

Item Nos. 01 to15

(Court No. 1)

**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 226/2020  
(Earlier O.A.68/2020 (CZ))

Om Puri

Applicant

Versus

Hindustan Zinc Ltd. & Ors.

Respondent(s)

**WITH**

Original Application No. 151/2021  
(Earlier O.A.49/2020 (CZ))

Karma Devi

Applicant

Versus

Hindustan Zinc Ltd. & Ors.

Respondent(s)

**WITH**

Original Application No. 152/2021  
(Earlier O.A.50/2020 (CZ))

Gopali Devi

Applicant

Versus

Hindustan Zinc Ltd. & Ors.

Respondent(s)

**WITH**

Original Application No. 153/2021  
(Earlier O.A.51/2020 (CZ))

Sushila Devi Applicant  
Versus

Hindustan Zinc Ltd. & Ors. Respondent(s)

**WITH**

Original Application No. 154/2021  
(Earlier O.A.52/2020 (CZ))

Ladu Ram Mali Applicant  
Versus

Hindustan Zinc Ltd. & Ors. Respondent(s)

**WITH**

Original Application No. 155/2021  
(Earlier O.A.53/2020 (CZ))

Jagdish Puri Goswami Applicant  
Versus

Hindustan Zinc Ltd. & Ors. Respondent(s)

**WITH**

Original Application No. 156/2021  
(Earlier O.A.54/2020 (CZ))

Mohd. Islam Applicant  
Versus

Hindustan Zinc Ltd. & Ors. Respondent(s)

**WITH**

Original Application No. 157/2021  
(Earlier O.A.55/2020 (CZ))

Dinesh Kumavat Applicant  
Versus

Hindustan Zinc Ltd. & Ors. Respondent(s)

**WITH**

Original Application No. 158/2021  
(Earlier O.A.56/2020 (CZ))

Suresh Kumar Lohar Applicant  
Versus

Hindustan Zinc Ltd. & Ors. Respondent(s)

**WITH**

Original Application No. 159/2021  
(Earlier O.A.57/2020 (CZ))

Prem Kumar Mali Applicant  
Versus

Hindustan Zinc Ltd. & Ors. Respondent(s)

**WITH**

Original Application No. 160/2021  
(Earlier O.A.58/2020 (CZ))

Kanchan Devi Applicant  
Versus

Hindustan Zinc Ltd. & Ors. Respondent(s)

**WITH**

Original Application No. 161/2021  
(Earlier O.A.59/2020 (CZ))

Satyanarayan Daroga Applicant  
Versus

Hindustan Zinc Ltd. & Ors.

Respondent(s)

**WITH**

Original Application No. 162/2021  
(Earlier O.A.60/2020 (CZ))

Gheesu Bheel

Applicant

Versus

Hindustan Zinc Ltd. & Ors.

Respondent(s)

**WITH**

Original Application No. 163/2021  
(Earlier O.A.62/2020 (CZ))

Gheesalal Raigar

Applicant

Versus

Hindustan Zinc Ltd. & Ors.

Respondent(s)

**WITH**

Original Application No. 164/2021  
(Earlier O.A.69/2020 (CZ))

Shobhag

Applicant

Versus

Hindustan Zinc Ltd. & Ors.

Respondent(s)

Date of hearing: 02.02.2022

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON  
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER  
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER  
HON'BLE DR. AFROZ AHMAD, EXPERT MEMBER**

Applicant: Mr. Dharamveer Sharma, Advocate

Respondent: Mr. Krishnan Venugopal, Senior Advocate with Mr. U.N. Tiwary Advocate for R-1  
Dr. Sapna Aggarwal, Advocate for MoEF&CC  
Mr. Rohit Sharma, Advocate for RSPCB

**ORDER**

1. These applications have been filed with a grievance of violation of environmental norms by Hindustan Zinc Ltd., Udaipur, Rajasthan in executing mining lease of Lead, Zinc and associated minerals at villages Agucha, Rampura, etc., Tehsil Hurd, District Bhilwada, Rajasthan covering nearly an area about 1200 hectares of mining land. In the course of such mining, residents of the said villages are adversely affected on account of degradation of environment. There is heavy blasting and underground mining operations resulting in contamination of source of drinking of water, resulting in various diseases like Asthma and skin borne diseases. Live stocks are also affected. Dust and stones get accumulated close to the agricultural land and houses of the inhabitants. Toxic and contaminated waste water is discharged from the mines. The area is 'over exploited' in terms of the ground water, notified as such by the CGWB. There are mammoth holes at many places because of unplanned underground mining. The applicant has relied upon photographs filed with the application.

2. One of the applications was first taken up for hearing on 18.08.2020. The Tribunal issued notice and also sought an independent report from a

joint Committee comprising Collector, Bhilwada and the State PCB, the State PCB being the nodal agency. Vide order dated 05.02.2021, the Tribunal dealt with I.A. Nos. 94-95 of 2020 filed by the Project Proponent (PP) to recall the direction for seeking a report from an independent Committee. The Tribunal modified the constitution of the Committee directed the Committee to undertake the visit of the affected area and assess the extent of damage to the environment in the last three years. Copy of the report of the Committee was directed to be furnished to the PP for its response and also comments on such response by the CPCB were required to be filed. All connected matters were directed to be tagged for hearing together.

3. Accordingly, the Committee has filed its report dated 07.09.2021 to which the PP has filed response and CPCB has also filed comments on the said response. According to the report, the Committee visited the site on 12.07.2021 and interacted with the stake holders. The Committee examined the mining processes of the PP and status of compliance in terms of Environmental Condition (EC)/Consent Conditions. The Committee has made observations about the status of water quality, loss to the agriculture and livestock, status of ground water and health of the villagers and made certain recommendations. It would be appropriate to extract relevant parts of the reports with a view to consider the order to be passed:-

**“1. Background of M/s Hindustan Zinc Ltd, Rampura Agucha mine**

*The mine lease no. 8/99 has area of 1200Ha; out of which 1048Ha land is acquired by the unit. The GPS co-ordinates of mine lease pillars are (Pillar – A (25.819494, 74.737589); Pillar – B (25.838942, 74.71675); Pillar-C (25.864086, 74.745408) & Pillar-D (25.844633, 74.766247)). The mine lease is for 50years that expires on 12th March 2030. The first Environmental Clearance of 0.9MTPA for Pb & Zn mining was obtained on 19.4.1983. The development of the Rampura Agucha (RA) mine was started in 1989 and commissioned its operation in 1991 as an open pit mine. The Mine excavates and produces Lead and Zinc ores by mining and Lead and Zinc concentrate by mineral processing operations. The mining and mineral processing operations include blasting, transportation, crushing, grinding, screening and ore beneficiation (flotation, thickening, and pressure filtration). The present capacity as per the Environmental Clearance (EC) dated 11th December 2009 is 6.15 million metric tons per annum (MMTPA) of ore production and 6.5 MMTPA of ore beneficiation plant (Four streams; each of 2.3MTPA, 1.5MTPA, 1.2MTPA & 1.5MTPA capacity) to produce zinc and lead concentrates. Further the EC was amended on 5.3.2012, 22.08.2014, 12.12.2014, 28.12.2015 & 28.02.2020.*

*The open pit mine progressively ramped up to its capacity, before it ceased operation in March, 2018 after attaining its economic and safe ultimate pit depth of 400m below surface. Beyond 400m depth, underground mining was considered as the best suitable option in sustaining production from this mine.*

*The Rampura Agucha (RA) Mine underground development activities commenced in year 2010 and production started from Oct-2012 onwards. RA underground mine operated concurrently with the open pit mine between year 2012 and 2018, till the completion of open pit mine life. Thereafter, RA mine completely transitioned into underground operation and presently continued.*

*During mining and beneficiation of ores, large quantity of overburden (OB) and tailings are generated. The present quantity of OB generated is about 2.0 million metric tonnes per annum (MMTPA) which is presently stacked within the mine lease boundary. The height of OB dump varies from 20 m to 140 m at present. The quantity of Tailing generated is about 5 million metric tonnes per annum (MMTPA). Part of*

*tailing quantity approx. 40-50% from processing plant are converted to paste form along with suitable binder to back fill underground voids generated from production. Remaining part of tailing quantity are transported from beneficiation plants through closed pipelines to a confined area known as "Tailing Dam" which is located near to the ore beneficiation plant. The tailing dam is constructed with the mine overburden and soil. The tailings in the slurry form are discharged to the tailing dam wherein the solids settled at the bottom of the tailing dam and the supernatant (water) is pumped back to the beneficiation plant for reuse.*

## **2. Factual status of the compliance norms**

*Based on the discussion hold on 12th July 2021 with M/s Hindustan Zinc Ltd Rampura- Agucha mine officials on compliance status followed by field visit; the factual status of the specific conditions is as below:*

### **2.1 Statutory permissions**

- i. The unit has valid Consent to Operate under Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 for Beneficiation for Lead Zinc Ore (6.5MMTPA) upto 28.02.2023. Copy enclosed as an Annexure-II.*
- ii. The unit has valid Consent to Operate under Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 for Beneficiation for Lead Zinc Ore (6.5MMTPA) upto 28.02.2023. Copy enclosed as an Annexure-II.*
- iii. The unit has valid Consent to Operate under Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 for Lead & Zinc ore mining (6.15MMTPA) upto 28.02.2023. Copy enclosed as an Annexure-III.*
- iv. The unit has valid authorization under Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016 for upto 30.11.2024. Copy enclosed as an Annexure-III.*
- v. The unit has obtained No Objection Certificate (NOC) for ground water extraction from radial well in Banas river from Central Ground Water Board vide letter dated 8.7.2013. Unit has applied for renewal vide letter dated**



**04.04.2018. Copy enclosed as an Annexure-IV. It is pertinent to mention that, as per the condition no. 11 (vi) of the notification no. S.O. 3289 (E) dated 24.9.2020 of Ministry of Jal Shakti (Central Ground Water Authority), the NOC shall be deemed to be extended till the date of renewal of NOC. The condition no. 11 (vi) states as :**

### **11.0 Renewal of No Objection Certificate**

- vi. If the application for renewal is submitted in time and the CGWA/ the respective State/ Ut Authority is unable to process the application in time, No Objection Certificate shall be deemed to be extended till the date of renewal of No Objection Certificate.**

*Copy of the notification is enclosed as an Annexure-V.*

### **2.2 Blasting operation**

*Due to depletion of zinc ore reserves in 2018, which was approachable from the surface, the company has shifted its mining operation from surface mining to underground mining to extract further the deep seated ores. The underground blasting is done in a very controlled manner as it is a matter of safety of underground personnel and mine workings. The blast designs, drilling patterns and the quantities of the explosive used are approved by Directorate General of Mines Safety (DGMS) and optimized by CSIR-CIMFR, Dhanbad. Extreme care is to be taken so that its own mining tunnels (i.e., mine workings) do not get damaged due to blast vibrations (i.e., prevention of over-breaking) otherwise it may create unsafe conditions in underground. The blasting operation is carried out under supervision of expert agency. The company uses water resistant 'permitted' explosives like Power gel cartridges for blasting. Electronic micro-second delay detonators are used to further control the blast vibrations and maximizing ore outputs. Large diameter 'relief holes' (102mm) and 'uncharged holes' (45mm ) are kept to reduce further vibrations, during blasting in the mine. This technique minimizes the usage of explosives and increases output of ore per blast.*

*As per the present Indian standards, as mentioned in DGMS (Tech) (S&T) Circular No. 7 dated 29th August of 1997 (Copy of*

the circular is enclosed as an Annexure-VI), depending on the type of structures and dominant excitation, the peak particle velocity (PPV) on the ground adjacent to the structure shall not exceed the values is as tabulated below:

**Table no. 1 Permissible Peak Particle Velocity (PPV) at the foundation level of structures in Mining Areas in mm/s**

Type of Structures	Dominant Excitation Frequency, Hz		
	< 8 Hz	8 - 25 Hz	> 25 Hz
<b>(A) Buildings/structures not belong to the owner</b>			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed)	10	20	25
Objects of historical importance and sensitive Structures	2	5	10
<b>(B) Building belonging to owner with limited span of life</b>			
Domestic houses /structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed)	15	25	50

The present Indian standard is a frequency based criterion. As the frequency of vibration increases the threshold value of damage also increases. Indian Standard also recommends minimum PPV value of 5.0 mm/s for domestic houses which correspond to less than 8 Hz frequency. As the frequency increase above 8 Hz, the limiting PPV value enhances to 10 mm/s and 15 mm/s for frequency range 8- 25 Hz and greater than 25 Hz respectively.

In present case, the safe permissible limit of peak particle velocity (PPV) for domestic houses and industrial building not belonging to mine management is 15 mm/s and 25 mm/s respectively, corresponding to > 25 Hz frequency range as per the present DGMS criterion.

The blast vibration data of underground mine provided for 23.10.2020 to 2.3.2021 is enclosed as an Annexure- VII. The 36 data set of vibration and associated explosive charge analysed and found that dominant frequency of the vibration induced is greater than 50 Hz. The PPV values provided by HZL unit shows that the majority of the PPV value is less than 5.0 mm/s. Therefore, blast induced ground vibration is found to be well within the safe limit for domestic houses as well as

*industrial building. Following are the other observations on blasting practices.*

- i. The unit has conducted subsidence study for increasing the depth of underground mine working from 1000mbgl to 1500mbgl in 2020 from Central Institute of Mining & Fuel Research (CIMFR). Subsidence due to blasting operations was not observed.*
- ii. Blasting operation is carried out with various control measures as per DGMS guidelines to ensure safety.*
- iii. Explosive charge weight per delay and total explosive charge in a blasting round is followed considering the minimization of blast vibration within stipulated standards for safety of nearby underground structures as well as surface residential/industrial structures.*
- iv. The vibrations monitored are well within the prescribed limits by DGMS by use of permitted explosives, electronic detonators, relief holes, etc.*
- v. Peak Particle velocity of blast vibration is being monitored for every blast & records are maintained, within DGMS limits.*
- vi. Wet drilling system is adopted to reduce air borne dust particles.*

### **2.3 Fugitive emission management**

*There are 03 crushers viz. Primary crusher-New (700TPH), Primary crusher-Old (700TPH) & secondary crusher (700TPH). To curtail the fugitive emission at various points following is provided:*

- i. Adopted wet drilling operations.*
- ii. Conditioning of ore is carried out during crushing. Mist water spraying system at ore crushing area followed by bag filter & adequate stack height.*
- iii. The conveyor belt of ore mill plant & beneficiation ore plant are covered. Dust extraction system & water sprinkling*

*nozzles are installed on conveyor belts, transfer points & stockpiles.*

- iv. Installed Semi-Autonomous-Grinding mills to eliminate dry secondary and tertiary Crushing.*
- v. Water sprinkling is carried out by 04 nos. of 40KL water sprinkler on Haul roads of mine area.*
- vi. The use of chemical wetting agents for dust suppression on haul roads.*
- vii. Cleaning of industrial roads by truck mounted mechanical road sweepers*

*Ambient air quality manual monitoring is carried out at 3 locations inside mine i.e. Mine Site, Mine Gate & Mine tower and 3 locations outside the mine area i.e. Agucha Village, Khotiya village and Bherukhera village twice monthly for SPM, PM10, PM2.5, SOx, NOx & CO. All the monitoring locations are meeting 24 hourly National Ambient Air Quality Standards, 2009. Monitoring reports since 2017 to 2020 is as tabulated below:*

Month	PM10 @ Mine Site				Agucha Village				Kothiya Village				Bherukhera Village			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Jan	78.64	76.32	76.39	71.25	61.47	62.09	66.34	63.44	57.8	56.24	68.22	56.29	56.57	61.49	62.37	62.84
	81.52	84.61	92.03	79.82	60.61	68.61	70.14	62.5	57.19	59.7	57.59	60.78	51.13	58.26	59.7	55.96
Feb	77.67	88.13	84	69.04	68.14	61.92	63.47	61.63	57.24	52.73	67.2	56.29	56.85	64.8	66.47	55.75
	78.01	76.19	85.33	87.16	71.39	57.02	67.67	63.67	62.98	55.42	67.51	52.32	47.15	59.6	66.88	77.67
Mar	74.14	79.99	83.67	68.84	68.23	63.65	67.11	59.7	56.16	59.94	67.08	54.89	59.59	63.73	59.6	55.15
	82.03	82.73	77.64	73.12	73.82	61.83	67.2	60.95	62.17	68.8	64.58	53.29	53.21	62.3	61.4	53.13
Apr	82.87	86.22	79.99	63.71	69.78	76.52	76.19	49.97	61.11	71.78	67.08	54.89	64.37	72.75	59.6	55.15
	85.52	87.19	78.37	69.71	71.22	73.53	69.67	60.95	60.03	64.4	64.58	53.29	56.09	66.82	61.4	53.13
May	87.28	85.92	86.94	68.76	73.58	62.16	76.59	62.97	60.7	67.57	66.24	62.3	61.42	62.3	62.43	57.39
	81.67	91.53	82.58	73.25	65.67	68.23	67.97	62.3	60.73	69.88	64.96	53.35	53.6	66.41	73.77	50.37
Jun	77.68	79.63	88.41	74.74	68.43	63.17	66.64	62.1	60.7	60.38	67.59	59.09	63.1	59.5	66.24	58.96
	47.51	80.31	81.2	68.43	49.1	65.42	71.93	60.21	63.32	61.25	67.66	57.76	66.36	63.95	66.5	56.03
Jul	69.78	75.51	68.98	71.92	62.9	57.82	57.08	62.36	60.7	79.44	60.23	65.87	62.5	64.15	60.14	52.49
	54.07	57.91	70.67	72.65	53.59	50.2	44.18	48.94	51.32	54.51	57.67	49.42	47.8	49.69	64.92	56.09
Aug	72.12	84.54	64.38	74.03	48.27	57.33	56.32	71.87	59.84	73.68	43.74	57.76	56.85	67.02	45.1	56.03
	74.4	74.64	68.18	66.52	53.81	53.71	60.23	39.8	50.32	61.21	57.76	38.93	51.05	65.23	53.49	46.43
Sep	75.59	74.91	67.06	59.6	66.48	64.7	56.16	78.93	59.5	63.06	49.34	68.91	56.57	63.03	52.88	75.58
	78.57	61.7	58.82	83.94	58.63	69.99	43.72	55.06	63.13	72.17	41.21	48.45	52.21	63.89	42.15	52.55
Oct	88.4	65.97	67.06	88.74	59.59	66.79	60.74	79.8	54.55	65.64	52.35	52.98	67.95	67.74	55.34	51.61
	85.33	79.15	86.79	75.43	52.78	56.82	66.28	72.9	55.02	54	52.76	53.16	55.15	49.54	51.87	58.83
Nov	74.5	74.83	68.31	71.48	59.16	66.07	60.75	74	62.02	65.64	52.35	63.63	61	65.67	55.35	58.17
	79.24	83.36	85.83	82.45	72.76	60.23	69.07	73.68	74.79	71.99	57.32	67.74	74.81	68.9	63.2	59.16
Dec	75.12	73.78	71.11	76.46	59.56	65.77	63.1	56.36	59.87	61.42	59.03	55.62	56.24	65.04	55.03	56.51
	83.05	73.07	78.38	72.82	66.45	51.89	66.07	61.49	50.4	55.24	60.09	60.08	63.29	56.24	65.33	64.04

The available limited ambient air quality data for PM<sub>10</sub> of last 03 years i.e. 2018 to 2020 compared with air quality data of year 2017 revealed that the Air Quality was stable with no incremental value in last 03 years in and around the surrounding villages i.e. Agucha, Kothiya & Bherukhera. Monitoring reports since 2017 to 2020 are enclosed as an Annexure-VIII.

The monitoring reports of AAQM carried out by Rajasthan State Pollution Control Board during 2018 to 2020 also shows that all the location were meeting the 24 hourly NAAQS, 2009. Reports are enclosed as an Annexure-IX. The results are briefed as below.

S. No.	Sampling Location	Date of monitoring	PM10 (µg/m3)
1.	Main Gate of the Unit	06.08.2018	83
		25.11.2019	75
		28.12.2020	90
2.	Mine Pit of the Unit	06.08.2018	75
		28.12.2020	72
3.	Mine Tower of the Unit	06.08.2018	67

		25.11.2019	93
		28.12.2020	92
4.	Agucha Village	25.11.2019	79
5.	Bherukhera Village	25.11.2019	91
6.	Kothiya Village	25.11.2019	84

Unit has installed 03 Continuous Ambient Air Quality Monitoring System (CAAQMS) of AEROQUAL AQM 65 Make; installed one in upwind and 02 in downwind direction. The Ambient Air Quality Monitoring is carried out for CO, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> & TSP. The location is as tabulated below:

S. No.	Location of CAAQMS	GPS coordinates
1	Orica site	25.830029, 74.731033
2	Main Gate	25.839174, 74.727852
3	Near Waste dump (100mtrs from dump)	25.840778, 74.755961

## 2.4 Water management

- i. M/s HZL Rampura-Agucha mine has daily water requirement of 16198KLD. Out of which 8450KLD as fresh water is received from the radial well in Banas River. Central Ground Water Board has issued NOC for 11700KLD ground water extraction from existing Radial Well/Tubewell vide letter dated 8.7.2013. Unit has applied for renewal vide letter dated 4.4.2018.

The water sources against the daily requirement are as below:

S. NO.	Source of water	Quantity in KLD	Water Quality	Major usage	Water use (%)
1	River Water	8450	Fresh water	Drinking Plant domestic consumption Reagent preparation Colony Process make up	55.2%
2	Tailing dam	7192	Recycled	Milling and Mining process water sprinkling on road vehicle washing,	44.4%

				cooling towers paste filling	
3	Mine dewatering	189	Fresh water	Milling and Mining process water sprinkling on road vehicle washing cooling towers paste filling	1.2%
4	STP treated water	367	Treated water	Horticulture	2%

- ii. To improve the water recovery from beneficiation plant; all the conventional thickeners retrofitted to High Rate Deep Cone Thickeners.
- iii. Sewage treatment plant of 425 KLD capacity in colony and 300 KLD in mine area was found operational. The treated effluent is used in horticulture & dust suppression. Oil and grease trap installed for workshop effluent.
- iv. There are 02 water bodies near mine lease. River Khari in North and River Mansi in South; which are 4 kms and 1.2 kms far from the buffer zone respectively. The water course was not found obstructed due to the mining operations as there is no mine activity of M/s HZL outside the mine lease area.
- v. The ground water monitoring in and around the mine lease area is being carried out through 08 piezometer well & 11 wells; four times in a year. The Six-monthly compliance reports of last 03 years (2018-2020) have shown no significant change in the ground water quality. Copy of the Groundwater report is enclosed as an Annexure-X.
- vi. The piezometer named as ADM, P, K & A are in upstream of tailing dam whereas piezometers viz. E,G, H & I are in downstream of the tailing dam. The piezometers water sampling carried out by Rajasthan State PCB during 2014 to 2020 revealed no significant increment trend for any parameter in consecutive years. The increased values of Hardness, Chloride, Sulphate in one year followed by reduced concentration in next year may be due to the varying sampling schedule. The reports are enclosed as an Annexure- XI. The results are as tabulated below:

		pH	Total Hardness	SO <sub>4</sub> <sup>2-</sup>	Cl-	F-	Fe	Pb	Cd	Zn
	<b>IS 10500:2012</b>	<b>6.5-8.5</b>	<b>600</b>	<b>400</b>	<b>1000</b>	<b>1.5</b>	<b>0.3</b>	<b>0.01</b>	<b>0.003</b>	<b>15</b>
<b>Piezometer A</b> near Material Gate (near Bherukhera village opening)	31.10.2014	8.31	650	162.5	880	0.96	ND	ND	ND	ND
	15.2.2017	8.21	ND	779	292	ND	0.168	0.04	NT	0.193
	28.12.2020	7.81	1392	359	260	0.545	0.147	NT	NT	NT
<b>Piezometer ADM</b> near Admin Block.	31.10.2014	7.87	540	475	568	0.56	ND	ND	ND	ND
	15.2.2017	8.01	ND	1302	408	ND	0.275	0.065	NT	0.141
	28.12.2020	7.97	260	376	164	0.62	0.404	NT	NT	0.253
<b>Piezometer E- 1</b> behind new pump house	15.2.2017	8.10	ND	1656	536	ND	4.73	0.072	NT	1.04
	28.12.2020	8.2	916	230	232	0.524	0.210	NT	NT	0.025
<b>Piezometer G-1</b> near Papri Kheda Village downstream of Tailing Dam)	28.12.2020	7.97	500	290	248	0.481	0.213	NT	NT	0.049
<b>Piezometer H</b> near Tailing Dam.(before IBP)	31.10.2014	7.6	528	255	968	0.8	ND	ND	ND	ND
	15.2.2017	7.97	ND	198	160	ND	0.862	0.047	NT	0.275
	28.12.2020	8.0	744	314	288	0.549	0.412	NT	NT	0.056
<b>Piezometer I-1</b> near reclaim water pump house	31.10.2014	8.48	320	305	944	0.76	ND	ND	ND	ND
	28.12.2020	8.0	656	338	272	0.478	0.393	NT	NT	0.136
<b>Piezometer K</b> CISF Colony (near mine pit boundary)	31.10.2014	8.34	290	105	468	1.42	ND	ND	ND	ND
	15.2.2017	8.24	ND	178	136	ND	0.476	0.046	NT	1.19
	28.12.2020	7.9	464	251	184	0.547	2.36	NT	NT	0.24
<b>Piezometer P</b> near Central Workshop	31.10.2014	8.1	560	52	664	1.16	ND	ND	ND	ND
	15.2.2017	8.02	ND	1269	480	ND	0.630	0.075	NT	0.183
	28.12.2020	7.8	572	534	284	0.449	0.44	NT	NT	0.089
<b>Tailing Dam Water</b>	28.12.2020	7.2	2024	1400	1480	0.578	0.297	NT	NT	2.94

A study conducted by National Environmental Engineering Research Institute (NEERI) Nagpur in year 2016 as “Assessment of aquifer vulnerability at Rampura-Agucha Mine of Hindustan Zinc Limited” concluded as:

“Comparison of characteristics of tailing dam water/seepage water with that of groundwater quality around the tailing dam of RA mine revealed that there is no co-relation between the characteristics of tailing dam water/seepage water and the groundwater quality around the tailing dam especially in the downstream direction (North, North-East, East). It is therefore concluded that construction and operation of tailing dam at RA mine has not posed any threat to groundwater resources in the area. The high values of TDS, Chlorides, Sulphate and Sodium in groundwater, which was observed both in upstream as well as downstream of tailing dam be attributed to the local geological and hydrogeological setup of the study area.

Although there is seepage of water from the tailing dam for last few years, the contamination of groundwater has not occurred, possibly



due to existence of clayed soil and hard, compact and massive rocks beneath the tailing dam area as established through reported geophysical investigations.”

The copy of the **NEERI, 2016 report** is enclosed as an Annexure-XII.

## **2.5 Overburden management**

- i. The annual Overburden (OB) generation is to the tune of 2.0 million metric tonnes per annum (MMTPA) which is presently stacked within the mine lease boundary. The height of OB dump varies from 20 m to 140 m at present. Vide amended Environmental Clearance letter no. J-11015/267/2008-I-A-II (M) dated 22.08.2014 the maximum height of dump allowed from 100m to 140m (in two lifts of 20m each). Copy of the EC dated 22.08.2014 is enclosed as an Annexure-XIII.
- ii. Waste is dumped in earmarked location with 7 lift of 20 m each to maximum height of 140 mtrs. The overall slope is maintained in tune of 27°. The waste dump design and slope stability is reviewed by Central Institute of Mining & Fuel Research, Dhanbad (CIMFR).
- iii. The stabilization of the OB dump through vegetation is carried out in phase manner. The dumps are covered by geo-textiles sheet. As informed, total Geo-textiles 1,45,000 M<sup>2</sup> (14.50 Ha.) laid at waste dump
- iv. Garland drain is constructed along the waste dump toe and mining pit, along with siltation pond. This provides retention for silt settlement. Rainwater collection sumps of about 8.5 Lakhs M<sup>3</sup> capacity are constructed. The collected water is utilized for watering in mine area, roads, green belt development. Retaining wall at the toe of the OB dump is constructed along the garland drain. However, de-siltation of the drain needs to be regularly carried out to avoid any discharge outside the lease boundary.

## **2.6 Tailing management**

The tailing dam is in 4.5kms perimeter. The sides of the tailing dam are lined with HDPE. The present height of tailing dam is 54 meter. Height rising by 6m was ongoing. Garland drains are constructed around the tailing pond with pumping arrangement to collect any seepage and rainwater runoff back to tailing pond. The tailings of the beneficiation plant are being disposed through closed pipeline to the earmarked tailing dam after lime treatment. The tailing dam water is reused in the process plant.

## **2.7 Green belt development**

- i. Safed babool is the most abundant tree species planted in the project area; along with other species viz. Shisham, Pongamia, Bombax Ceiba, Tamarind, Arjun, Amla etc. **The green cover was observed less dense (<1500tree/hectare). As per the Env Clearance dated 11.12.2009 condition XVI “The density of the trees should be around 1500 plants per hectare.”**
- ii. As per the study carried out by Terracon Ecotech Pvt Ltd (Sept 2015) there were 91 various tree species recorded.

iii. The details of the plantation in the lease area is as tabulated below:

<b>RAMPURA AGUCHA MINE (With in lease)</b>			
<b>S. No.</b>	<b>Session of Plantation</b>	<b>Plantation Status</b>	<b>Plantation Area (Ha.)</b>
<b>1</b>	Till- 2014-15	283,550	243.30
<b>2</b>	2015-16	7,100	4.70
<b>3</b>	2016-17	4,000	4.20
<b>4</b>	2017-18	17,000	17.00
<b>5</b>	2018-19	20,000	20.00
<b>6</b>	2019-20	20,000	20.00
<b>7</b>	2020-2021	20,000	20.00
<b>Plantation total</b>		<b>371,650</b>	<b>329.20</b>
<b>S.NO.</b>	<b>Geo-textile with seed spreading and plantation</b>	<b>Area Sqm</b>	<b>Area Ha.</b>
1	Till -2016-2017	72000	7.2
2	2017-2018	8000	0.8
3	2018-2019	15000	1.5
4	2019-2020	25000	2.5
5	2012-2021	25000	2.5
Geo-textile Total		145000	14.5
<b>Total Green belt (Plantation + Geo-textiles)</b>			<b>343.7</b>
<b>Plantation Out site lease</b>			
<b>S. No.</b>	<b>Area/Location</b>	<b>Plantation Area (Ha.)</b>	
1	COLONY SITE	37.76	
2	ROAD SIDE (FROM COLONY TO MINE)	7.15	
3	OTHERS (In Govt Land near Parasrampura)	8.00	
<b>Total Area</b>			<b>52.91</b>

## **2.8 Committee observations**

The M/s Hindustan Zinc Ltd Rampura-Agucha (RA) mine is majorly complying the stipulated norms under Environmental Clearance granted in year 2009 and EC amendment thereafter. **However, committee observed following non-compliances after having field visit and document verifications:**

- 1. The plantation cover reported was found less dense as per the EC, 2009 specific condition no. xvi.**
- 2. De-siltation of the tailing dam garland drain needs to be regularly carried out to avoid any overflow towards North direction of the tailing dam.**
- 3. The crusher area needs to have rubber/transparent curtains to curtail the fugitive emission during unloading of the ore in crusher area.**

- 4. Water sprinklers needs to be established in more number to curtail the fugitive emission during truck movement on the haul road.**

**3.0 Visit of the affected area**

The committee members visited village Araniya Chauhan; where along with applicant Sh Om Puri, villagers of Araniya Chauhan, Agucha, Kothiya and others were present. The issues related to loss to agriculture produce, domestic animals, livestock's & human health, cracks in property and contamination of the groundwater were heard by the committee. The committee visited few fields where damaged wells, pits in land were shown. Water samples were collected by Rajasthan State PCB for analysis.

The issues raised by the villagers were discussed with the concern departments of the district on 13th July 2021. The summary of the details provided by the concern departments is as below:

**3.1 Status of the water quality in Hurda block, Bhilwara**

Public Health Engineering Department, Govt. of Rajasthan carry out periodic sampling from the shallow Tubewell & delivery point. **The water analysis report since 2017 of Hurda block of Bhilwara district reflect that the Panchayat of Aguncha, Barantiya, Kotri, Bhojras, Barla & Hurda falls in the 10 kms of the periphery of the M/s HZL Rampura-Agucha mines are having high concentration of Chloride, Nitrate, Total Dissolved Solids, Fluoride, Hardness & Sulphate w.r.to the drinking water standards IS 10500:2012. The high values of these drinking water parameters in groundwater, which was observed in all around the mine villages, be attributed to the local geological and hydrogeological setup of the study area as earlier reported in the report of NEERI. The maximum values observed at Panchayats are as tabulated below:**

Name of the Panchayat	Geo-graphical location		Observed maximum concentration (in mg/l) since 2017					
	Latitude	Longitude	Cl <sup>-</sup>	NO <sub>3</sub> <sup>-2</sup>	TDS	F <sup>-</sup>	Hardness	SO <sub>4</sub> <sup>-2</sup>
Aguncha	25.824069	74.72732	2320	620	8760	5.6	3350	751
Barantiya	25.79141	74.76407	3000	238	7650	6.9	3700	1710
Kotri	25.88827	74.73792	3950	206	9180	3.5	2650	516
Bhojras	25.772225	74.66049	1490	338	4370	8.4	1250	400
Barla	25.833413	74.69219	3500	208	8270	8.7	2890	1510
Hurda	25.897337	74.68903	1330	378	4920	3.6	2026	614
<b>Drinking water (IS 10500:2012) Permissible limit</b>			<b>1000</b>	<b>45</b>	<b>2000</b>	<b>1.5</b>	<b>600</b>	<b>400</b>

The analysis report submitted by the PHED department is enclosed as an Annexure-XIV.

04 groundwater samples were collected from few locations using the available tube-well or open wells during the visit from Araniya

Chauhan village to characterize the groundwater quality. These samples were taken from random depths of confined / unconfined aquifers as monitoring network was not readily available around the plant site. **The committee observed significant variation in groundwater table at visited places that shows, there is a strong heterogeneity of groundwater flow regime of the area. The NEERI report is related to groundwater pollution and its sources apportionment is quite old. Thus, it is difficult to conclude that quantity and quality of groundwater resources of the area are not affected by the Industrial activities.**

A further groundwater sampling during the pre and post monsoon seasons is needed to be conducted by the industry from appropriate depths and locations in and around the plant premise. It is also suggested to conduct hydrogeological survey of the plant site using a series of geophysical investigations and suitable pumping/recovery testes to map the groundwater flow regime and its seasonal dynamics. Isotopic analysis of surface and groundwater samples of the area is recommended strongly to establish the sound linkages between the possible subsurface pollutants and the Industrial activities of the area.

The water samples collected on 12.7.2021 from 04 locations shown the following water quality:

S. No.	Location	pH	Cl <sup>-</sup>	Hardness	F <sup>-</sup>	SO <sub>4</sub> <sup>2-</sup>	Zn
1.	Open well in Agri field of Sh Bhawani Shankar Mali, Araniya Chauhan village	7.66	1920	876	1.31	633	0.768
2.	Open well in Agri field of Sh Ram Prasad Mali, Araniya Chauhan village	7.64	2200	940	1.35	1087	0.363
3.	Borewell in Agri field of Sh Bhawani Shankar Mali, Araniya Chauhan village	7.56	2440	868	1.74	678	0.137
4.	Open well in the land of Sh Ram Chandra Regar, Near highway	7.59	3280	1036	2.14	629	0.111
<b>IS 10500:2012</b>		<b>6.5-8.5</b>	<b>1000</b>	<b>600</b>	<b>1.5</b>	<b>400</b>	<b>15</b>

Note: All values are in mg/l except pH.

**The analysis result reveals that the Chloride, Hardness & Sulphate is in higher concentration at all the 04 locations of the Araniya Chauhan village. The fluoride concentration was also observed higher at 02 locations w.r.to the prescribed IS 10500:2012 standards of 1.5 mg/l.**

The analysis report is enclosed as an Annexure-XV

### 3.2 Status of agriculture production

The 04 years (Since 2017) agriculture production details of Gram Panchayat Agucha provided by the office of Assistant Agriculture Officer, Gulabpura-I is as tabulated below:

S. No.	Crop	Year-wise production in Quintal/Ha				Remark
		2017-18	2018-19	2019-20	2020-21	
1.	Wheat	40.5	42.5	48.12	50.6	The production of Urad & Moong reduced in year 2019-20 & 2020-21 due to Yellow Mosaic disease and excess rain.
2.	Barley	28.5	30.3	31.0	31.5	
3.	Gram	9.5	10	15	10.62	
4.	Mustard	13.5	14.0	15.0	15.5	
5.	Maize	25.5	26.0	24.5	27.0	
6.	Cotton	23.0	24.0	26.5	25.8	
7.	Urad	7.125	7.625	9.5	1.8	
8.	Moong	6.0	6.7	5.7	5.0	

**The Agriculture department's water test reports of year 2016 & 2019 of villages viz. Bherukhera, Agucha, Parasrampura, Kalyanpura, Kothiya, Balapura & others revealed that the pH ranges between 7 to 8.7, Sodium Adsorption Ratio ranges between 2.04 to 38.6 and the Electrical Conductivity ranges between 1.9 to 14.9mS/cm that makes the water alkaline & saline.**

**For such water quality, it is recommended to increase the number of the water irrigation and use of gypsum.** The report is enclosed as an Annexure-XVI

### 3.3 Status on the loss of livestock

A report submitted by Dr Satish Malvi, Veterinary Hospital, Hurda, Bhilwara dated 17.7.2021 state that a three member committee was constituted for surveying the records of the Veterinary hospitals established nearby the M/s HZL Rampura Agucha mine for any livestock death reported due to the pollution. The report concludes that there is no entry available in the outdoor records that show ill-effect of pollution on the livestock. The report is enclosed as an Annexure- XVII.

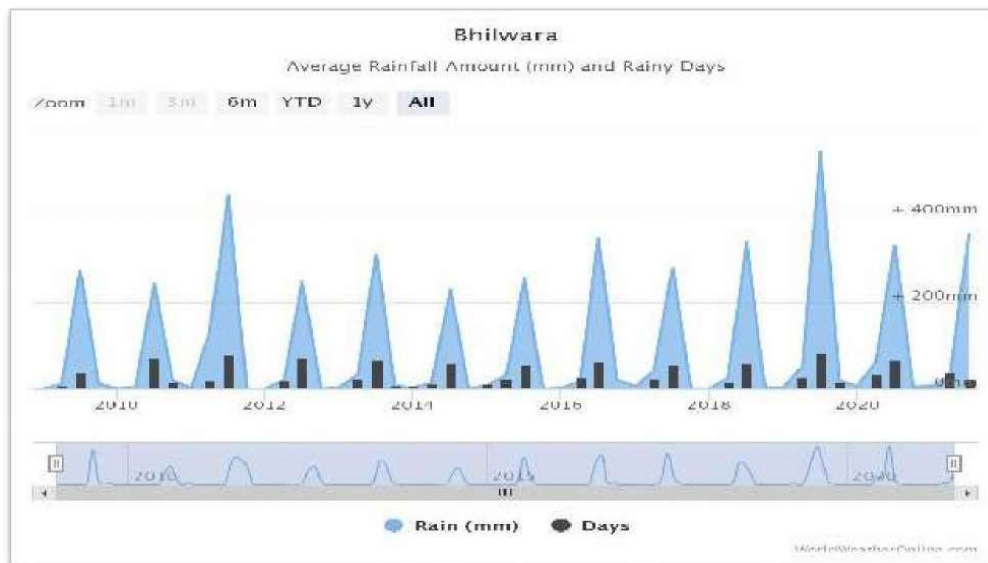
### 3.4 Status of ground water level around the mine lease area

The information provided by the Groundwater department, Bhilwara regarding the groundwater level trend around the periphery of Rampura Agucha mining area from year 2011 to 2020 is as tabulated below:

Year	Duration	Water level in meter around the peripheral villages of Rampura Agucha mine area				
		Agoocha (Dug well) GPS location (25.821942, 74.731394)	Agoocha (Piezo-well) GPS location (25.826836, 74.729236)	Bhairon Khera (Piezo-well) GPS location (25.816861, 74.764139)	Hurda Seja (Dug well) GPS location (25.902631, 74.68325)	Kothiya (Dug well) GPS location (25.8717, 74.767406)

2011	Pre-Monsoon	DRY	9.15	-	9.95	Covered
	Post-Monsoon	DRY	1.00	-	8.10	Covered
2012	Pre-Monsoon	DRY	3.95	-	10.85	12.25
	Post-Monsoon	DRY	1.10	-	8.30	4.35
2013	Pre-Monsoon	DRY	5.95	-	10.20	13.55
	Post-Monsoon	DRY	2.47	-	7.80	6.20
2014	Pre-Monsoon	11.8	5.90	-	15.60	15.15
	Post-Monsoon	11.7	1.45	-	7.60	5.35
2015	Pre-Monsoon	11.7	5.75	-	10.00	14.15
	Post-Monsoon	13.5	3.60	-	8.75	13.55
2016	Pre-Monsoon	14.6	14.35	-	10.40	DRY
	Post-Monsoon	9.00	2.15	-	7.60	3.15
2017	Pre-Monsoon	11	5.65	-	9.2	11.5
	Post-Monsoon	12.6	8.65	-	7.20	12.45
2018	Pre-Monsoon	15.00	13.65	-	8.90	12.25
	Post-Monsoon	13.00	4.35	2.30	4.20	10.80
2019	Pre-Monsoon	12.80	Filled	4.90	10.00	12.80
	Post-Monsoon	1.80	0.35	0.80	4.90	2.40
2020	Pre-Monsoon	9.60	2.85	1.30	6.50	3.05
	Post-Monsoon	6.30	2.95	3.20	6.70	1.85
<b>Fluctuation from Pre 2011 to Pre 2020</b>		-	<b>6.30</b>	-	<b>3.45</b>	-

The water level report reveals that the water level of village Agucha & Hurda Seja in year 2020 positively increased by 6.30 mbgl & 3.45 mbgl respectively since 2011 level. The water level information is enclosed as an Annexure- XVIII. On comparing the water level during last 3 years viz. 2018 to 2020; it is observed that water level positively increased in all the 05 locations round the mine area. This indicates towards the high recharge in the area either by more rainfall or by seepage from the large water pond existing in the industrial premise. As per the last 10 years of average rainfall data, highest average rainfall of + 550mm was observed only during the year 2019 since 2011. This shows possibility of groundwater flow from Industrial zone towards the surrounding regions. The average rainfall detail is as below:



**The damage of the water well and formation of the large pits in land may be due to rising sub- surface water level. It is suggested having the hydro-geological survey of the affected area using geophysical investigations and suitable aquifer testes to map the groundwater flow regime of the area.**

**3.5 Status of the Health in villages around the mine lease area**

As per the information furnished by Block Chief Health Officer, Gulabpura, Bhilwara vide letter dated 26.8.2021 of the last 05 years (2017-20) Out-Door Patients (OPDs) visits in Gulabpura blocks hospitals i.e. Hurda, Agucha, Ruphailekalan, Kanwliyas, Sareri & Gulabpura, it was observed that only 0.03% OPDs were w.r.t. Asthma. Also the OPD visits with Asthma from 2018-20, not showing any significant increasing trend w.r.to 2017 OPDs. The copy of the same is enclosed as an Annexure- XX.

The field photographs are enclosed as an Annexure-XXI.

**4.0 Monetary value of damage to the environment in the last three years**

To bring out the damage to the environment done by the Project Proponent (M/s Hindustan Zinc Ltd Rampura Agucha mine) in the last three years i.e. 2018, 2019 & 2020; the committee gone through the Six Monthly Environmental Clearance Compliance reports submitted by the (PP) since 2017 to the Statutory Authorities i.e. MoEF&CC, CPCB & RSPCB. Based on the available information and compliance observed during field visit on 12th July 2021, **the committee brought out that less dense plantation may be considered as the major non-compliance during last 03 years w.r.to the Environmental Clearance condition.**

**4.1 Monetary value against the less dense plantation in last 03 years**

The details of plantation carried out during last 03 years i.e. 2018-19 to 2020-21 are as tabulated below:

<b>RAMPURA AGUCHA MINE (With in lease)</b>			
<b>S. No.</b>	<b>Plantation in last 3 years</b>	<b>Plantation Status</b>	<b>Plantation Area (Ha.)</b>
1.	2	20,000	20.00
2.	2	20,000	20.00
3.	2	20,000	20.00
<b>Plantation total</b>		<b>60,000</b>	<b>60</b>

The average per hectare plantation is = **1000 trees/Ha**

As per the Environmental Clearance dated 11.12.2009 specific condition no. xvi "The density of the trees should be **around 1500 plants** per hectare."

So, the difference in plantation/hectare = **(1500 – 1000) = 500/ha**  
**Considering the cost of plantation & post-plantation care = Rs. 300/tree** (As per the EIA, 2009 report Chapter 7 Environmental Monitoring Programme of the Mine lease area) Copy enclosed as Annexure-XXII.

Monetary value against

the less dense plantation = Area under plantation **(2018-19 to 2020-21) x** (difference in plantation/Ha) **x** Cost of plantation  
= 60 x 500 x 300  
= Rs. 90,00,000/- (Ninety Lacs Rupees)

## **5.0 Recommendation:**

As per the factual situation of the compliance status observed by the committee during field visit on 12th July 2021, following is recommended:

1. A monetary value of Rs. 90,00,000/- (Ninety Lacs Rupees) against violating the Environmental Clearance, 2009 specific condition no. xvi for plantation may be imposed on the unit.
2. To increase the plantation as per the EC condition stipulated under condition no. xvi of EC, 2009.
3. Unit need to carry out the hydrogeological survey of the surrounding area to map the current groundwater flow regime and its seasonal dynamics for identifying the cause of pit formation in the surrounding areas.
4. Unit need to carry out isotopic analysis of surface and groundwater samples of the area to establish the sound linkages between the possible sub-surface pollutants and the industrial activities of the area.
5. The unit ensure de-siltation of the tailing dam garland drain regularly to avoid any overflow and seepages towards North direction of the tailing dam
6. To increase the number of water sprinklers to curtail the fugitive emission at crusher area, haul road & others."

4. We have heard learned counsel for the parties and given our consideration to the issue of remedial action against damage caused in the process of mining operations undertaken by the PP.



5. Learned counsel for the applicants has made pointed reference to the following observations of the report:-

“xxx.....xxxx.....xxx  
iv. The unit has obtained No Objection Certificate (NOC) for ground water extraction from radial well in Banas river from Central Ground Water Board vide letter dated 8.7.2013. Unit has applied for renewal vide letter dated 04.04.2018. Copy enclosed as an Annexure-IV. It is pertinent to mention that, as per the condition no. 11 (vi) of the notification no. S.O. 3289 (E) dated 24.9.2020 of Ministry of Jal Shakti (Central Ground Water Authority), the NOC shall be deemed to be extended till the date of renewal of NOC. The condition no. 11 (vi) states as :

**11.0 Renewal of No Objection Certificate**

v. If the application for renewal is submitted in time and the CGWA/ the respective State/ Ut Authority is unable to process the application in time, No Objection Certificate shall be deemed to be extended till the date of renewal of No Objection Certificate.

xxx.....xxxx.....xxx  
**Water management**

i. M/s HZL Rampura-Agucha mine has daily water requirement of 16198KLD. Out of which 8450KLD as fresh water is received from the radial well in Banas River. Central Ground Water Board has issued NOC for 11700KLD ground water extraction from existing Radial Well/Tubewell vide letter dated 8.7.2013. Unit has applied for renewal vide letter dated 4.4.2018.

xxx.....xxx.....xxx

**3.0 Visit of the affected area**

The committee members visited village Araniya Chauhan; where along with applicant Sh Om Puri, villagers of Araniya Chauhan, Agucha, Kothiya and others were present. **The issues related to loss to agriculture produce, domestic animals, livestock’s & human health, cracks in property and contamination of the groundwater were heard by the committee.** The committee visited few fields where damaged wells, pits in land were shown. Water samples were collected by Rajasthan State PCB for analysis.

The issues raised by the villagers were discussed with the concern departments of the district on 13th July 2021. The summary of the details provided by the concern departments is as below:

**3.1 Status of the water quality in Hurda block, Bhilwara**

Public Health Engineering Department, Govt. of Rajasthan carry out periodic sampling from the shallow Tubewell & delivery point. **The water analysis report since 2017 of Hurda block of Bhilwara**

**district reflect that the Panchayat of Aguncha, Barantiya, Kotri, Bhojras, Barla & Hurda falls in the 10 kms of the periphery of the M/s HZL Rampura-Agucha mines are having high concentration of Chloride, Nitrate, Total Dissolved Solids, Fluoride, Hardness & Sulphate w.r.to the drinking water standards IS 10500:2012. The high values of these drinking water parameters in groundwater, which was observed in all around the mine villages, be attributed to the local geological and hydrogeological setup of the study area as earlier reported in the report of NEERI. The maximum values observed at Panchayats are as tabulated below:**

Name of the Panchayat	Geo-graphical location		Observed maximum concentration (in mg/l) since 2017					
	Latitude	Longitude	Cl <sup>-</sup>	NO <sub>3</sub> <sup>-2</sup>	TDS	F <sup>-</sup>	Hardness	SO <sub>4</sub> <sup>-2</sup>
Aguncha	25.824069	74.72732	2320	620	8760	5.6	3350	751
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Barla	25.833413	74.69219	3500	208	8270	8.7	2890	1510
Hurda	25.897337	74.68903	1330	378	4920	3.6	2026	614
<b>Drinking water (IS 10500:2012) Permissible limit</b>			<b>1000</b>	<b>45</b>	<b>2000</b>	<b>1.5</b>	<b>600</b>	<b>400</b>

The analysis report submitted by the PHED department is enclosed as an Annexure-XIV.

04 groundwater samples were collected from few locations using the available tube-well or open wells during the visit from Araniya Chauhan village to characterize the groundwater quality. These samples were taken from random depths of confined / unconfined aquifers as monitoring network was not readily available around the plant site. **The committee observed significant variation in groundwater table at visited places that shows, there is a strong heterogeneity of groundwater flow regime of the area. The NEERI report is related to groundwater pollution and its sources apportionment is quite old. Thus, it is difficult to conclude that quantity and quality of groundwater resources of the area are not affected by the Industrial activities.**

A further groundwater sampling during the pre and post monsoon seasons is needed to be conducted by the industry from appropriate depths and locations in and around the plant premise. It is also suggested to conduct hydrogeological survey of the plant site using a series of geophysical investigations and suitable pumping/recovery testes to map the groundwater flow regime and its seasonal dynamics. **Isotopic analysis of surface and groundwater samples of the area is recommended strongly to establish the sound linkages between the possible subsurface pollutants and the Industrial activities of the area.**

The water samples collected on 12.7.2021 from 04 locations shown the following water quality:

S. No.	Location	pH	Ct	Hardness	F-	SO <sub>4</sub> <sup>2-</sup>	Zn
5.	Open well in Agri field of Sh Bhawani Shankar Mali, Araniya Chauhan village	7.66	1920	876	1.31	633	0.768
6.	Open well in Agri field of Sh Ram Prasad Mali, Araniya Chauhan village	7.64	2200	940	1.35	1087	0.363
7.	Borewell in Agri field of Sh Bhawani Shankar Mali, Araniya Chauhan village	7.56	2440	868	1.74	678	0.137
8.	Open well in the land of Sh Ram Chandra Regar, Near highway	7.59	3280	1036	2.14	629	0.111
<b>IS 10500:2012</b>		<b>6.5-8.5</b>	<b>1000</b>	<b>600</b>	<b>1.5</b>	<b>400</b>	<b>15</b>

Note: All values are in mg/l except pH.

**The analysis result reveals that the Chloride, Hardness & Sulphate is in higher concentration at all the 04 locations of the Araniya Chauhan village. The fluoride concentration was also observed higher at 02 locations w.r.to the prescribed IS 10500:2012 standards of 1.5 mg/l.**

The analysis report is enclosed as an Annexure-XV

### 3.2 Status of agriculture production

The 04 years (Since 2017) agriculture production details of Gram Panchayat Agucha provided by the office of Assistant Agriculture Officer, Gulabpura-I is as tabulated below:

S. No.	Crop	Year-wise production in Quintal/Ha				Remark
		2017-18	2018-19	2019-20	2020-21	
9.	Wheat	40.5	42.5	48.12	50.6	The production of Urad & Moong reduced in year 2019-20 & 2020-21 due to Yellow Mosaic disease and excess rain.
10.	Barley	28.5	30.3	31.0	31.5	
11.	Gram	9.5	10	15	10.62	
12.	Mustard	13.5	14.0	15.0	15.5	
13.	Maize	25.5	26.0	24.5	27.0	
14.	Cotton	23.0	24.0	26.5	25.8	
15.	Urad	7.125	7.625	9.5	1.8	
16.	Moong	6.0	6.7	5.7	5.0	

**The Agriculture department's water test reports of year 2016 & 2019 of villages viz. Bherukhera, Agucha, Parasrampura, Kalyanpura, Kothiya, Balapura & others revealed that the pH ranges between 7 to 8.7, Sodium Adsorption Ratio ranges between 2.04 to 38.6 and the Electrical Conductivity ranges**

**between 1.9 to 14.9mS/cm that makes the water alkaline & saline.**

**For such water quality, it is recommended to increase the number of the water irrigation and use of gypsum.** The report is enclosed as an Annexure-XVI

XXX.....XXX.....XXX

The average per hectare plantation is = **1000 trees/Ha**

As per the Environmental Clearance dated 11.12.2009 specific condition no. xvi "The density of the trees should be **around 1500 plants** per hectare."

So, the difference in plantation/hectare = **(1500 - 1000) = 500/ha**

6. In the light of above observations, it is submitted by learned Counsel for the applicants that the PP has caused extensive damage and has violated EC conditions and other norms. The Committee has noted some of the violations but has erroneously ignored some of the violations and thus recommendations made do not fully remedy the wrong caused in the process of the PP. There is damage to the wells, pits, loss to agriculture produce, livestock, contamination of ground water and land degradation which has not been fully appreciated on wrong assumption that clear proof of industrial activity being responsible for the damage is required. Once possibility of damage to the quantity and quality of ground water sources due to industrial activities was not ruled out, the PP should have been held accountable on precautionary principle. The water test reports show that water had become alkaline and saline. Merely recommending increase in water irrigation and use of gypsum is not enough. Soil needs remediation. The assumption that the damage to the water quality may be due to sub-surface water level for local hydro geological set up is uncalled for. It is against the 'Precautionary' principle to the effect that scientific certainty is not a condition precedent for requiring remedial measures. Environmental issues are governed by

reverse burden of proof which is on the PP to show that its activities are benign and not capable of harming environment. Thus, remedial action is required and mere further studies are not enough. Ground water extraction has continued even after expiry of permission granted for extraction on 08.07.2013. The unit has applied for renewal but no such renewal has been granted. Thus, the extraction of ground water has been going on illegally. Reference to the notification dated 24.09.2020 for claiming deemed permission for extraction of ground water could not apply to extract ground water extraction prior to the date of Notification and in view of judgment of the Hon'ble Supreme Court in *M.C. Mehta v. UOI & Ors.*,<sup>1</sup> undertaking assessment of availability of ground water before granting permission/renewal cannot be avoided by concepts of deemed permissions.

7. Learned counsel for the PP submitted that monetary value cost of plantation assessed by the Committee will be deposited by the PP and steps will be taken to increase the plantations as per EC conditions. The PP will also undertake further studies as suggested and ensure de-siltation of the tailing dam, garland dam and increase water sprinklers to curtail fugitive emissions. No further remedial action is required as the PP is not responsible for damage to the environment or health or fertility of soil or ground water.

8. We have duly considered the rival submissions. We find that the Committee has failed to consider the precautionary principle of environment laid down inter alia in *Vellore Citizens (1996) 5 SCC 647* and *MV Nayudu, (1999) 2 SCC 718* and on that basis ignored serious violations and damage to water and land. It has not gone into damage to

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<sup>1</sup>(1997) 11 SCC 312

health by simply referring to record of hospital admissions. While the recommendations for plantation, further studies for remedial action in other measures like de-siltation and increase of water sprinklers may certainly be undertaken, in view of damage to the quality of ground water resources adverse impact on soil, the PP has to take necessary restoration measures for improvement of water quality as well as soil. Violation of plantation condition has continued for a long period. Merely requiring cost of plantation to be depositing without fixing accountability for the past violations may not be adequate. Environmental law violations cannot be taken lightly when the violators are being entities like the present PP and victims are poor villagers. Annual turnover of the PP is said to be about Rs. 22,000/- Crores per annum<sup>2</sup> for the last more than three years and revenue receipt for the year 2020-2021 is more than Rs. 20,000/- Crores per annum, though it is stated that there is no separate figure for particular mining unit. The victims of damage are unspecified number of persons spread over in more than six Panchayats in Hurda block namely Bherukhera, Agucha, Parasrampura, Kalyanpura, Kothiya, Balapura & others. Thus, case is made out for requiring the PP to provide for compensation for the past violations and bear the cost of remediation, apart from complying with the recommendations of the Committee.

9. Even if the Committee has not been able to conclude with certainty that the PP is responsible for the damage, it is possible to infer damage to the groundwater due to activities of the PP. The groundwater quality is required to be co-related with the source by comparing with parameters

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<sup>2</sup> [https://www.google.com/search?q=turnover+of+hindustan+zinc+limited&rlz=1C1CHBF\\_enIN828IN828&sxsrf=APq-WBtzwf\\_5AM3zndm0jNmCvNUHf44Shg%3A1643790350753&ei=DkD6YYm1LevN5OUPpo6MsA4&aq=Turnover+of+Hindustan+Zinc+&gs\\_lcp=Cgdnd3Mtd2l6EAEYADIGCAAQFhAeOgolABCxAXCDARBDOgQIABBDOhEILhCABBcAXCDARDHARDRAzoFCAAQgAQ6BQguEIAEOgsIABCABBcAXCDAToICAAQgAQQsQM6BAguEEM6CAguEIAELEDQggIABCxAXCDAToFCAAQkQI6BwguELEDEEM6BwgAELEDEENKBahBGABKBahGGABQAFITU2CmYmgAcAJ4AIABnQKIAbUjkgEGMC4yMi41mAEEAoAEBwAEB&scient=gws-wiz](https://www.google.com/search?q=turnover+of+hindustan+zinc+limited&rlz=1C1CHBF_enIN828IN828&sxsrf=APq-WBtzwf_5AM3zndm0jNmCvNUHf44Shg%3A1643790350753&ei=DkD6YYm1LevN5OUPpo6MsA4&aq=Turnover+of+Hindustan+Zinc+&gs_lcp=Cgdnd3Mtd2l6EAEYADIGCAAQFhAeOgolABCxAXCDARBDOgQIABBDOhEILhCABBcAXCDARDHARDRAzoFCAAQgAQ6BQguEIAEOgsIABCABBcAXCDAToICAAQgAQQsQM6BAguEEM6CAguEIAELEDQggIABCxAXCDAToFCAAQkQI6BwguELEDEEM6BwgAELEDEENKBahBGABKBahGGABQAFITU2CmYmgAcAJ4AIABnQKIAbUjkgEGMC4yMi41mAEEAoAEBwAEB&scient=gws-wiz)

like Zinc and lead. With regard to the air quality, observations do not match the daily or annual average standards taking into account the resuspension of mine dust in the contiguous area. With regard to the blasting operations and continuing underground mining, comprehensive observations on the effect of such operations on the nearby houses have not been properly interpreted except mentioning with the DGMS norms and Peak Particle Velocity (PPV) was considered to be in the acceptable limits. Thus, remedial action is required for which the PP has to bear the cost and pay compensation on principles laid down by the Hon'ble Supreme Court inter-alia in MC Mehta (1987)1 SCC 395, Sterlite, (2013) 4 SCC 575 and Goel Ganga (2018) 18 SCC 257, taking into account financial capacity of the PP and the damage/violations.

9. Having regard to the violations/damage by the PP and overall estimated cost of ecological rehabilitation and restoration and financial capacity of the PP, we require the PP to deposit a sum of Rs. 25 crore with the District Magistrate, Bhilwada within three months to meet the cost of remediation measures. A joint Committee of CPCB, State PCB and District Magistrate, Bhilwada with the assistance of any other experts may prepare a restoration plan for remediating the soil and quality of ground water in the area, apart from undertaking health improvement programme for the inhabitants and the cattle. The action taken may be placed on the website of the District Magistrate, Bhilwada and its execution duly monitored. The remediation works may be got executed by an appropriate agency utilizing the amount deposited by the PP and the PP itself will have liberty to get the such work executed of restoration/rehabilitation on its own or through any other agency, if found proper by the joint Committee in the circumstances. A public awareness group may be setup jointly by the DM and the PP to list out

the issues requiring further action. The amount deposited will be utilized for executing the plan within one year, associating all stake holders, including the PP and civil society in a suitable manner, subject to overall supervision of the Committee. State PCB will be the nodal agency. In case the amount deposited is found to be deficient, the Tribunal may consider further directions, depending upon the material available. The joint Committee may have a report of status of compliance as on 31.03.2023 filed before the Registrar General of this Tribunal by e-mail at [judicial-ngt@gov.in](mailto:judicial-ngt@gov.in) preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF by 30.04.2023. In case any further direction becomes necessary, the Registrar General will place the matter before the Bench.

Subject to above, all the application stand disposed of.

A copy of this order be forwarded to CPCB, State PCB and District Magistrate, Bhilwada by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Dr. Nagin Nanda, EM

Dr. Afroz Ahmad, EM

February 02, 2022  
Original Application No. 226/2020 &  
Connected matters  
A + DV + AVT