice plot near Durgamanwadi Village	S5- Jawar plot near Padsali village	S6- Forest area near Chavan wadi	
1	pH (1:5Aq. Extraction)	7.58	7.75	7.55	7.86	7.96	7.98	IS 2720 (Part 26)
2	E.C. (μ s)(1:5 Aq. Suspension)	2.84	0.84	2.59	3.04	2.97	1.73	IS:1892
3	Nitrates (mg/kg)	12.10	3.41	9.14	52.81	32.92	3.11	IS 2720
4	Available Phosphorus as P ₂ O ₅ (mg/kg)	1.08	1.03	0.98	15.01	16.11	1.22	IS 2720
5	Potassium as K ₂ O (mg/kg)	3.83	5.41	2.74	30.30	40.20	4.60	IS 2720
6	Available Sodium as Na ₂ O (mg/kg)	1.26	2.45	1.02	10.50	11.72	1.75	IS 2720
7	Ex. Calcium (mg/kg)	328.57	267.92	316.97	594.16	476.33	135.22	IS 2720
8	Ex. Magnesium (mg/kg)	92.62	129.81	84.73	251.65	263.82	192.65	USEPA Method 3050B
9	Water Soluble Chlorides as Cl (mg/kg)	63.12	50.13	49.01	272.81	323.63	38.13	IS:812 P-4
10	Organic Carbon (%)	0.23	1.64	0.15	1.84	1.65	0.93	IS 2720-P22
11	Texture	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	IS 2720-P4
	a) Sand (%)	84.10	75.20	82.13	58.50	61.60	72.80	
	b) Silt (%)	3.29	6.16	2.95	8.12	10.12	12.14	
	c) Clay (%)	12.61	18.64	14.92	33.38	28.28	15.06	
12	Total Soluble Salts (mg/kg)	1902.19	1232.83	1735.61	2031.62	1992.46	1159.14	IS 2720

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**GREEN ENVIROSAFE**

Engineers & Consultant Pvt Ltd.

Survey No-1405/06, Mayuri Residency, Shop No-16, 2nd Floor, Sanaswadi, Tal-Shirur, Pune-412208.

Mob-+ 9545084620 | E-mail:gesec12@gmail.com | www.greenenvirosafe.co.in

CIN No. : U74900PN2013PTC149666

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Stack Analysis Report

Report No.	GESEC/PRO/2019-20/06/215	Date of Report	01.04.2019
Name of Client	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.		
Project Name and Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected By	Green EnviroSafe Engineers & Consultant Pvt. Ltd, Pune, Maharashtra.		
Date of Sampling	18.03.2019		
Name Of Instrument	Stack Monitoring Kit	Date Of Calibration	22.12.2018
Calibration Certificate No.	UI/181222/525/001	Due Date Of Calibration	21.12.2019

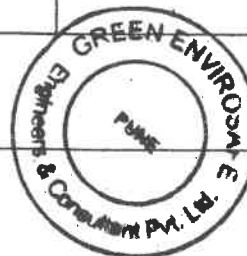
Stack Details

Stack -I attached to	DG(1000KVA) [-1]	I.D. of stack at port (m)D	0.2
Crossection of the stack	Round	Stack crossectional area (m2)	0.0314
Height of stack above ground (m)	17	Consumption of fuel (l/hr)	55
Fuel used	HSD	Load on the system	Approx.85%

Emission details

Sr. No.	Particulars	Unit	Value
1	Temperature	°C	125.00
2	Differential Pressure	mmWG	2.20
3	Velocity of the gas	m/sec	5.62
4	Gas flow rate at NTP	Nm ³ /hr	476.33
5	Particulate matter	mg/NM ³	35.02
6	SO ₂	Kg/Hr	0.25

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Stack Analysis Report

Report No.	GESEC/PRO/2019-20/06/216	Date of Report	01.04.2019
Name of Client	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.		
Project Name and Address	M/s. Hindalco Industries Limited (Durgamanwadi Bauxite Mine) A/P. Durgamanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.		
Sample Collected By	Green EnviroSafe Engineers & Consultant Pvt. Ltd, Pune, Maharashtra.		
Date of Sampling	18.03.2019		
Name Of Instrument	Stack Monitoring Kit	Date Of Calibration	22.12.2018
Calibration Certificate No.	UI/181222/525/001	Due Date Of Calibration	21.12.2019

Stack Details

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

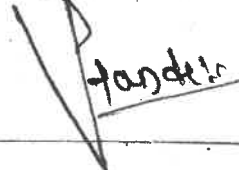
Emission details

Sr. No.	Particulars	Unit	Value
1	Temperature	°C	119.0
2	Differential Pressure	mmWG	2.30
3	Velocity of the gas	m/sec	5.70
4	Gas flow rate at NTP	Nm ³ /hr	490.75
5	Particulate matter	mg/NM ³	38.63
6	SO ₂	Kg/Hr	0.30

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DURGMANWADI BAUXITE MINE

**TAHSIL: RADHANAGARI , DISTRICT: KOLHAPUR
STATE: MAHARASHTRA**

OF

M/s. HINDALCO INDUSTRIES LTD.

ENVIRONMENTAL QUALITY MONITORING REPORT

SEASON - MONSOON 2019

JUNE, JULY, AUGUST

PREPARED BY



EQUINOX ENVIRONMENTS (I) PVT. LTD.,

**ENVIRONMENTAL; CIVIL & CHEMICAL ENGINEERS, CONSULTANTS & ANALYSTS,
KOLHAPUR (MS)**

E-mail: lab@equinoxenvi.com, enquiry@equinoxenvi.com

An ISO 9001:2015 & QCI NABET ACCREDITED ORGANIZATION



2019 - 2020

INDEX

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GROUND WATER QUALITY	9
DOMESTIC EFFLUENT QUALITY	11

PREFACE

M/s. Hindalco Industries Limited entrusted environmental quality monitoring at **Durgmanwadi Bauxite Mine** situated **Radhanagari Tahsil, Kolhapur District, Maharashtra** to **Equinox Environments (India) Pvt. Ltd.** during monsoon season of the year 2019.

According to MoU dt. 1st September 2018, **The Equinox Environments (India) Pvt. Ltd.** has availed the various monitoring services by lab viz. **Green Envirosafe Engineers & Consultant Pvt. Ltd.** which is recognized and duly approved by the **Ministry of Environment, Forests & Climate Change (MoEFCC); New Delhi** (through Notification No. S.O. 1174 (E) dated 18.07.2007 as amended vide Notification No. S.O. 388 (E) dated 10.02.2017) and **NABL (ISO/IEC 17025:2005** vide certificate number **TC-8061** dated 03.11.2018) has also received certifications namely **ISO 9001:2015** and **OHSAS 18001: 2007** from **Crescent Quality Certification Pvt. Ltd.**

The environmental monitoring for water quality was carried out in core zone and buffer zone during the months of June–July–August 2019. The data obtained was compiled to assess the current environmental status of the mining as well as the surrounding villages in the study area.

Equinox Environments (India) Pvt. Ltd. gratefully acknowledges the cooperation extended by management and staff of **M/s. Hindalco Industries Limited** and village people to the field staff.

EXECUTIVE SUMMARY

Durgmanwadi Bauxite Mine of M/s. Hindalco Industries Limited includes the study of the water quality (ground water, surface water and domestic waste water) in core zone and buffer zone around the mine lease area during the monsoon season of the year 2019.

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.

AREA DETAILS

INTRODUCTION

Hindalco Industries is one of the leading producers of aluminum in the country. The company business involves bauxite mining to alumina refining. Alumina metal conversion, sheet, extrusion, foil manufacturing and is spread all over the country. The company is operating number of bauxite mines in Maharashtra, Orissa, Chhattisgarh and Jharkhand to feed the Alumina plants located in Belgaum, Renukut and Muri.

As per the directions of the Government of Maharashtra the mining plan was prepared for the entire lease area of 141.18 ha and the same was approved by the Indian Bureau of Mines vide letter no. RMP/MECH-02(MAH)/GOA/2017-18 DT.07/06/2019 on submission of approved mining plan Government of Maharashtra has sanctioned mining lease for the production of bauxite for the revenue land, The Environmental Clearance was obtained for the production of 0.864 million TPA of bauxite over the entire area. The mining lease was executed by the collector of Kolhapur over the area on 30/01/2017 and the lease expires on 31/03/2030.

MINE DETAIL

Durgmanwadi bauxite mine is located near Durgmanwadi village of Radhanagari Tahsil of Kolhapur District in Maharashtra state.

GEOGRAPHICAL DETAILS

Latitude: 16.0° 20.0'25.09"
Longitude: 73.0° 55.0'41.45"
MSL: 992 m

DETAILS OF LEASE AREA

The following table gives the details of the area in terms of District, Tahsil, Village, Gat No., etc.

District	Tahsil	Village	Gat No.	Area Granted (ha)
Kolhapur	Radhanagari	Durgmanwadi	120(p)	40.21
			123(p)	0.81
		Padsali	13(p)	9.51
			14	6.76
			15(p)	15.58
			16(p)	3.72
			18(p)	3.04
			38(p)	2.75
			39(p)	5.91
			40	18.66
			41(p)	11.65
			42	17.12
			36(p)	3.54
			43(p)	10.24
			45(p)	4.65
			188(p)	28.08
			Total	182.23

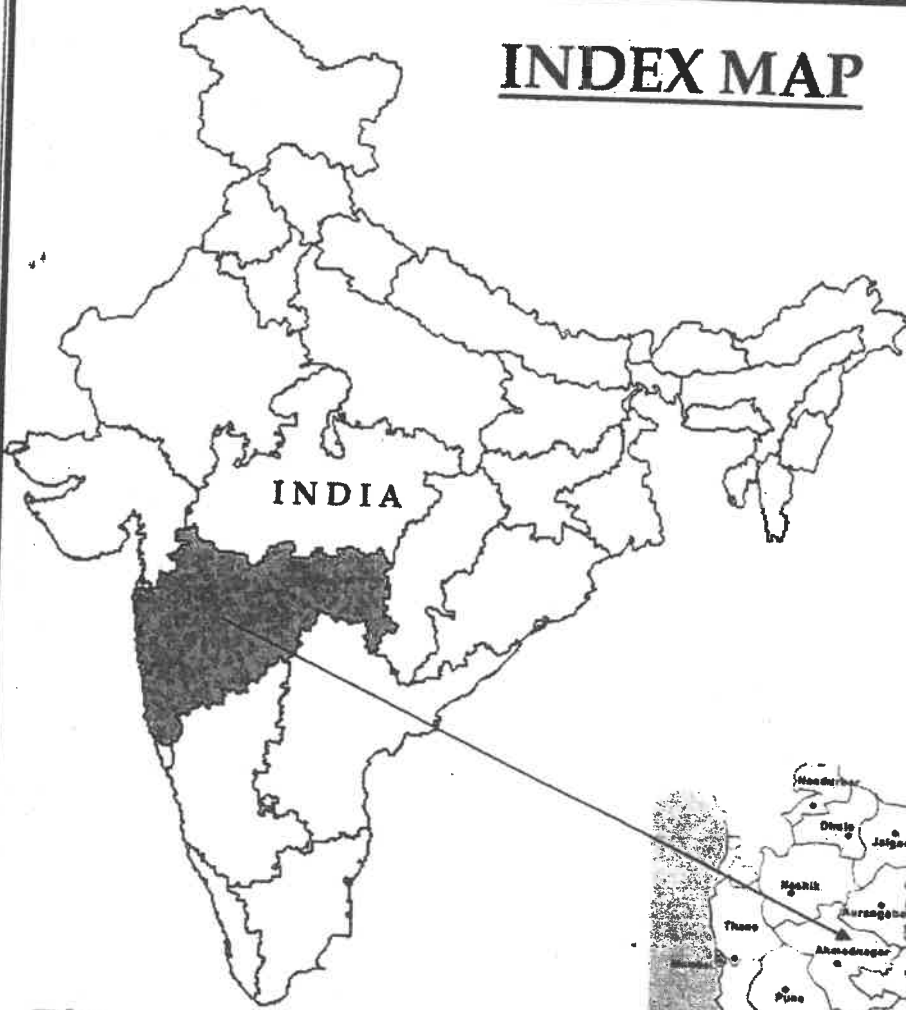
Note:

The mining activities at Durgmanwadi Bauxite Mine have been stopped since 17/03/2018 as per the directions and show cause notice dated 15/03/2018, bearing letter no. Z-11013/3/2018-IA-11(M) issued by Ministry of Environment Forest and Climate Change.

AREA DETAILS

DURGMANWADI BAUXITE MINE (M/s. Hindalco Industries Limited)	
DETAILS	
State	Maharashtra
District	Kolhapur
Tahsil	Radhanagari
Village	Durgmanwadi
Latitude	16° 20' 25.09"
Longitude	73° 55' 41.45"
Nature of the area	Hilly Area
Toposheet no.	47 H/15
GENERAL CLIMATIC CONDITIONS	
Maximum temperature	40.0°C
Minimum temperature	16.0°C
ACCESSIBILITY	
Road connectivity	Durgmanwadi Bauxite Mine is approachable from Radhanagari by tar road at a distance of 10 km.
Rail connectivity	Kolhapur railway station (55 km)
Airport	Kolhapur (55 km)
Sea port	Ratnagiri (180 km)
Biosphere reserve	Not any
Sanctuary	Extended Radhanagari Wildlife Sanctuary adjacent to lease area.

INDEX MAP



INDIA



MAHARASTRA

ARABIAN SEA



KOLHAPUR



(Mine Lease Area)






DURGMANWADI BAUXITE MINE

M/s Hindalco Industries Limited

NOT TO SCALE



KEY PLAN

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

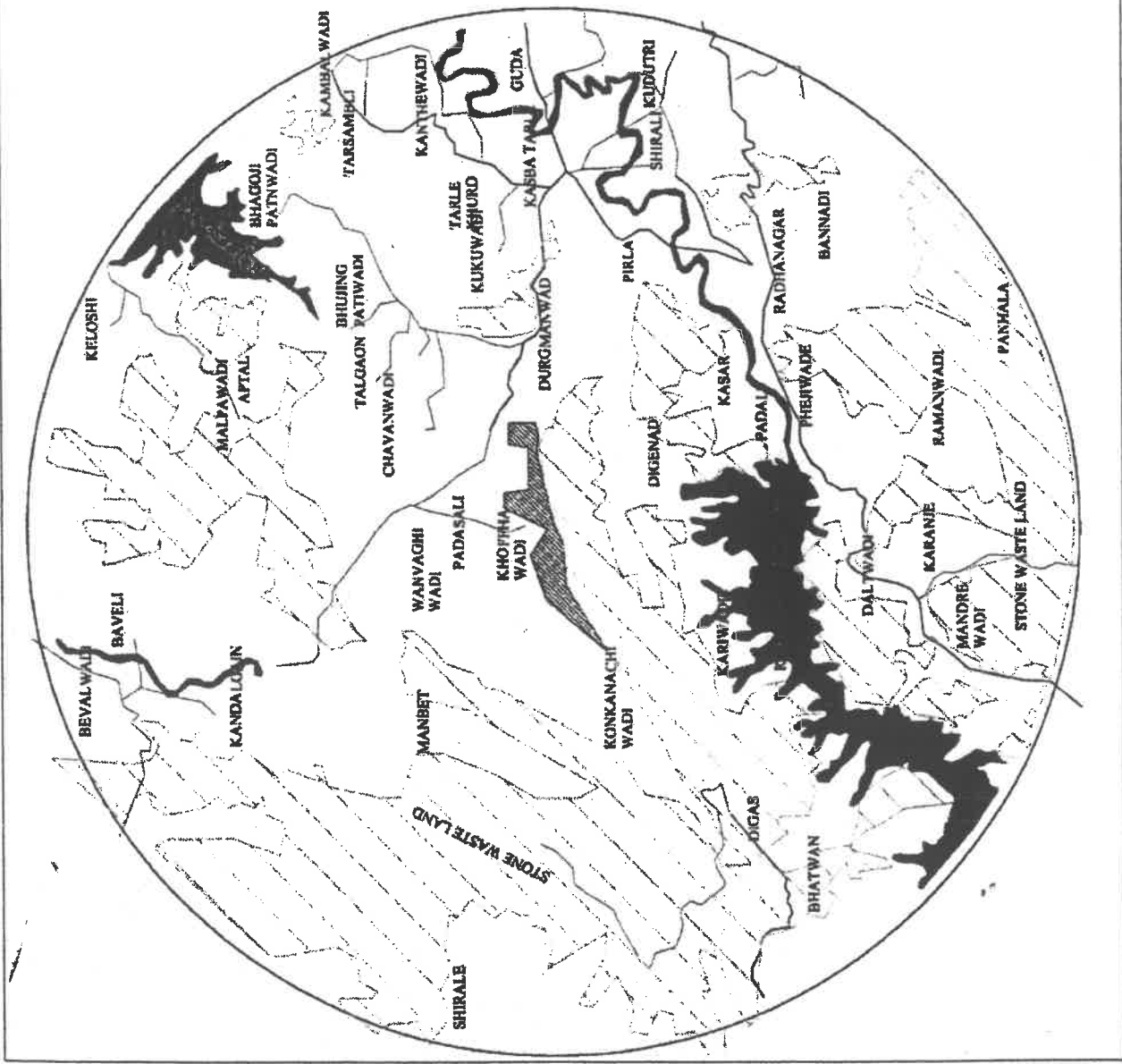


PROJECT : DURGAMWADI

HAUXITE MINES

TITLE : KEY PLAN

PREPARED BY
EQUINOX ENVIRONMENTS INDIA PVT. LTD.
KOLHAPUR



ENVIRONMENTAL QUALITY

Environmental quality monitoring at Durgmanwadi Bauxite Mine of M/s. Hindalco Industries Limited at Durgmanwadi village of Radhanagari Tahsil, Kolhapur district, Maharashtra includes monitoring of various environmental components viz. ground, surface and domestic waste water within core zone and buffer zone around the mine lease area.

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.

A total of 6 locations have selected, out of which 3 are for ground water and 3 are for surface water. Location of water quality monitoring stations is given below.

WATER QUALITY MONITORING LOCATIONS

Code	Name of sampling station	Source of water
W-1	Chavanwadi Village	Ground water
W-2	Durgmanwadi Village	Ground water
W-3	Talegaon Village	Ground water
W-4	Mine accumulated water	Surface water
W-5	Tulsi stream	Surface water
W-6	Padsali Village	Surface water

SAMPLING DETAILS

The water samples were collected from 6 sampling locations out of which one is from core zone and other 5 are from buffer zone. 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). Samples were collected in the monsoon season of the year 2019 as per the prescribed sample collecting methods and analyzed as per the IS standard procedures.







SURFACE WATER QUALITY

Proper drainage system has prepared to drag the monsoon water into the mine pit area for harvesting rain water and overflow of the same is being channelized through series of check dams and settling tanks so as to reduce the water pollution. Buffer zone have seasonal nallahs which used to recharge the ground during post monsoon.



WATER QUALITY LOCATIONS

LEGEND

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

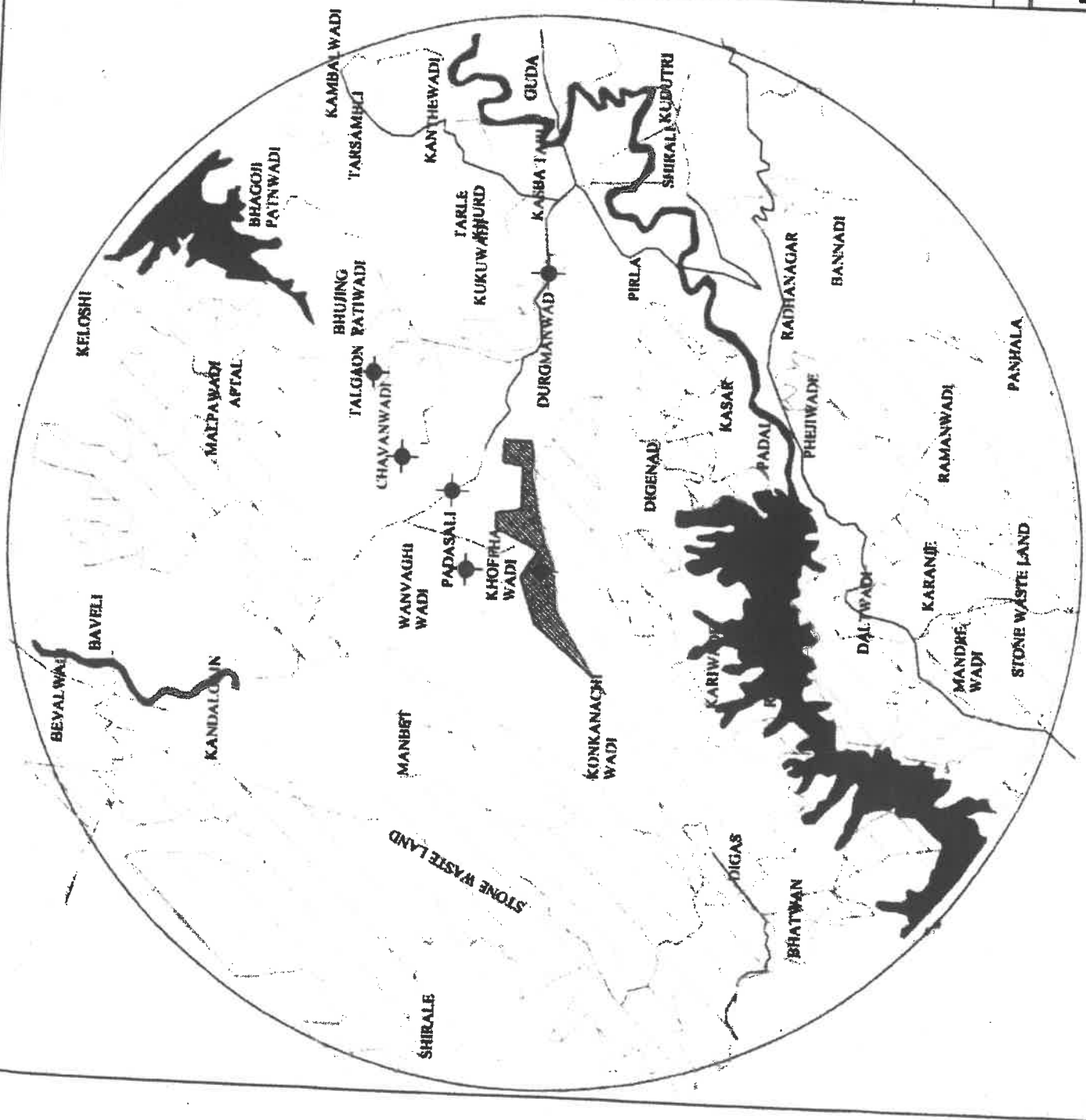


PROJECT : DURGMANWADI

BAUXITE MINES

TITLE : WATER LOCATIONS

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KOLHAPUR





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Surface Water Analysis Report

Client Name:		Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.		Report Number		GESEC/PRO/2019-20/08/220-222	
Project Name and Address: M/s. Hindalco Industries Limited (Durgmanwadi Bauxite Mine) A/P. Durgmanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.				Date of Report		19/08/2019	
				Sample Details		Surface Water	
				Nature of sample		Liquid	
				Date of Sampling		25/07/2019	
				Date of Sample Registration		26/07/2019	
				Date of Analysis		26/07/2019	
Sample Collected and Analyzed by				Green Envirosafe Engineers & Consultant Pvt. Ltd, Pune, Maharashtra.			
Sr. No.	Parameter	Unit(s)	Location			Limits as per IS 10500:2012	Analysis Method
			Mine accumulated water	Tulsi Stream	Padsali Village		
1.	Odor	--	Un- objectiona ble	Un- objectiona ble	Un- objectiona ble	Agreeable	IS : 3025 (Part5):1983,
2.	Taste	--	Agreeabl e	Agreeabl e	Agreeabl e	Agreeable	IS:3025 (Part 7 and 8)
3.	Color	Hazen	<5.00	<5.00	<5.00	5.00	IS : 3025 (Part4):1983
4.	pH	--	7.55	7.62	7.65	6.5-8.5	APHA 4500 H ⁺ , A, 23 rd Ed.2017
5.	Turbidity	NTU	<5.00	<5.00	<5.00	< 1.00	IS 3025 (Part 10): 1983
6.	DO	mg/lit	2.75	5.95	5.08	Not Specified	IS 3025 (Part 38)
7.	TDS	mg/lit	264.74	163.14	176.04	< 500.00	IS 3025 (Part 16):
8.	TSS	mg/lit	24.71	13.83	16.77	Not Specified	IS: 3025 (Part-17)- 1984
9.	BOD:3 days at 27°C	mg/lit	19.87	4.15	8.53	Not Specified	IS:3025 (Part 44)- 1993,
10.	Alkalinity as CaCO ₃	mg/lit	40.12	30.47	35.4	<200	IS 3025 (Part 23)
11.	Total Hardness as CaCO ₃	mg/lit	138.27	47.13	63.53	< 200.00	IS 3025 (Part 21): 2009
12.	Nitrate as NO ₃	mg/lit	35.57	12.73	17.84	< 45.00	APHA 4500 NO ₃ - B
13.	Phosphorous as PO ₄	mg/lit	1.2	BDL	BDL	Not Specified	APHA 4500 P-C
14.	Chlorides as Cl ⁻	mg/lit	36.36	13.68	15.74	< 250.00	IS 3025 (Part 32):
15.	Sulphates as SO ₄	mg/lit	18.95	1.36	9.03	< 200.00	IS 3025 (Part-24):
16.	Sodium as Na	mg/lit	9.65	0.44	2.47	Not Specified	APHA 3111 B





GREEN ENVIROSAFE

Engineers & Consultant Pvt Ltd.

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CIN No. : U74900PN2013PTC149666

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17.	Potassium as K	mg/lit	38.52	10.53	12.38	Not Specified	APHA 3111 B
18.	Calcium as Ca	mg/lit	37.61	13.89	19.20	< 75.00	IS 3025 (Part 40) 1991
19.	Magnesium as Mg	mg/lit	10.74	3.01	3.77	< 30.00	IS 3025 (Part 46) 1994 (RA 2009)
20.	Lead as Pb	mg/lit	BDL	BDL	BDL	<0.01	APHA 3111 B
21.	Manganese as Mn	mg/lit	BDL	BDL	BDL	<0.1	APHA 3111 B
22.	Cadmium as Cd	mg/lit	BDL	BDL	BDL	<0.003	APHA 3111 B
23.	Chromium as Cr	mg/lit	BDL	BDL	BDL	< 0.05	APHA 3111 B
24.	Copper as Cu	mg/lit	BDL	BDL	BDL	< 0.05	APHA 3111 B
25.	Zinc as Zn	mg/lit	BDL	BDL	BDL	<5.00	APHA 3111 B
26.	Iron as Fe	mg/lit	0.18	0.01	0.03	< 0.30	APHA 3111 B
27.	Fluorides as F ⁻	mg/lit	0.84	0.02	0.08	< 1.00	APHA 4500-F ⁻ D
28.	Mercury as Hg	mg/lit	BDL	BDL	BDL	<0.001	APHA 3111 B
29.	Selenium as Se	mg/lit	BDL	BDL	BDL	<0.01	APHA 3111 B
30.	Arsenic as As	mg/lit	BDL	BDL	BDL	< 0.01	APHA 3111 B
31.	Cyanide as CN	mg/lit	BDL	BDL	BDL	<0.05	APHA 3111 B
32.	Boron as B	mg/lit	BDL	BDL	BDL	< 0.50	APHA 3111 B

Remark-

> BDL – Below Detectable Limit.

Lab Chemist



Authorized Signatory

SURFACE WATER QUALITY

Sr. No.	Parameter	Unit (s)	Location		
			Mine Accumulated Water	Tulsi Stream	Padsali Village
1.	Odor	--	Un-objectionable	Un-objectionable	Un-objectionable
2.	Taste	--	Agreeable	Agreeable	Agreeable
3.	Color	Hazen	<5.00	<5.00	<5.00
4.	pH	--	7.55	7.62	7.65
5.	Turbidity	NTU	<5.00	<5.00	<5.00
6.	DO	mg/lit	2.75	5.95	5.08
7.	TDS	mg/lit	264.74	163.14	176.04
8.	TSS	mg/lit	24.71	13.83	16.77
9.	BOD:3 days at 27°C	mg/lit	19.87	4.15	8.53
10.	Alkalinity as CaCO ₃	mg/lit	40.12	30.47	35.4
11.	Total Hardness as CaCO ₃	mg/lit	138.27	47.13	63.53
12.	Nitrate as NO ₃	mg/lit	35.57	12.73	17.84
13.	Phosphorous as PO ₄	mg/lit	1.2	BDL	BDL
14.	Chlorides as Cl ⁻	mg/lit	36.36	13.68	15.74
15.	Sulphates as SO ₄	mg/lit	18.95	1.36	9.03
16.	Sodium as Na	mg/lit	9.65	0.44	2.47
17.	Potassium as K	mg/lit	38.52	10.53	12.48
18.	Calcium as Ca	mg/lit	37.61	13.89	19.2
19.	Magnesium as Mg	mg/lit	10.74	3.01	3.77
20.	Lead as Pb	mg/lit	BDL	BDL	BDL
21.	Manganese as Mn	mg/lit	BDL	BDL	BDL
22.	Cadmium as Cd	mg/lit	BDL	BDL	BDL
23.	Chromium as Cr	mg/lit	BDL	BDL	BDL
24.	Copper as Cu	mg/lit	BDL	BDL	BDL
25.	Zinc as Zn	mg/lit	BDL	BDL	BDL
26.	Iron as Fe	mg/lit	0.18	0.01	0.03
27.	Fluorides as F ⁻	mg/lit	0.84	0.02	0.08
28.	Mercury as Hg	mg/lit	BDL	BDL	BDL
29.	Selenium as Se	mg/lit	BDL	BDL	BDL
30.	Arsenic as As	mg/lit	BDL	BDL	BDL
31.	Cyanide as CN	mg/lit	BDL	BDL	BDL
32.	Boron as B	mg/lit	BDL	BDL	BDL

Note:

- mg/l: milligram per liter
- BDL: Below Desirable Limit

Remark:

All the parameters of the surface water samples collected from various sites are well below the desirable limit and maximum permissible limit as per IS: 10500 Standard for Drinking Water.

GROUND WATER QUALITY

The source of drinking water in the study area is the ground water, which is tapped by a bore well. The buffer zone is good in ground water source. The ground water in the study area gets recharged by rainwater in monsoon season.

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). Total of 3 locations have selected from buffer zone.

DURGMANWADI MINES			
Well Depths of Villages			
Sr. No.	Location	Total Depth in Meters	Water Level From Surface in Meters
1	Padsali Village	4.10	0.55
2	Chavanwadi Village	2.80	0.89

Ground Water Analysis Report

Client Name:	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.	Report Number	GESEC/PRO/2019- 20/08/217-219
Project Name and Address: M/s. Hindalco Industries Limited (Durgmanwadi Bauxite Mine) A/P. Durgmanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.	Date of Report	19/08/2019	
	Sample Details	Ground Water	
	Nature of sample	Liquid	
	Date of Sampling	25/07/2019	
	Date of Sample Registration	26/07/2019	
	Date of Analysis	26/07/2019	
Sample Collected and Analyzed by	Green Envirosafe Engineers & Consultant Pvt. Ltd, Pune, Maharashtra.		

Sr. No.	Parameter	Unit(s)	Location			Limits as per IS 10500:2012	Analysis Method
			CHAVANWA DI VILLAGE	DURGMAN WADI VILLAGE	TALEGAON VILLAGE		
1.	Odor	--	Un-objectionable	Un-objectionable	Un-objectionable	Agreeable	IS : 3025 (Part5):1983,
2.	Taste	--	Agreeable	Agreeable	Agreeable	Agreeable	IS:3025 (Part 7 and 8)
3.	Color	Hazen	<5.00	<5.00	<5.00	5.00	IS : 3025 (Part4):1983
4.	pH	--	7.52	7.56	7.60	6.5-8.5	APHA 4500 H ⁺ , A, 23 rd Ed.2017
5.	Turbidity	NTU	<5.00	<5.00	<5.00	< 1.00	IS 3025 (Part 10): 1983
6.	DO	mg/lit	4.40	4.25	4.10	Not Specified	IS 3025 (Part 38)
7.	TDS	mg/lit	119.95	127.39	144.81	< 500.00	IS 3025 (Part 16):
8.	TSS	mg/lit	15.24	17.12	18.13	Not Specified	IS: 3025 (Part-17)-1984
9.	BOD:3 days at 27°C	mg/lit	4.17	6.67	7.05	Not Specified	IS:3025 (Part 44)-1993,
10.	Alkalinity as CaCO ₃	mg/lit	16.54	27.58	31.89	<200	IS 3025 (Part 23)
11.	Total Hardness as CaCO ₃	mg/lit	50.00	41.50	63.88	< 200.00	IS 3025 (Part 21): 2009
12.	Nitrate as NO ₃	mg/lit	18.05	22.33	27.98	< 45.00	APHA 4500 NO ₃ - B
13.	Phosphorous as PO ₄	mg/lit	BDL	BDL	BDL	Not Specified	APHA 4500 P-C
14.	Chlorides as Cl ⁻	mg/lit	33.28	35.87	20.24	< 250.00	IS 3025 (Part 32):
15.	Sulphates as SO ₄	mg/lit	11.80	12.56	15.67	< 200.00	IS 3025 (Part-24):
16.	Sodium as Na	mg/lit	1.25	1.95	1.51	Not Specified	APHA 3111 B
17.	Potassium as K	mg/lit	12.02	15.24	23.14	Not Specified	APHA 3111 B
18.	Calcium as Ca	mg/lit	17.38	14.67	20.03	< 75.00	IS 3025 (Part 40) 1991
19.	Magnesium as Mg	mg/lit	1.59	1.17	3.35	< 30.00	IS 3025 (Part 46) 1994 (RA 2009)
20.	Lead as Pb	mg/lit	BDL	BDL	BDL	<0.01	APHA 3111 B
21.	Manganese as Mn	mg/lit	BDL	BDL	BDL	<0.1	APHA 3111 B





GREEN ENVIROSAFE
Engineers & Consultant Pvt Ltd.

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CIN No. : U74900PN2013PTC149666

Recognised by Ministry of Environment, Forest & Climate Change (MoEF) Govt. of India and ISO/IEC 17025:2005 (NABL), ISO 9001:2015 and OHSAS 18001:2007 Certified Company

22.	Cadmium as Cd	mg/lit	BDL	BDL	BDL	<0.003	APHA 3111 B
23.	Chromium as Cr	mg/lit	BDL	BDL	BDL	< 0.05	APHA 3111 B
24.	Copper as Cu	mg/lit	BDL	BDL	BDL	< 0.05	APHA 3111 B
25.	Zinc as Zn	mg/lit	BDL	BDL	BDL	<5.00	APHA 3111 B
26.	Iron as Fe	mg/lit	BDL	0.01	BDL	< 0.30	APHA 3111 B
27.	Fluorides as F ⁻	mg/lit	0.04	0.01	BDL	< 1.00	APHA 4500-F ⁻ D
28.	Mercury as Hg	mg/lit	BDL	BDL	BDL	<0.001	APHA 3111 B
29.	Selenium as Se	mg/lit	BDL	BDL	BDL	<0.01	APHA 3111 B
30.	Arsenic as As	mg/lit	BDL	BDL	BDL	< 0.01	APHA 3111 B
31.	Cyanide as CN	mg/lit	BDL	BDL	BDL	<0.05	APHA 3111 B
32.	Boron as B	mg/lit	BDL	BDL	BDL	< 0.50	APHA 3111 B

Remark-

➤ BDL – Below Detectable Limit.

Lab Chemist



Authorized Signatory

GROUND WATER QUALITY

Sr. No.	PARAMETER	UNIT (S)	Location		
			CHAVANWADI VILLAGE	DURGMANWADI VILLAGE	TALEGAON VILLAGE
1.	Odor	–	Un-objectionable	Un-objectionable	Un-objectionable
2.	Taste	–	Agreeable	Agreeable	Agreeable
3.	Color	Hazen	<5.00	<5.00	<5.00
4.	pH	--	7.52	7.56	7.60
5.	Turbidity	NTU	<5.00	<5.00	<5.00
6.	DO	mg/lit	4.40	4.25	4.10
7.	TDS	mg/lit	119.95	127.39	144.81
8.	TSS	mg/lit	15.24	17.12	18.13
9.	BOD:3 days at 27°C	mg/lit	4.17	6.67	7.05
10.	Alkalinity as CaCO ₃	mg/lit	16.54	27.58	31.89
11.	Total Hardness as CaCO ₃	mg/lit	50.00	41.50	63.88
12.	Nitrate as NO ₃	mg/lit	18.05	22.33	27.98
13.	Phosphorous as PO ₄	mg/lit	BDL	BDL	BDL
14.	Chlorides as Cl ⁻	mg/lit	33.28	35.87	20.24
15.	Sulphates as SO ₄	mg/lit	11.80	12.56	15.67
16.	Sodium as Na	mg/lit	1.25	1.95	1.51
17.	Potassium as K	mg/lit	12.02	15.24	23.14
18.	Calcium as Ca	mg/lit	17.38	14.67	20.03
19.	Magnesium as Mg	mg/lit	1.59	1.17	3.35
20.	Lead as Pb	mg/lit	BDL	BDL	BDL
21.	Manganese as Mn	mg/lit	BDL	BDL	BDL
22.	Cadmium as Cd	mg/lit	BDL	BDL	BDL
23.	Chromium as Cr	mg/lit	BDL	BDL	BDL
24.	Copper as Cu	mg/lit	BDL	BDL	BDL
25.	Zinc as Zn	mg/lit	BDL	BDL	BDL
26.	Iron as Fe	mg/lit	BDL	0.01	BDL
27.	Fluorides as F ⁻	mg/lit	0.04	0.01	BDL
28.	Mercury as Hg	mg/lit	BDL	BDL	BDL
29.	Selenium as Se	mg/lit	BDL	BDL	BDL
30.	Arsenic as As	mg/lit	BDL	BDL	BDL
31.	Cyanide as CN	mg/lit	BDL	BDL	BDL
32.	Boron as B	mg/lit	BDL	BDL	BDL

Note:

- mg/l: milligram per liter
- BDL: Below Desirable Limit

Remark:

All the parameters of the surface water samples collected from various sites are well below the desirable limit and maximum permissible limit as per IS: 10500 Standard for Drinking Water.

Indian Standard

DRINKING WATER — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for drinking water.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 TERMINOLOGY

For the purpose of this standard the following definition shall apply.

3.1 Drinking Water — Drinking water is water intended for human consumption for drinking and cooking purposes from any source. It includes water (treated or untreated) supplied by any means for human consumption.

4 REQUIREMENTS

Drinking water shall comply with the requirements given in Tables 1 to 4. The analysis of pesticide residues given in Table 3 shall be conducted by a recognized laboratory using internationally established test method meeting the residue limits as given in Table 5.

Drinking water shall also comply with bacteriological requirements (see 4.1), virological requirements (see 4.2) and biological requirements (see 4.3).

4.1 Bacteriological Requirements

4.1.1 Water in Distribution System

Ideally, all samples taken from the distribution system including consumers' premises, should be free from coliform organisms and the following bacteriological quality of drinking water collected in the distribution system, as given in Table 6 is, therefore specified when tested in accordance with IS 1622.

4.2 Virological Requirements

4.2.1 Ideally, all samples taken from the distribution

Table 1 Organoleptic and Physical Parameters
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, <i>Max</i>	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources a) Test cold and when heated b) Test at several dilutions
ii)	Odour	Agreeable	Agreeable	Part 5	
iii)	pH value	6.5-8.5	No relaxation	Part 11	Test to be conducted only after safety has been established
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	
v)	Turbidity, NTU, <i>Max</i>	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, <i>Max</i>	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Table 2 General Parameters Concerning Substances Undesirable in Excessive Amounts
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Aluminium (as Al), mg/l, <i>Max</i>	0.03	0.2	IS 3025 (Part 55)	—
ii)	Ammonia (as total ammonia-N), mg/l, <i>Max</i>	0.5	No relaxation	IS 3025 (Part 34)	—
iii)	Anionic detergents (as MBAS) mg/l, <i>Max</i>	0.2	1.0	Annex K of IS 13428	—
iv)	Barium (as Ba), mg/l, <i>Max</i>	0.7	No relaxation	Annex F of IS 13428* or IS 15302	—
v)	Boron (as B), mg/l, <i>Max</i>	0.5	1.0	IS 3025 (Part 57)	—
vi)	Calcium (as Ca), mg/l, <i>Max</i>	.75	200	IS 3025 (Part 40)	—
vii)	Chloramines (as Cl ₂), mg/l, <i>Max</i>	4.0	No relaxation	IS 3025 (Part 26)* or APHA 4500-Cl G	—
viii)	Chloride (as Cl), mg/l, <i>Max</i>	250	1 000	IS 3025 (Part 32)	—
ix)	Copper (as Cu), mg/l, <i>Max</i>	0.05	1.5	IS 3025 (Part 42)	—
x)	Fluoride (as F) mg/l, <i>Max</i>	1.0	1.5	IS 3025 (Part 60)	—
xi)	Free residual chlorine, mg/l, <i>Min</i>	0.2	1	IS 3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l
xii)	Iron (as Fe), mg/l, <i>Max</i>	0.3	No relaxation	IS 3025 (Part 53)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xiii)	Magnesium (as Mg), mg/l, <i>Max</i>	30	100	IS 3025 (Part 46)	—
xiv)	Manganese (as Mn), mg/l, <i>Max</i>	0.1	0.3	IS 3025 (Part 59)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xv)	Mineral oil, mg/l, <i>Max</i>	0.5	No relaxation	Clause 6 of IS 3025 (Part 39) Infrared partition method	—
xvi)	Nitrate (as NO ₃), mg/l, <i>Max</i>	45	No relaxation	IS 3025 (Part 34)	—
xvii)	Phenolic compounds (as C ₆ H ₅ OH), mg/l, <i>Max</i>	0.001	0.002	IS 3025 (Part 43)	—
xviii)	Selenium (as Se), mg/l, <i>Max</i>	0.01	No relaxation	IS 3025 (Part 56) or IS 15303*	—
xix)	Silver (as Ag), mg/l, <i>Max</i>	0.1	No relaxation	Annex J of IS 13428	—
xx)	Sulphate (as SO ₄) mg/l, <i>Max</i>	200	400	IS 3025 (Part 24)	May be extended to 400 provided that Magnesium does not exceed 30
xxi)	Sulphide (as H ₂ S), mg/l, <i>Max</i>	0.05	No relaxation	IS 3025 (Part 29)	—
xxii)	Total alkalinity as calcium carbonate, mg/l, <i>Max</i>	200	600	IS 3025 (Part 23)	—
xxiii)	Total hardness (as CaCO ₃), mg/l, <i>Max</i>	200	600	IS 3025 (Part 21)	—
xxiv)	Zinc (as Zn), mg/l, <i>Max</i>	5	15	IS 3025 (Part 49)	—

NOTES

1 In case of dispute, the method indicated by '*' shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Table 3 Parameters Concerning Toxic Substances
(Foreword and Clause 4)

SI No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Cadmium (as Cd), mg/l, Max	0.003	No relaxation	IS 3025 (Part 41)	—
ii)	Cyanide (as CN), mg/l, Max	0.05	No relaxation	IS 3025 (Part 27)	—
iii)	Lead (as Pb), mg/l, Max	0.01	No relaxation	IS 3025 (Part 47)	—
iv)	Mercury (as Hg), mg/l, Max	0.001	No relaxation	IS 3025 (Part 48) Mercury analyser	—
v)	Molybdenum (as Mo), mg/l, Max	0.07	No relaxation	IS 3025 (Part 2)	—
vi)	Nickel (as Ni), mg/l, Max	0.02	No relaxation	IS 3025 (Part 54)	—
vii)	Pesticides, µg/l, Max	See Table 5	No relaxation	See Table 5	—
viii)	Polychlorinated biphenyls, mg/l, Max	0.000 5	No relaxation	ASTM 5175*	—
ix)	Polynuclear aromatic hydrocarbons (as PAH), mg/l, Max	0.000 1	No relaxation	APHA 6440	or APHA 6630
x)	Total arsenic (as As), mg/l, Max	0.01	0.05	IS 3025 (Part 37)	—
xi)	Total chromium (as Cr), mg/l, Max	0.05	No relaxation	IS 3025 (Part 52)	—
xii)	Trihalomethanes:				
a)	Bromoform, mg/l, Max	0.1	No relaxation	ASTM D 3973-85* or APHA 6232	—
b)	Dibromochloromethane, mg/l, Max	0.1	No relaxation	ASTM D 3973-85* or APHA 6232	—
c)	Bromodichloromethane, mg/l, Max	0.06	No relaxation	ASTM D 3973-85* or APHA 6232	—
d)	Chloroform, mg/l, Max	0.2	No relaxation	ASTM D 3973-85* or APHA 6232	—

NOTES

1 In case of dispute, the method indicated by '*' shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Table 4 Parameters Concerning Radioactive Substances
(Foreword and Clause 4)

SI No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 14194	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Radioactive materials:				
a)	Alpha emitters Bq/l, Max	0.1	No relaxation	Part 2	—
b)	Beta emitters Bq/l, Max	1.0	No relaxation	Part 1	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Table 5 Pesticide Residues Limits and Test Method
(Foreword and Table 3)

Sl No. (1)	Pesticide (2)	Limit µg/l (3)	Method of Test, Ref to	
			USEPA (4)	AOAC/ ISO (5)
i)	Alachlor	20	525.2, 507	—
ii)	Atrazine	2	525.2, 8141 A	—
iii)	Aldrin/ Dieldrin	0.03	508	—
iv)	Alpha HCH	0.01	508	—
v)	Beta HCH	0.04	508	—
vi)	Butachlor	125	525.2, 8141 A	—
vii)	Chlorpyrifos	30	525.2, 8141 A	—
viii)	Delta HCH	0.04	508	—
ix)	2,4- Dichlorophenoxyacetic acid	30	515.1	—
x)	DDT (o, p and p, p - Isomers of DDT, DDE and DDD)	1	508	AOAC 990.06
xi)	Endosulfan (alpha, beta, and sulphate)	0.4	508	AOAC 990.06
xii)	Ethion	3	1657 A	—
xiii)	Gamma — HCH (Lindane)	2	508	AOAC 990.06
xiv)	Isoproturon	9	532	—
xv)	Malathion	190	8141 A	—
xvi)	Methyl parathion	0.3	8141 A	ISO 10695
xvii)	Monocrotophos	1	8141 A	—
xviii)	Phorate	2	8141 A	—

NOTE — Test methods are for guidance and reference for testing laboratory. In case of two methods, USEPA method shall be the reference method.

Table 6 Bacteriological Quality of Drinking Water¹⁾
(Clause 4.1.1)

Sl No. (1)	Organisms (2)	Requirements (3)
i)	<i>All water intended for drinking:</i>	
	a) <i>E. coli</i> or thermotolerant coliform bacteria ^{2), 3)}	Shall not be detectable in any 100 ml sample
ii)	<i>Treated water entering the distribution system:</i>	
	a) <i>E. coli</i> or thermotolerant coliform bacteria ²⁾	Shall not be detectable in any 100 ml sample
	b) Total coliform bacteria	Shall not be detectable in any 100 ml sample
iii)	<i>Treated water in the distribution system:</i>	
	a) <i>E. coli</i> or thermotolerant coliform bacteria	Shall not be detectable in any 100 ml sample
	b) Total coliform bacteria	Shall not be detectable in any 100 ml sample

¹⁾Immediate investigative action shall be taken if either *E. coli* or total coliform bacteria are detected. The minimum action in the case of total coliform bacteria is repeat sampling; if these bacteria are detected in the repeat sample, the cause shall be determined by immediate further investigation.

²⁾Although, *E. coli* is the more precise indicator of faecal pollution, the count of thermotolerant coliform bacteria is an acceptable alternative. If necessary, proper confirmatory tests shall be carried out. Total coliform bacteria are not acceptable indicators of the sanitary quality of rural water supplies, particularly in tropical areas where many bacteria of no sanitary significance occur in almost all untreated supplies.

³⁾It is recognized that, in the great majority of rural water supplies in developing countries, faecal contamination is widespread. Under these conditions, the national surveillance agency should set medium-term targets for progressive improvement of water supplies.

Domestic Effluent Analysis Report

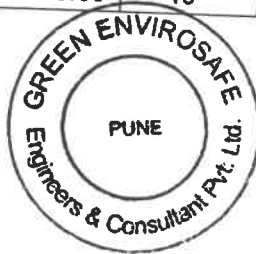
Report No: GESEC/PRO/2019-20/08/223	Date of Report	19/08/2019
Name of Client	Equinox Environments (I) Pvt. Ltd., Kolhapur, Maharashtra.	
Project Name and Address M/s. Hindalco Industries Limited. (Durgmanwadi Bauxite Mine) A/P. Durgmanwadi, Tahsil. Radhanagari, District. Kolhapur, State. Maharashtra.	Sample Location	Canteen waste water
	Nature of sample	Liquid
	Date of Sampling	25/07/2019
	Date of Sample Registration	26/07/2019
	Date of Analysis	26/07/2019
	Sample Collected By	Green Envirosafe Engineers & Consultant Pvt. Ltd, Pune, Maharashtra.

Domestic Effluent Analysis

Sr. No.	Parameter	Result	MPCB Limits	Unit(s)	Standard Method
1.	Total Suspended Solids	45.12	100	mg/l	APHA 2540-D
2.	Total Dissolved Solids	623.73	2100	mg/l	APHA 2540-C
3.	COD	38.96	250	mg/l	APHA 5220 B
4.	BOD for 3 days at 27oC	15.04	100	mg/l	APHA 5210 B
5.	Total Solids	668.85	---	mg/l	APHA 2540-D
6.	Oil and Grease	<5.00	10	mg/l	APHA 5520 B

ANALYZED BY-

(Signature)



(Signature)

AUTHORIZED SIGNATORY

Terms and conditions

- The report is refer only to the sample tested and not applies to the bulk.
- The results shown in this test report may differ based on various factors including temperature, humidity, pressure, retention time etc.
- The test report cannot be reproduced wholly or in part and cannot be used for promotional or publicity purpose without the written consent of laboratory, GESEC.
- Samples will be retained for a period of seven (7) days after completion of analysis. Longer retention periods can be arranged, on request of the customer.
- We strictly maintain the confidentiality of all test result of sample(s) collected by us/ supplied by customer and not revel to third party unless required by the statutory or legal requirement.
- MoEF approved Lab by Govt. of India. From date. 09/02/2017 to 08/02/2022.

DOMESTIC EFFLUENT ANALYSIS

The only source of waste water on site was canteen effluent. All employees used to have two meals in the canteen according to their shifts. The said canteen has now been stopped since the workmen of the mines have been retrenched with effective from 1st August 2019 consequent to the stoppage of mines as per MoEF directives. Sample was collected one time from outlet and analyzed. Results are given below.

DOMESTIC EFFLUENT ANALYSIS

Sample Location: Canteen waste water

Date of Sampling: 25.07.2019

Sr. No	Unit	Parameter	Result	MPCB Standards
1	mg/l	Total Suspended Solids	45.12	100
2	mg/l	Total Dissolved Solids	623.73	2100
3	mg/l	COD	38.96	250
4	mg/l	BOD for 3 days at 27°C	15.04	100
5	mg/l	Total Solids	668.85	—
6	mg/l	Oil and Grease	<5.00	10

