vedanta
transforming for good

HINDUSTAN ZINC
Zinc & Silver of India

SPEED POST

Ref : HZL/Kayad/ENV/MOEF/2023-24/135 November 16, 2023

To,
The Deputy Director (S) /Scientist -C
Ministry of Environment, Forest & Climate Change,
Integrated Regional Office, A-209&218,Aranya Bhawan,
Jhalana Institutional area Jaipur-302004

Sub: Six monthly environmental compliance report from April 2023 to September 2023.

Ref : Env clearance vide No. : J-110115/47/2012-IA.II (M) dated 5th Feb, 2018.

Dear Sir / Madam,

Please find enclosed herewith the compliance status report of above referred Environmental Clearance granted by the Ministry of Environment, Forest and Climate Change for the period of **April 2023 to September 2023.** is for your kind perusal. Soft copy of compliance is also mailed and uploaded in the website.

Thanking you,

Yours faithfully

Director (SBU)
Hindustan Zinc Ltd.
Kayad Mine-305023
Dist.-Ajmer (Raj.)

(K.C. Meena)
Director- SBU Kayad Mine

Cc to:

In -Charge (Zonal office)
Central Pollution Control Board,
Vithal Market, Paryavaran Parisar ,
E-5, Arera Colony, Bhopal, – 462 016 (MP)

Member Secretary
Rajasthan Pollution Control Board
4 Institutional Area, Jhalana Doogri
Jaipur (Raj) -302004

The Regional officer
Rajasthan Pollution Control Board Regional Office,
SPL-II , RIICO Industrial Area, Phase-V , Kishangarh,
Dist. Ajmer-305801

Hindustan Zinc Limited
Kayad Mine, Ajmer

Environment Clearance Compliance Report: -

Name of the project: Kayad Lead- Zinc Underground Mine, M/S Hindustan Zinc Limited, Village kayad, Distt. Ajmer, Rajasthan.

Environmental Clearance letter no: J-11015/47/2012-IA.II (M) dated 5th Feb, 2018.

Period of Compliance report: April 2023 to September 2023

S.no	A. Specific Conditions	Compliance Status
1.	Environmental Clearance is Granted Subject to Under Hon'ble Supreme Court Judgment Date 02.08.2017	Noted
2.	Environmental Clearance is Granted Subject to Final Outcome of Hon'ble Supreme Court of India, Hon'ble High Court of Rajasthan and other Court of Law, if any, as May be Applicable to this project .	Noted
3.	This Environmental Clearance is subject to obtaining Requisite NBWL Clearance from the Standing Committee of National Board for Wildlife, if any, Applicable for this Mining Project	Not Applicable
4.	No Mining Activities Will be Allowed in Forest area, if any, for which the Forest Clearance is not Available.	No forest involved in mine lease area.
5.	This Project Shall obtain Consent to Operate from the State Pollution Control Board, Rajasthan and effectively implement all the Conditions Stipulated therein.	Consent to Operate was granted by Rajasthan State Pollution Control Board Vide F(Mines)/Ajmer(Ajmer)/303(1) /2017-2018/5559-5563 dated 06/01/2023 and valid till 31.01.2028 Annexure -VI All the conditions are being implemented effectively.
6.	The Proponent should install online Ambient Air Quality Monitoring System and there should be system for display of digital AAQ data within 03 months at least at three locations as per wind direction. Online provisions of pH and Turbidity meters at discharge points of STP and ETP and also at water storage pond in the mining area may be made; Project Proponent should display the result digitally in front of the main Gate of the mine site.	Online Ambient Air Quality Monitoring system installed and AAQ data digital displayed outside gate. pH and Turbidity meters at discharge point of STP and at a water storage pond in mining area installed and result digitally displayed. Annexure-VIII, No ETP at Kayad Mine .
7.	The Project Proponent has to take care of gullies formed on slopes. Dump mass should be consolidated with proper filling/leveling with the help of dozer/compactors. The report on slope and stability monitoring should be	Waste generated from Mining operations is being reused for back filling. No waste is accumulated at site.

	sent to MoEF & CC and its Regional office every six-month.	
8.	The reclamation at waste dump sites shall be ecologically sustainable. Scientific reclamation has been followed. The local species may be encouraged and species are so chosen that the slope, bottom of the dumps and top of the dumps are able to sustain these species. The aspect of the dump is also a factor which regulates some climatic parameters and allows only species adapted to that micro climate. This may be recommended to be studied by hiring Expert Ecology Group.	Waste generated from Mining operations is being reused for back filling. No waste is accumulated at site.
9.	There is need for regular monitoring of invertebrates and aquatic life of water bodies including the reservoir located close to the mining lease to establish that fish and other animals including the water is not 'contaminated with heavy metal. There could be a research on "bio accumulation of heavy metals in invertebrates" to completely establish that there is no impact of mining.	Study get done from M/s NEERI Nagpur and Report submitted. Annexure -VII
10.	A specialized Institution may be hired to carry out ecological survey on the plant species to evaluate their growth in terms of stunted, deformed and seed viability. The sensitive species and indicator species to heavy metal pollution may be screened out and plantation accordingly designed. Similarly, uptake of Zinc, Cadmium and lead etc. by crops and vegetables grown in the crop lands around the mining lease may be studied. Bottom sediment analysis of ponds, wells and Rivers to ascertain the level of accumulation of heavy metal may be done.	Study get done from specialized Institution M/s National Environmental Engineering Research Institute (NEERI), Nagpur and Report submitted.
11.	The Proponent shall conduct an Occupational health study with respect to the pressure impact on ear drums as person goes underground and implement the recommendations.	Occupational health study with respect to the pressure impact on ear drums as person goes underground conducted inhouse as well as from M/s Sure Safety. Report submitted.
12.	Project Proponent shall carry out vibration studies well before approaching any such habitats or other buildings to evaluate the zone of influence and impact of blasting on the neighborhood. Within 500 meters of such sites vulnerable to blasting vibrations, avoidance of use of explosives and adoption of alternative means of mineral extraction. A provision for monitoring of each blast should be made so that the impact of blasting on nearby habitation and dwelling units could be ascertained. The covenant of lease deed under Rule 31 of MCR 1960 provides that no mining operations shall be carried out within 50 meters of public works such as public roads and	Blasting being carried out during day time only and the vibration study is being done regularly by M/s CIMFR, Dhanbad. No secondary blasting being carried out at site.

	buildings or inhabited sites except with the prior permission from the Competent Authority.	
13.	Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. The material transfer points should invariably be provided with Bag filters and or dry fogging system. Belt-conveyors should be fully covered to avoid air borne dust; Use of effective sprinkler system to suppress fugitive dust on haul roads and other transport roads shall be ensured,	Mine haul road is being wetted through water tankers fitted with sprinklers. Annexure-XI Permanent water sprinkler fitted. Belt-conveyor at CRF is fully covered to avoid air borne dust. Ensured effective sprinkling system to suppress fugitive dust on haul and transport roads.
14.	The monitoring of PM2.5 in the vehicle emission shall be conducted to improve the mine environment and report submitted to the Regional Office of the MoEFCC.	The monitoring of PM2.5 in ambient air near vehicular movement is conducted but not able to monitor PM 2.5 in vehicular emission due unavailability of technology/ instruments.
15.	The Project Proponent reported that there are seven Schedule-1 species viz. Peafowl (Pavo cristatus), Osprey (Pandion haliaetus), Tawny eagle (Aquila rapax), Crested honey buzzard (Pernisptilorhynchus), Shikra (Accipiter badius), Leopard (Pantherapardus), Indian pangolin (Manis crassicaudata) in the study area. The PP shall implement the Conservation Plan and enhance the budget for implementation of Conservation Plan for Schedule I Specie and also increase the budget for plantation/green development. The Proponent shall implement the Wildlife Conservation Plan along with the funds so allocated with consultation of Chief Wild Life Warden of the State Govt. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office, Lucknow and the Chief Wild Life Warden of the State Govt.	Conservation plan has been developed for Schedule-1 namely Peafowl (Pavo cristatus) and has been approved by the additional Principal Chief Conservation of Forest and Chief wildlife warden Jaipur, Rajasthan and implemented the same. Action plan along with its implementation status report being submitted to RO MOEF & CC & Chief wild life warden of State Government.
16.	Proponent shall carry out monitoring of lead in the blood samples of the employees and the villagers in the areas surrounding the mine in their schedule of health check-up. The nearby water bodies shall be monitored every six months and report submitted to Regional office of the MoEFCC to ascertain impact due to lead contamination.	Lead in the blood samples of the employees carried out during their PME and villagers are monitored. Water samples analysis of nearby water bodies carried out regularly and report submitted.
17.	Implementation of Action Plan on the issues raised during the Public Hearing shall be ensured. The Project Proponent shall complete all the tasks as per the Action Plan submitted with budgetary provisions during the Public Hearing.	Being implemented
18.	Implementation of the outcome of study with regard to "optimization of blast design parameter for the safety and stability of surface structures and subsequent monitoring of vibration on the surface structures for their long term stability" which was carried out by Central Institute of Mining and Fuel Research should be ensured.	The Implementation of CIMFR study report is being ensured. • Regular vibration studies conducted through CIMFR • Peak Particle Velocity within ranging between 1.0 to 15.00 mm/sec

		• Due care is taken in blast design, explosives use, selection of detonators and delay to ensure safe vibration limit.
19.	Continuous monitoring of radioactive elements, if any, shall be undertaken till entire mine is dewatered and report has to be submitted to MoEFCC Regional Office. Periodic monitoring of any adverse impact of Radon and its daughter products on any worker should be included in the Occupational Health Monitoring Programmed.	The monitoring of radioactive element done, and report already submitted to MoEFCC Regional Office. No radioactive element trace in analysis. Periodic monitoring of any adverse impact of Radon and its daughter products on any worker included in the Occupational Health Monitoring Programmed
	B. Standard conditions	
1.	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest and Climate Change 5 years in advance of final mine closure for approval.	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted 5 years in advance.
2.	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment, Forest and Climate Change.	Assured to comply
3.	No change in the calendar plan including excavation, quantum of mineral and waste should be made.	Being ensured as per Mine Plan.
4.	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) for the project.	Renewal application submitted for permission. Recommendation by CGWB to CGWA done. NOC approved and valid till 09/10/2024. Surface water monitoring report attached Annexure XV
5.	Mining shall be carried out as per the provisions outlined in mining plan approved by Indian Bureau of Mines (IBM) as well as by abiding to the guidelines of Directorate General Mines Safety (DGMS).	Ensuring the Mining as per the Mine Plan approved by IBM and as per the guideline of DGMS
6.	The lands which are not owned by Proponent, mining will be carried out only after obtaining the consents from all the concerned land owners as per the provisions of the Mineral Concession Rules, 1960 and MMDR Act, 1957.	Ensured to comply
7.	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use. Pattern and report submitted to Ministry of Environment, Forest and Climate Change its Regional Office.	Digital processing of the entire lease area using remote sensing technique carried out M/s J.M. Envionet Pvt. Ltd. and Report submittedvide letter no HZL/Kayad/Enc/MoEF/22-23/94 dated 23 /11/2023 Annexure -XIV
8.	The critical parameters as per the Notification 2009 such as Pm, .10,. PM 2.5 NOx and Sox etc. in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored	The critical parameters such as PM10, PM 2.5, NOx and Sox etc. in the ambient air are being monitored within the impact zone,

	periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The circular No. 3-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.	peak particle velocity at Kayad Village being monitored regularly. Zero discharge is being maintained. PM 10, PM 2.5, NOx monitoring data and peak particle velocity data are being uploaded on website of the company as well as display board on main gate of the company.
9.	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of Phyllo and PM2.5 such as haul road, loading and unloading point and transfer points. Fugitive dust emissions from all the sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed under National Ambient Air Quality Standards (NAAQS) or by the Central Pollution Control Board in this regard. Monitoring of Ambient Air Quality to be carried out based on the Notification 2009, as amended from time to time by the Central Pollution Control Board.	An effective safeguard measure has been taken and regular water spraying on the haul road, loading and unloading area are being carried out. Ambient Air Quality parameters maintained and monitored as per National Ambient Air Quality Standards (NAAQS) or by the Central Pollution Control Board. Monitoring data enclosed as Annexure-II
10.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations. The monitoring shall be carried out four times in a year pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Regular monitoring of ground water level and quality is being carried out in and around the mine lease by establishing a network of existing wells and piezometers. No natural water course / water resources obstructed due to mining operations. The Water level and water quality Annexure -I.
11.	Regular monitoring of the flow rate of the springs and perennial allays flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in an around the village, should not be disturbed, The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table.	No springs and perennial allay flowing in and around the mine lease.
12.	Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority, Regional	Regular monitoring of water quality upstream and downstream of water bodies carried out and analysis report Enclosed Annexure-I

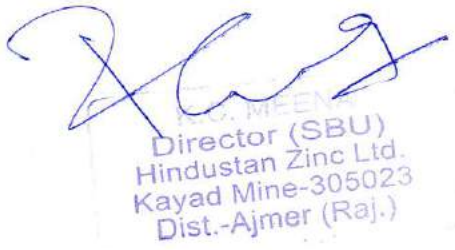
	Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	
13.	Transportation of the minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The project proponent shall bear the cost towards the widening and strengthening of existing public road network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.	Transportation of the lead & zinc ore is being done by road which is passing through Highways.
14.	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours.	Ensured the biological clock of the villagers by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limit for day and night. Annexure-III.
15.	Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. The material transfer points should invariably be provided with Bag filters and or dry fogging system. In case of Belt-conveyors facilities the system should be fully covered to avoid air borne dust; Use of effective sprinkler system to suppress fugitive dust on haul roads and other transport roads shall be ensured.	Permanent water sprinkler at near portal hual road and roads is being wetted through water tankers fitted with sprinklers. Annex- XI Effective sprinkling system is in place to suppress fugitive dust on haul road. Belt-conveyor at CRF is fully covered to avoid air borne dust.
16.	Sufficient number of Gullies to be provided for better management of water. Regular Monitoring of pH shall be included in the monitoring plan and report shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly bases.	Mine water monitored regularly, and report attached as Annexure - IV. Regular pH Monitoring Report enclosed Annexure-V.
17.	There shall be planning, developing, and implementing facility of rainwater harvesting measures on long term basis and implementation of conservation measures to augment ground water resources in the area in consultation with Central Ground Water Board.	Rainwater harvesting is being done and water recharge structure made in consultation with CGWA. Annexure- XII
18.	The Project Proponent has to take care of gullies formed on slopes. Dump mass should be consolidated with proper filling/leveling with the help of Dozer/compactors.	No dump mass, all the waste used in backfilling purpose.
19.	The reclamation at waste dump sites shall be ecologically sustainable. Scientific reclamation shall be followed. The local species may be encouraged and species are so chosen that the	No waste dumps. All the mine waste reused for backfilling in underground.

	slope, bottom of the dumps and top of the dumps are able to sustain these species. The aspect of the dump is also a factor which regulates some climatic parameters and allows only species adapted to that micro climate.	
20.	The top soil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time. The maximum height of the dumps shall not exceed 8m and width 20 m and overall slope of the dumps shall be maintained to 45°. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface runoff. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated area shall be backfilled and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.	The top soil stored at earmark location of 9000 CuM soil in 645 Sq M and developed a beautiful garden on it. All the waste utilized in the mine void refilling. No such OB Dump.
21.	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, roads, Green belt development etc. The drains shall be regularly desilted Particularly after monsoon and maintained properly. The drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps to prevent run off of water and flow of 'sediments directly into the river and other Water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt Material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.	Catch drains and siltation ponds constructed to collect and prevent run off water and flow of sediments directly into the river and other water bodies. Water so collected used for dust suppression in mine area haul roads, green belt development, recharge etc . The drain and settling pond are being regularly de-silted and maintained properly.
22.	Plantation shall be raised in a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around water body, along the roads etc. by planting the native species in consultation with the local DFO/Agriculture Department and as per CPCB Guidelines. The density of the trees should be around 2500 plants per ha. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	Plantation has been raised around boundary of acquired area along the road etc. and included the native species. More than 33% Greenbelt has been developed in mine area. Annexure -XIII
23.	Project Proponent shall follow the mitigation measures provided in Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014, titled "Impact of mining	Being ensured

	activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area", if any, applicable to the project.	
24.	The Project Proponent shall make necessary alternative arrangements, where required, in consultation with the State Government to provide alternate areas for livestock grazing, if any. In this context, Project Proponent should implement the directions of the Hon'ble Supreme Court with regard to acquiring grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded against felling and plantation of such trees should be promoted.	Ensured
25.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department, A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	A nursery has been developed within mine area for rare plant's species and other medicinal plants. Same being included in yearly plantation program to improve their existence.
26.	As per the Company Act, the CSR cost should be 2 % of average net profit of last three years. Hence CSR expenses should be as per the Company Act/Rule for the Socio Economic Development of the neighborhood Habitats which could be planned and ,executed by the Project Proponent more systematically based on the 'Need based door to door survey' by established Social Institutes/Workers. The report shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly bases.	The baseline needs assessment Survey done. Annexure XVI
27.	Provision shall be made for the housing of construction labor within the site with all necessary infrastructure and facilities such as Mel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed After the completion of the project.	The facilities are provided like Canteen, Toilets, STP Annexure IX, and safe drinking water and a permanent Doctor for their health care and crèche etc.
28.	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Regular monitoring of the noise in work environment is being carried out and workers engaged in operations of HEMM are being ensured with ear muffs.
29.	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Oil and grease trap have been installed at vehicle washing area and clean water reuse for vehicle washing- Annexure-X . Mine water reused for drilling and dust suppression, CRF Plant. Zero discharge Maintained.
30.	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with	Job specific PPE are mandatory for all workers and regular training

	adequate training and information on safety and health aspects.	being given on safety and health aspect.
31.	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A separate environmental management department is in place under control of SBU Director.
32.	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office.	The funds earmarked for environmental protection measures and kept in separate account. The expenditure from April 23 to September 2023 has been incurred Rs 41.14 Lacs.
33.	The project authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	No additional land is required for proposed expansion.
34.	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Central Pollution Control Board and State Pollution Control Board.	Being Complied
35.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	The project will extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.
36.	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing them proposal.	Complied
37.	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/Tehsildar's Office for 30 days.	Complied
38.	The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter Informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment, Forest and Climate Change at www.environmentclearance.nic.inand a copy of the same should be forwarded to the Regional Office.	Complied
14.	The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.	Assured to comply
15.	Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract	Assured to Comply

	action under the Provisions of the Environment (Protection) Act, 1986.	
16.	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/ High Court of Rajasthan and any other Court of Law relating to the subject matter.	Assured to Comply. Environment statement submitted to MoEF&CC dated 26/09/2023.
17.	Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Assured to Comply



HINDUSTAN ZINC LIMITED

KAYAD MINE

PIEZOMETER WATER ANALYSIS REPORT

	P-1		P-2		P-3		P-4		P-5	
Parameters	May-23	Sep-23	May-23	Sep-23	May-23	Sep-23	May-23	Sep-23	May-23	Sep-23
pH	7.06	7.1	6.57	7.05	7.5	7.1	7.13	6.65	7.09	7.12
Hardness	2289.72	623.85	2336.45	587.16	3457.94	642.2	1102.8	1192.66	3177.57	642.2
Iron	0.03	0.04	0.05	0.04	0.05	0.06	0.03	0.29	0.02	0.04
Chloride	2748.08	2612.67	2699.87	2375.15	3712.32	2660.17	2338.28	1235.08	3374.84	2565.16
TDS	7776	5580	6942	5244	9691	5426	5474	3355	9157	5375
Copper	0.03	BDL	0.03	BDL	0.04	0.02	0.02	0.02	0.03	BDL
Sulphate	2316.66	343.33	2600	331.66	3500	341.66	2033.33	975	3066.66	353.35
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.04	BDL	BDL
Lead	0.06	0.03	0.08	0.03	0.09	BDL	0.05	0.04	0.09	0.02
Zinc	BDL	0.02	4.7	BDL	0.09	BDL	0.12	18.65	10.11	0.02
Alkalinity	254.04	511.5	121.8	495	327.12	495	31.32	65.1	187.92	825
Nickel	0.03	0.02	0.12	0.02	0.06	0.06	0.04	0.04	0.09	0.02
Cyanide	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Cobalt	BDL	BDL	BDL	BDL	BDL	0.03	BDL	0.02	BDL	BDL
TSS	35	24	78	33	136	24	55	18	70	21
Total solid	7811	5604	7020	5277	9827	5450	5529	3373	9227	5396

All figureas are in mg/l except pH

HINDUSTAN ZINC LIMITED
KAYAD MINE
GROUND WATER ANALYSIS REPORT

Parameters	Kayad Village U/S			Gagwana Village D/S			Chatri Village D/S			Lohagal Village U/S		
	Baseline	May-23	Sep-23	Baseline	May-23	Sep-23	Baseline	May-23	Sep-23	Baseline	May-23	Sep-23
pH	7	8.14	7.75	7.1	8.11	7.89	7.5	7.02	7.96	6.9	7.5	7.88
Hardness	245	121.5	592.23	306	155.77	116.5	1366	766.36	563.11	1233	358.88	233.01
Iron	0.33	BDL	0.04	0.19	BDL	BDL	0.2	BDL	0.03	0.18	BDL	0.02
Chloride	92	66.7	387.11	536	58.82	62.68	1842	732.82	414.77	1060	250.7	331.81
TDS	598	338	1966	812	264	329	4746	1959	1922	4512	1460	1875
Mg	-	14.08	115.59	-	11.81	8.02	-	65.85	61.34	-	36.33	26.42
Copper	0.03	BDL	BDL	<0.01	BDL	BDL	<0.01	BDL	BDL	<0.01	BDL	BDL
Sulphate	54.9	56.8	45.83	302	24	45	512.6	140.8	130.83	666.8	65	146.66
Cadmium	<0.01	BDL	BDL	<0.01	BDL	BDL	<0.01	BDL	BDL	<0.01	BDL	BDL
Arsenic	<0.01	BDL	BDL	<0.01	BDL	BDL	<0.01	BDL	BDL	<0.01	BDL	BDL
Lead	0.01	BDL	BDL	0.01	BDL	BDL	0.01	BDL	BDL	0.01	BDL	BDL
Zinc	2.76	BDL	BDL	0.1	BDL	BDL	0.06	0.02	0.22	0.32	0.23	0.03
Alkalinity	272	142.68	370.3	456	114.84	135.3	524	285.36	503.25	486	443.7	470.25
TSS	-	3	6	-	5	4	7	9	17	-	5	8
Cobalt	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Mercury	<0.001	BDL	BDL	<0.001	BDL	BDL	BDL	BDL	BDL	<0.001	BDL	BDL
Cyanide	<0.02	BDL	BDL	<0.02	BDL	BDL	BDL	BDL	BDL	<0.02	BDL	BDL
Nickel	BDL	BDL	BDL	BDL	BDL	BDL	0.02	BDL	BDL	BDL	BDL	BDL
Total solid	-	341	1972	-	269	333	3260	1968	1939	-	1465	1883

All figureas are in mg/l except pH

Water level of Piezometers & open wells

Annexure I (3/3)

S.No.	Source Code	Location with land mark	Lattitude	Longitude	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
	P-1	Piezometer-1, near VTC- HZL	N26°31'44.1"	E74°41'19.2"	27.9	28.5	27.6	23.9	21.4	19.2
2	P-2	Near mine dumped area, HZL fuel pump	N26°31'56.9"	E74°41'41.1"	26.7	27.1	26.3	24.2	22.4	20.9
3	P-3	Plantation area, nursery, near other collapsed bore well	N26°32'10.0"	E74°41'44.4"	17.9	18.4	17.9	15.3	13.2	13.4
4	P-4	New drilled bore well, near ANFO Mixing plant, HZL boundary wall corner	26°32'02.0"	74°41'45.2"	12.2	12.9	12.1	11.6	10.9	8.4
5	P-5	New drilled bore well, DG Set area	26°31'40.3"	74°41'29.1"	16.1	16.9	15.8	14.7	13.5	12.1
6	W-1	Man Singh Raghuveer singh Chandawal, Kayar/ Naeem Bhutta	N26°33'25.7"	E74°41'45.9"	16.4	17.3	17.1	12.4	9.45	8.3
7	W -2	Gurjar Well Near Abkar Minar and ARG opp SK associates	N26°32'48.6"	E74°42'24.8"	19.2	19.8	19.4	14.4	10.4	9.47
8	W-3	Near Talab area, land planning by propoerty dealers/ poltary farm	N26°32'08.3"	E74°42'27.7"	21.5	21.9	20.8	13	8.75	10.8
9	W-4	Mohan Gurjar Well Kayad	N26°31'11.7"	E74°41'02.7"	12.6	13.1	12.4	10.4	7.4	9
10	W-5	Near outside HZL boundary wall, near outside HZL road area	N26°31'52.7"	E74°41'36.0"	21.3	21.8	20.7	11.4	10.4	8
11	W-6	Near Govt. School/Mr. Sultan Master, Kamurdin Nizam ji Kayar	N26°31'38.7"	E74°41'11.3"	16.5	17.1	16.3	12.7	12.1	10.1

HINDUSTAN ZINC LIMITED

KAYAD MINE

AMBIENT AIR MONITORING

Annexure-I

Location->		Near Sub Station						Near CRF						Near ANFO					
Month-Year	Parameter	SPM	PM_{10}	PM2.5	SO_2	NO_x	CO	SPM	PM_{10}	PM2.5	SO_2	NO_x	CO	SPM	PM_{10}	PM2.5	SO2	NO_x	CO
	Limit	500 µg/m3	100 µg/m3	60 µg/m3	80 µg/m3	80 µg/m3	4000 µg/m3	500 µg/m3	100 µg/m3	60 µg/m3	80 µg/m3	80 µg/m3	4000 µg/m3	500 µg/m3	100 µg/m3	60 µg/m3	80 µg/m3	80 µg/m3	4000 µg/m3
Apr-23	Ist Fortnight	147.59	81.77	27.90	5.96	14.80	340.00	154.80	76.82	32.69	4.32	14.93	310.00	160.74	79.00	32.95	7.51	15.01	370.00
	IInd Fortnight	137.10	77.28	32.83	4.59	15.86	280.00	143.72	76.18	34.56	4.09	15.97	310.00	139.66	72.20	42.26	4.89	15.40	370.00
May-23	Ist Fortnight	133.63	69.90	32.62	6.65	14.88	390.00	126.20	64.41	31.28	5.41	14.65	370.00	146.62	74.56	31.82	4.32	12.97	330.00
	IInd Fortnight	139.78	72.05	32.40	5.31	15.22	380.00	131.52	67.87	32.83	5.58	14.75	390.00	157.70	79.73	36.31	4.80	15.33	320.00
Jun-23	Ist Fortnight	118.22	70.71	32.01	3.66	14.88	350.00	151.00	73.51	31.70	4.02	14.81	370.00	135.39	70.09	30.04	6.11	14.44	280.00
	IInd Fortnight	124.98	58.45	34.88	4.90	15.00	370.00	136.73	76.58	34.18	4.66	14.67	360.00	134.03	67.31	27.19	5.18	14.75	410.00
Jul-23	Ist Fortnight	128.02	59.90	25.73	5.85	15.93	350.00	132.88	66.57	24.15	6.85	15.13	310.00	107.08	54.41	26.38	7.37	15.58	320.00
	IInd Fortnight	125.07	55.98	23.59	7.12	15.59	290.00	104.73	51.66	23.52	6.88	15.31	310.00	103.49	56.50	23.99	7.45	12.05	340.00
Aug-23	Ist Fortnight	127.15	58.16	27.82	7.55	16.14	290.00	115.99	57.53	24.25	4.03	16.90	310.00	125.79	64.27	32.66	6.92	15.79	280.00
	IInd Fortnight	128.99	62.04	31.68	5.67	15.43	360.00	135.26	69.79	29.19	8.96	15.73	370.00	141.13	75.62	35.48	6.65	14.54	310.00
Sep-23	Ist Fortnight	132.25	66.48	29.94	6.75	15.43	360.00	114.02	64.94	30.68	7.24	12.08	260.00	136.46	55.39	25.37	5.38	15.89	370.00
	IInd Fortnight	108.05	57.35	30.78	6.31	15.04	310.00	128.80	52.22	32.09	5.90	14.38	290.00	129.72	65.97	28.29	6.39	15.42	320.00

Location->		Kayar						Lohagal						Gagwana					
Month-Year	Parameter	SPM	PM_{10}	PM2.5	SO_2	NO_x	CO	SPM	PM_{10}	PM2.5	SO_2	NO_x	CO	SPM	PM_{10}	PM2.5	SO_2	NO_x	CO
	Limit	500 µg/m3	100 µg/m3	60 µg/m3	80 µg/m3	80 µg/m3	4000 µg/m3	500 µg/m3	100 µg/m3	60 µg/m3	80 µg/m3	80 µg/m3	4000 µg/m3	500 µg/m3	100 µg/m3	60 µg/m3	80 µg/m3	80 µg/m3	4000 µg/m3
Apr-23	Ist Fortnight	127.20	67.32	27.21	6.46	11.56	270.00	157.48	73.96	28.59	6.44	15.70	260.00	140.82	68.64	30.62	4.83	12.28	290.00
	IInd Fortnight	143.32	65.94	34.39	5.38	13.45	260.00	137.24	75.71	34.26	4.78	12.95	290.00	151.33	78.81	45.08	4.01	13.51	270.00
May-23	Ist Fortnight	127.35	73.13	39.79	4.41	15.06	270.00	143.36	66.64	35.23	5.52	14.01	280.00	135.59	67.39	33.79	5.96	13.02	290.00
	IInd Fortnight	147.07	77.34	31.01	5.68	16.55	280.00	118.70	77.26	32.30	3.84	16.02	270.00	146.89	71.11	33.19	4.82	15.28	290.00
Jun-23	Ist Fortnight	131.96	73.79	28.86	6.00	15.49	320.00	132.53	80.10	25.34	5.02	15.57	280.00	162.45	77.71	25.51	5.35	16.53	270.00
	IInd Fortnight	117.38	56.14	34.24	3.14	15.32	320.00	132.17	69.31	32.94	3.74	14.71	350.00	130.69	64.99	32.63	4.43	14.40	290.00
Jul-23	Ist Fortnight	118.33	63.85	28.39	3.75	11.32	280.00	109.14	50.13	27.05	6.68	14.12	270.00	120.78	56.56	26.45	6.34	12.86	260.00
	IInd Fortnight	127.85	58.19	27.06	5.16	14.96	260.00	112.03	51.28	24.38	7.66	13.95	280.00	106.00	52.56	18.48	7.22	12.77	270.00
Aug-23	Ist Fortnight	130.79	64.72	26.00	7.25	11.57	270.00	109.37	57.04	23.38	4.25	13.08	260.00	134.53	60.67	28.04	5.22	11.03	250.00
	IInd Fortnight	108.21	57.95	28.83	6.37	15.31	290.00	136.63	53.99	26.90	7.79	14.84	270.00	135.58	70.58	25.32	8.13	14.60	280.00
Sep-23	Ist Fortnight	165.27	71.56	23.74	6.16	14.16	290.00	126.01	59.74	25.81	6.78	13.11	280.00	114.29	49.25	29.42	7.11	12.44	270.00
	IInd Fortnight	122.24	57.96	28.85	7.94	13.95	207.00	115.69	69.76	31.94	7.49	13.90	280.00	141.93	71.53	26.82	7.67	13.70	270.00

HINDUSTAN ZINC LIMITED
KAYAD MINE

Annexure-III

Noise Level Monitoring Report for April 23 to September 23

S.No	Location	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
		Day Time Industrial Limit 75dB(A)						*Night Time Industrial Limit 65dB(A)*					
N-1	South West Corner of Mine Boundary	59.8	63.8	61.4	63.5	60.7	61.5	51.4	55.9	52.2	51.3	51.5	53.6
N-2	East Side Boundary Near West Dump	60.7	61.9	60.4	60.7	61.0	64.8	52.3	54.7	51.7	52.4	52.4	57.5
N-3	North East Corner of Mine Boundary	58.4	64.2	63.7	61.5	60.8	63.5	50.3	54.3	52.5	52.5	51.8	54.7
N-4	North West Corner of Mine Boundary	61.2	64.5	62.5	61.4	61.3	62.3	52.7	54.3	53.3	51.2	51.1	51.8
N-5	West Side Towards Kayad Village	59.8	63.1	62.3	61.5	59.9	60.7	50.6	54.5	51.1	50.2	50.3	51.2
N-6	South East East Corner	60.4	61.1	62.2	62.3	59.8	57.6	51.4	53.8	53.7	53.9	50.5	48.7
N-7	Sub station	64.0	66.6	66.7	60.4	62.4	50.2	53.6	57.5	53.2	51.2	53.6	41.2
S.No	**Location**	*Day Time Residencial Limit 55dB(A)*						*Night Time Residencial Limit 45dB(A)*					
N-8	Kayad Village	53.9	52.8	52.4	51.2	51.4	51.2	52.3	42.6	41.7	41.1	41.2	42.3
N-9	Lohagal Village	52.4	53.3	52.7	51.7	49.6	53.6	52.7	43.2	40.2	42.5	40.3	42.5
N-10	Gagwana	50.4	52.3	53.1	50.3	50.2	50.4	53.1	42.8	42.6	40.2	41.2	40.7

Annexure IV

HINDUSTAN ZINC LIMITED						
KAYAD MINE						
MINE WATER ANALYSIS REPORT						
Parameters	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
pH	7.49	7.15	7.35	7.39	7.24	7.28
Total Disolved Solod	3894	3912	3882	3870	3903	3868
Total Suspended Solid	31	29	25	10	21	28
Total Solid	3925	3941	3907	3880	3924	3896
Chloride	777.06	670.22	603	636.54	560.54	503.53
Cyanide	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hardness	1088	1134.62	962.96	1435.19	1504.85	1048.54
Sulphate	974	941	846	873	850	805.45
Arsenic	BDL	BDL	BDL	BDL	BDL	BDL
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL
Cobalt	BDL	BDL	BDL	BDL	BDL	BDL
Copper	0.06	0.04	0.02	0.18	0.11	0.03
Iron	0.06	0.2	0.07	0.19	0.12	0.09
Lead	BDL	BDL	BDL	BDL	BDL	BDL
Zinc	1.63	1.18	1.36	2.81	2.65	2.45
Alkalinity	76.8	47.5	57.3	64	39.52	31.8
MG	31.97	48.5	56.28	56.24	87.96	79.76
Hg	BDL	BDL	BDL	BDL	BDL	BDL
Ni	0.16	0.17	0.26	0.14	0.16	0.19

Hindustan Zinc Limited Kayad Mine

pH monitoring report April 23 to Sep 23

Annexure-V

Month	pH	Month	pH	Month	pH	Month	pH	Month	pH	Month	pH
01/04/2023	7.36	01/05/2023	8.00	01/06/2023	7.62	01/07/2023	7.0	01/08/2023	6.7	01/09/2023	6.4
02/04/2023	7.34	02/05/2023	7.90	02/06/2023	7.63	02/07/2023	7.0	02/08/2023	6.7	02/09/2023	6.4
03/04/2023	7.30	03/05/2023	7.70	03/06/2023	7.64	03/07/2023	6.9	03/08/2023	6.7	03/09/2023	6.6
04/04/2023	7.29	04/05/2023	7.90	04/06/2023	7.90	04/07/2023	7.0	04/08/2023	6.6	04/09/2023	6.5
05/04/2023	7.29	05/05/2023	7.20	05/06/2023	7.91	05/07/2023	7.0	05/08/2023	7.2	05/09/2023	6.4
06/04/2023	7.31	06/05/2023	7.80	06/06/2023	7.90	06/07/2023	7.1	06/08/2023	6.7	06/09/2023	6.4
07/04/2023	7.30	07/05/2023	7.70	07/06/2023	7,43	07/07/2023	7.2	07/08/2023	6.6	07/09/2023	6.5
08/04/2023	7.29	08/05/2023	7.60	08/06/2023	7.65	08/07/2023	7.0	08/08/2023	6.6	08/09/2023	6.4
09/04/2023	7.28	09/05/2023	7.80	09/06/2023	7.63	09/07/2023	7.1	09/08/2023	6.7	09/09/2023	6.4
10/04/2023	7.27	10/05/2023	7.75	10/06/2023	7.60	10/07/2023	7.3	10/08/2023	6.7	10/09/2023	6.5
11/04/2023	7.26	11/05/2023	7.30	11/06/2023	7.23	11/07/2023	7.2	11/08/2023	6.7	11/09/2023	6.4
12/04/2023	7.25	12/05/2023	7.90	12/06/2023	7.30	12/07/2023	7.1	12/08/2023	6.7	12/09/2023	6.4
13/04/2023	7.24	13/05/2023	8.10	13/06/2023	7.19	13/07/2023	7.2	13/08/2023	6.6	13/09/2023	6.6
14/04/2023	7.19	14/05/2023	8.20	14/06/2023	7.61	14/07/2023	7.2	14/08/2023	6.5	14/09/2023	6.9
15/04/2023	7.61	15/05/2023	8.10	15/06/2023	7.61	15/07/2023	7.2	15/08/2023	6.5	15/09/2023	6.8
16/04/2023	7.61	16/05/2023	7.60	16/06/2023	7.60	16/07/2023	7.3	16/08/2023	6.5	16/09/2023	6.9
17/04/2023	7.60	17/05/2023	7.80	17/06/2023	7.30	17/07/2023	7.3	17/08/2023	6.5	17/09/2023	6.9
18/04/2023	7.30	18/05/2023	7.60	18/06/2023	7.90	18/07/2023	7.3	18/08/2023	6.4	18/09/2023	7.0
19/04/2023	7.90	19/05/2023	7.60	19/06/2023	7.30	19/07/2023	7.3	19/08/2023	6.3	19/09/2023	6.9
20/04/2023	7.23	20/05/2023	7.39	20/06/2023	7.80	20/07/2023	7.2	20/08/2023	6.4	20/09/2023	6.8
21/04/2023	7.30	21/05/2023	7.25	21/06/2023	7.30	21/07/2023	7.1	21/08/2023	6.4	21/09/2023	6.9
22/04/2023	7.17	22/05/2023	7.94	22/06/2023	7.00	22/07/2023	7.0	22/08/2023	6.3	22/09/2023	6.9
23/04/2023	7.20	23/05/2023	7.91	23/06/2023	7.96	23/07/2023	7.1	23/08/2023	6.5	23/09/2023	6.9
24/04/2023	7.82	24/05/2023	7.64	24/06/2023	7.90	24/07/2023	6.8	24/08/2023	6.6	24/09/2023	6.9
25/04/2023	7.82	25/05/2023	6.80	25/06/2023	8.20	25/07/2023	6.7	25/08/2023	6.4	25/09/2023	6.9
26/04/2023	7.83	26/05/2023	7.22	26/06/2023	7.80	26/07/2023	6.7	26/08/2023	6.4	26/09/2023	6.9
27/04/2023	7.88	27/05/2023	7.20	27/06/2023	7.63	27/07/2023	6.6	27/08/2023	6.4	27/09/2023	6.9
28/04/2023	7.89	28/05/2023	7.17	28/06/2023	7.63	28/07/2023	6.7	28/08/2023	6.3	28/09/2023	6.9
29/04/2023	7.89	29/05/2023	7.19	29/06/2023	7.80	29/07/2023	6.8	29/08/2023	6.3	29/09/2023	6.9
30/04/2023	7.92	30/05/2023	7.61	30/06/2023	7.6	30/07/2023	6.8	30/08/2023	6.4	30/09/2023	7.0
		31/05/2023	7.61			31/07/2023	6.8	31/08/2023	6.4		

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDH

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	23200002766	Date :	18-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Mines
Type of sample / Discipline :	Liquid Effluents / Chemical	Date of Sample Collection/Monitoring :	22-09-2023
Point of Collection :	Mine Water - 2	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 18-10-2023	Sampling Plan :	APHA 2017 : 1060
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol
1	Radioactive Substances:		
2	Gross Alpha(Bq/l)	BDL(<0.1)	IS : 14194(Part-2) 2022
3	Gross Beta (Bq/l)	BDL(<1.0)	IS : 14194(Part-1) 2020

Notes :-

The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.

This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.

The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Sunil Kumar
Senior Analyst

Puran Mal Yogi
Authorized Signatory
(Report No: 23200002766)

Mechanism for addressing Environmental Issues

HZL has a Health Safety and Environment Policy, given below, signed by its CEO and forms the guidelines for the entire organization. A well laid mechanism is implemented uniformly across all units of HZL for the implementation of the policy.

All operating uints of Hindustan Zinc Limited are certified for ISO-14001 Environmental Management system (EMS). The Management Representative (MR) of the certification system is an experienced environmental officer with due authority to implement and drive a responsible EMS. The MR is duly supported by a committee constituting the operations and maintenance officers of the unit. The system has a well laid documented procedure for identification of all environmental aspect, Impacts and implementation of suitable mitigation measures.

The company has three level monitoring mechanism for addressing environmental concerns starting at unit level, HZL corporate level and Vedanta group company level. Depending on the scale and nature of the issue, the concern is escalated to different level right up to the Board of the company and also the shareholders of the company in the general body meetings.

The compliances to Environment Clearance and all environmental licenses are reviewed and monitored regularly and reports are submitted to the respective regulatory authorities at every unit, by a dedicated environmental professional, who reports directly to the unit head. The compliance is periodically reviewed and audited by Corporate Environment Department, which reports to the top management of the company. A Corporate Sustainability Committee, chaired by the CEO of the company, oversees all sustainability issues including Environment, Safety and Health and also reviewing any policy matters.

Any non-compliances/show cause/notices/complaints received from regulatory authority or any stakeholder is addressed jointly by the unit and corporate environment department. Such issues are also reported and the actions taken are reviewed by the top management every month. Further, all show cause, complaint letters and notices from any stakeholder, along with the action taken report is submitted to the Board Of Directors of the company every quarterly. All major concerns are reported to the stakeholders through the annual general body meetings of the company.

vedanta
transforming for good

HINDUSTAN ZINC
Zinc & Silver of India

HINDUSTAN ZINC

Environmental Policy

Purpose

Hindustan Zinc Limited is committed to achieving excellence in environmental management. Our goal is to minimise environmental impacts of our business across the entire lifecycle by implementing pollution-prevention and natural resource conservation actions either on site or off site.

This policy is forward looking and sets a vision for businesses across the Hindustan Zinc Limited.

Scope

This policy is applicable to all Hindustan Zinc Limited business units, including subsidiaries, joint ventures, and acquisitions, managed sites, licensees, outsourcing partners, corporate offices, and research facilities. This policy is also applicable to all Hindustan Zinc Limited employees, contractor employees, business partners, suppliers, and others with whom Hindustan Zinc does business.

In addition, this policy is applicable throughout the operational lifecycle of the projects and mines, covering stages from exploration and planning to evaluation, operation, and closure. Furthermore, it extends to activities in our upstream and downstream value chain, limited to distribution, logistics, and sale of products and services to the customer.

Objectives of the Environmental Policy

Hindustan Zinc will strive to:

- Comply with applicable national, regional, and local environmental regulations and statutory obligations. In the absence (or lack) of appropriate legislation, industry best practices and applicable international standards will be used.
- Develop, implement, and improve environmental management systems, consistent with world-class standards.
- Set targets and objectives to avoid, reduce or mitigate Environmental impacts on people and planet.
- Consistently assess our environmental risks, manage our impacts, take appropriate mitigation and adaptation measures, and communicate our environmental strategy to our stakeholders.
- Incorporate appropriate environmental criteria for all business decisions including the planning, operationalization, and closure of the projects.
- Conduct regular environmental review and due diligence of the projects (including for mergers & acquisitions) to identify, prioritize, assess, and take effective actions for mitigating the potential environmental risks.
- Drive continuous environmental performance improvement by implementing appropriate available practices and technology.
- Conserve natural resources by adopting environment-friendly and energy-efficient technologies through process improvements.
- Apply mitigation hierarchy (avoid, reduce, reuse, recycle, disposal) to environmental impacts and adopt the principles of circular economy.
- Manage impacts related to energy, carbon emissions, waste, nature, air emissions, land-use & biodiversity, and water.
- Raise awareness of internal and internal stakeholders including business partners, suppliers, and other stakeholders on adoption of practices in alignment with our policies, thereby fostering a collective commitment to managing environmental impacts.
- Provide appropriate training to all employees and emphasise the importance of minimising risks to environment, while also understanding the impacts of their work activities on the environment.
- Communicate with all our stakeholders on the progress and performance of Environment management.
- Review the performance against the policy on a periodic basis to ensure management of environmental impacts as per our objectives including the sharing of good practices throughout the organization and stakeholders.

Responsibility & Review

This policy is part of the Vedanta Sustainability Framework, and each Hindustan Zinc Limited business unit shall implement this policy. Our CEO will be accountable for controlling and setting the policy, and the Executive Committee are responsible for the full implementation of the policy and associated standards. The Board ESG committee will review this policy annually and recommend appropriate revisions to the Board as may deem necessary.

Related additional policies: Energy & Climate Change Policy, Biodiversity Policy, Water Policy, Tailing Management Policy.

Arun Misra

Arun Misra
CEO & Whole Time Director, HZL

Date: 1st September, 2023

vedanta
transforming for good

HINDUSTAN ZINC
Zinc & Silver of India

HINDUSTAN ZINC

Health & Safety Policy

Purpose

Hindustan Zinc Limited is committed to achieving excellence in Health and Safety (H&S) management. Our goal is to minimise safety and health impacts of our operations by eliminating unsafe work conditions either on-site or off-site.

Scope

This policy is applicable to all Hindustan Zinc Limited business units, including subsidiaries, joint ventures, and acquisitions, managed sites, licensees, outsourcing partners, corporate offices, and research facilities. This policy is also applicable to all Hindustan Zinc Limited employees, contractor employees, business partners, suppliers, and others with whom Hindustan Zinc does business.

In addition, this policy is applicable throughout the operational lifecycle of the projects and mines, covering stages from exploration and planning to evaluation, operation, and closure. Furthermore, it extends to activities in our upstream and downstream value chain, limited to distribution, logistics, and sale of products and services to the customer.

Objectives of the Health & Safety Policy

Hindustan Zinc will strive to:

- Comply with applicable national, regional, and local H&S regulations and statutory obligations as well industry best practices. In the absence (or lack) of appropriate legislation, industry best practices and applicable international standards will be used.
- Develop, implement, and improve H&S management systems, with our commitments and values and consistent with world class standards.
- Set targets and objectives to avoid, reduce or mitigate H&S related impacts on people.
- Prevent injury and ill-health to employees and business partners by eliminating hazards and providing a safe and healthy work environment and minimizing the risks associated with occupational hazards.
- Implement regular health surveillance and risk-based exposure monitoring of employees and contractor workers.
- Incorporate appropriate H&S criteria for all business decisions including the planning, operationalization, and closure of the projects.
- Conduct regular H&S review of the projects (including for mergers & acquisitions) to identify, prioritize, assess, and take effective actions for mitigating the potential H&S risks.
- Drive continuous H&S improvement through setting and reviewing targets using appropriate best available practices and technology.
- Review performance against the policy on a periodic basis to ensure management of health & safety as per our objectives including the sharing of good practices throughout the organization and stakeholders.
- Ensure training for all employees training to emphasize the importance of maintaining a safe and healthy workplace.
- Promote a positive H&S culture through effective communication, participation and consultation with employees and business partners.
- Establish processes of consultation and ensure participation of workers, and their representatives (when applicable) in the decision-making process for H&S matters.
- Promote awareness of business partners, suppliers, and other stakeholders on the adoption of practices in alignment with our policies, thereby fostering a collective commitment to health and safety.
- Drive positive healthcare outcomes for our employees, business partners and the local community.
- Communicate to all our stakeholders on the progress and performance of H&S management.
- Provide information and education programs on high-risk diseases including HIV/ AIDS for all employees and contractor employees.
- Ensure prevalence of diseases such as HIV/AIDS in any of our workforce, do not affect employment, employee rights, development opportunities, benefits, or access to sick leaves. We also commit to elimination of stigma and discrimination associated with these diseases through non-discriminatory policies, practices and relevant awareness and outreach programs for our workforce, their families, and the community.

Responsibility & Review

This policy is part of the Vedanta Sustainability Framework, and each Hindustan Zinc Limited business unit shall implement this policy. Our CEO will be accountable for controlling and setting the policy, and the Executive Committee are responsible for the full implementation of the policy and associated standards. The Board ESG committee will review this policy annually and recommend appropriate revisions to the Board as may deem necessary.

Arun Misra

Arun Misra
CEO & Whole Time Director, HZL

Date: 1st September, 2023

Head Office (Mines)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716814,2716813Fax: 0141-2716814

Registered

File No F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563

Order No 2022-2023/Mines/10692 **Date:** 06/01/2023

Unit Id : 11254

M/s Hindustan Zinc Limited (Kayar Mine)

P.O.- Kayad, Ajmer- 305 023,

District :Ajmer

E-Mail : kastoor.meena@vedanta.co.in

Sub: Grant of Consent to Operate under Section 21(4) of Air (Prevention & Control of Pollution) Act, 1981 and under Section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 for your **Major Mineral** Mine at near Village-Kayar, Tehsil-Ajmer, District- **Ajmer (M.L.No-16/92).**

Ref: (I) Your applications dated 23/09/2022
(II) Received on 23/09/2022
(III) Received at Head office on 22/09/2022

Sir,

In view of the details submitted vide your above referred applications/ documents, the **Consent to Operate** under Section 21(4) of Air (Prevention & Control of Pollution) Act,1981 and under Section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 is hereby granted for carrying mining activities. This consent is subject to the following stipulations:-

1 That this consent is being granted in favour of **M/s. Hindustan Zinc Limited (Kayar Mine)**, a Mine of **Major Mineral** having **M.L.No.- 16/92 in an area measuring 480.4500 Hectares** at/near Village-Kayar ,Tehsil-Ajmer,District-Ajmer.

2 That this consent is valid for a period from **01/02/2023** to **31/01/2028**

3 That this consent is valid for following mining activities :-

	Mineral	Permitted Mining Capacity
1	LEAD & ZINC ORE (ROM)	12.0000 LAKHS TONNES/ANNUM

4 That the project proponent will comply with the Standard as prescribed vide the Ministry of Environment, Forest and Climate Change notification no. GSR 826(E) dated 16th November, 2009 with respect to National Ambient Air Quality standards.

Signature valid
Digitally signed by [illegible] Chand Gupta
Date: 2023.01.[illegible]:48:06 IST
Reason: SetAttribute
Location:

Head Office (Mines)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716814,2716813Fax: 0141-2716814

Registered

File No F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563

Order No 2022-2023/Mines/10692 Date: 06/01/2023

Unit Id : 11254

5 That this consent to establish/consent to operate is only for carrying out mining of mineral/ore and not for any processing/beneficiation or crushing/grinding of ore/mineral for which a separate application for consent to establish and/or consent to operate should be submitted. The project proponent is required to obtain seprate consent to establish and consent to operate for carrying out mining of other minerals(s), if any or processing/beneficiation of such mineral(s) and for any addition/modification/alteration or change in process.

6 That this **Consent to Operate** is for mining / processing / beneficiation of product as mentioned above in **M.L.No.-16/92** and a separate **Consent to Operate** is required to be obtained for any other Mineral mining/ processing/ beneficiation Plant/process if any and for any addition/ modification/ alteration or change in process.

7 **That the occupier/operator of mine shall ensure that all the conditions imposed in the Environmental Clearance granted by MoEF&CC dated 05.02.2018.**

8 **That this consent is valid for production of Lead & Zinc Ore (ROM) @ 1.2 Million TPA Tonnes per Annum. For any change in product and/or increase in capacity/lease area, the mine has to seek fresh Environmental Clearance, consent to establish & consent to operate**

9 **That the lessee shall submit monitoring report of Ambient Air Quality within the lease area, once in 3 months**

10 **That plantation shall be developed so as to cover at least 33% of the total land use for mining and allied activities as given in Approved Mining Plan and shall be maintained at all the time to maintain ambient air quality around the mine.**

11 **That ground water shall not be abstracted without prior permission of the Central Ground Water Authority (CGWA).**

12 **That haul roads should be regularly graded and compacted. Regular water sprinkling should be carried out on haul roads to minimize dust generations**

13 **That adequate measure shall be taken for control of fugitive emissions from the areas prone to air pollution.**

14 **That you shall not operate any stone crusher/mineral grinding/mineral processing plant within said lease without obtaining prior consent of the State Board.**

15 **That this consent to Operate shall not be valid, if the lessee has not obtained permissions required, if any, from NBWL/Forest Department etc. with respect to Wild Life Sanctuary /National Parks/ Critical Tiger Habitats in compliance of various orders passed by any other law/act/rule/ regulation or order of MoEF&CC and/or any Court/Tribunal time to time**

Signature valid
Digitally signed by [illegible] Chand Gupta
Date: 2023.0[illegible]:48:09 IST
Reason: Self Attested
Location:

Head Office (Mines)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716814,2716813Fax: 0141-2716814

Registered

File No F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563

Order No 2022-2023/Mines/10692 Date: 06/01/2023

Unit Id : 11254

16 That regular water sprinkling should be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as on haul road, loading and unloading points and transfer points.

17 That the mine shall install adequately designed rain water harvesting structure for prevention and recharge of ground water in and around the lease area.

18 That the mine shall not allow making any obstacles to any natural water flow i.e., natural nallah/steam carrying rain water to any water body.

19 This the mine shall not allow unauthorized disposal of any solid waste on land inside or outside the premises.

20 That this consent to Operate shall be subject to compliance of direction/order passed by Courts of Law in the matter,if any

21 That the lessee should dump the overburden in such a manner that it does not get washed away to nearby water tanks and lakes etc. during rainy season

22 That the lease shall not intersect the ground water table without permission of CGWA.

23 This consent shall be subject to validity of mining lease.

24 That all other general conditions enclosed as Annexure shall be strictly complied with.

25 That this Consent is subject to the conditions as stated above and general conditions as stated in Annexure. Further, the mining unit will comply with the provisions of the Air (Prevention & Control of Pollution) Act, 1981 & Water (Prevention & Control of Pollution) Act, 1974 and any such conditions as may be specified from time to time by the State Board under the provisions of the aforesaid Acts.

26 That the grant of this Consent to Operate is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time-being in force, rests with the industry/ unit/ project proponent.

27 That the grant of this Consent to Operate shall not, in any way, adversely affect or jeopardize the legal proceedings, if any, instituted in the past or that could be instituted against you by the State Board for violation of the provisions of the Act or the Rules made thereunder.

Signature valid
Digitally signed by [illegible] Chand Gupta
Date: 2023.0[illegible]:48:09 IST
Reason: Self-Attested
Location:

Head Office (Mines)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716814,2716813Fax: 0141-2716814

Registered

File No F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563

Order No 2022-2023/Mines/10692 **Date:** 06/01/2023

Unit Id : 11254

28 That the grant of this consent to establish/operate is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other legal instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time-being in force, rests with the industry/unit/project proponent.

This bears approval of the competent authority.

Encl: As Above

Yours sincerely,

Group Incharge-Mines

(A): **Copy To:-**

1. Director, Department of Mines & Geology, Government of Rajasthan, Shastri Circle, Udaipur..
2. Regional Officer, Regional Office, Rajasthan State Pollution Control Board, Kishangarh-please ensure compliance of the consent conditions and monitor time to time
3. Mining Engineer, Department of Mines & Geology, Government of Rajasthan, Ajmer -To inform that this consent has been issued from the environmental angle only, and ensuring compliance of any other law/act/rule/regulation or order of any Court /Tribunal is the sole responsibility of the project proponent and the concerned departments
4. Master File .

(B):

1. The Additional PCCF (WL) and Chief Wildlife Warden, Aranya Bhawan, Jhalana Institutional Area, Jaipur/DCF(WL) Ajmer, To inform that this consent has been issued from the environmental angle only, and ensuring compliance of any other law/act/rule/regulation or order of any Court /Tribunal is the sole responsibility of the project proponent and the concerned departments

Group Incharge-Mines

Signature valid
Digitally signed by [illegible] Chand Gupta
Date: 2023.0[illegible]:48:09 IST
Reason: Self Attested
Location:

Environmental Monitoring and Evaluation Studies at Kayad Mines, of Hindustan Zinc limited

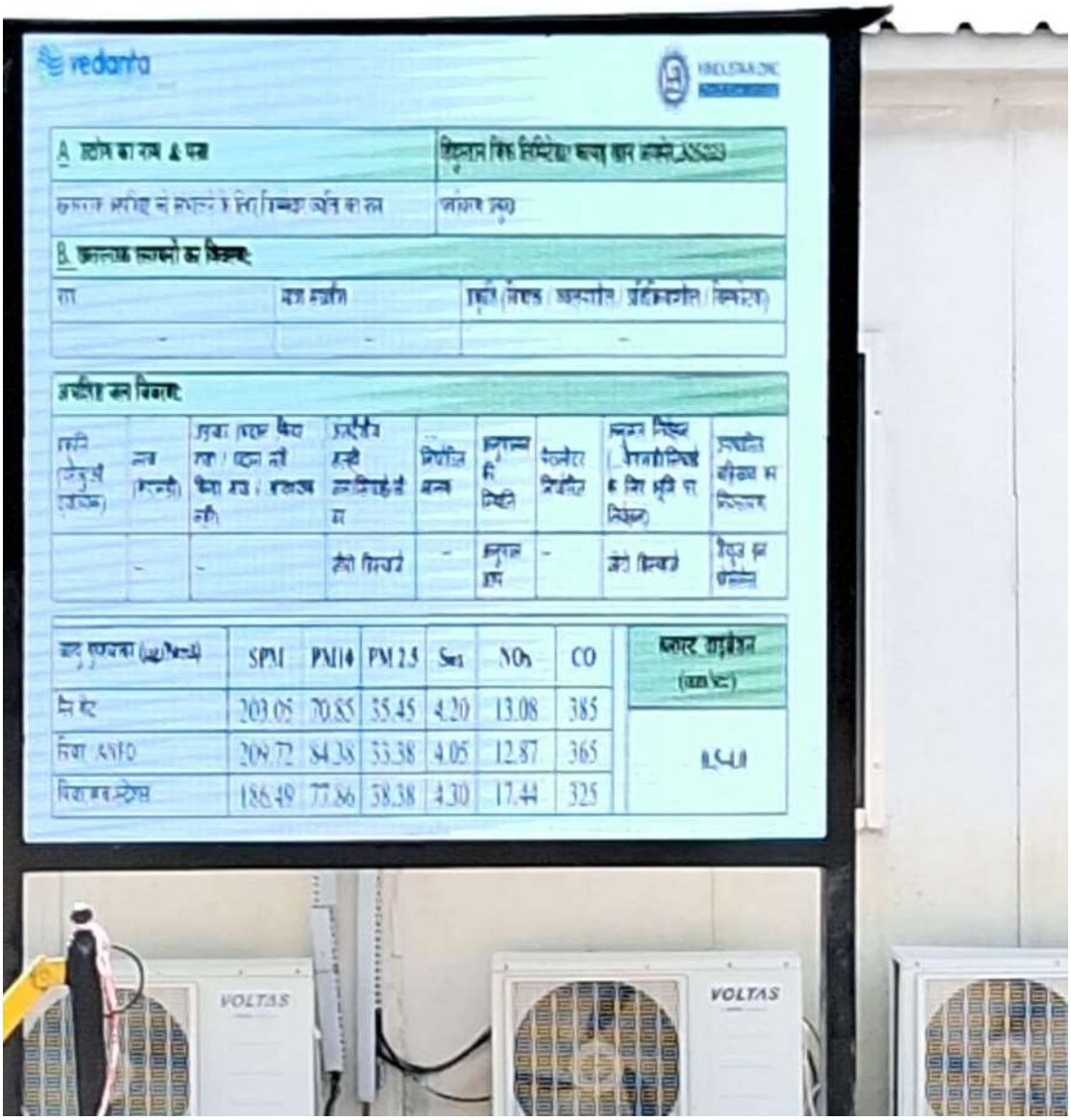
Sponsored by
Kayad Mines, Hindustan Zinc Ltd.

CSIR-National Environmental Engineering Research Institute

Nehru Marg, Nagpur - 440020

February 2021

Annexure -VIII



Annexure -IX

Annexure -X

Annexure -XI

Annexure -XII

Annexure -XIII

LAND USE/LAND COVER STUDY REPORT

Kayad Lead Zinc Mine

(M.L. No. Area: 480.45 ha)

At
Village: Kayad,
Tehsil & District: Ajmer (Rajasthan)

PROJECT PROPONENT

HINDUSTAN ZINC

Hindustan Zinc Limited

Regd. Office: Yashad Bhawan,
Udaipur
Rajasthan - 313 004

PREPARED BY

JM

J.M. EnviroNet Pvt. Ltd.

(Registered EIA Consultant Organization from NABET-QCI)
Certificate No.: NABET/EIA/2023/SA 0172 (Valid till 7th Aug., 2023)
Emmar Digital Greens, Tower – B, Unit No. 1517,
Golf Course Ext. Road, Sector – 61, Gurugram (Haryana) – 122 011
E-mail: jmenviron@hotmail.com
NABL Approved Lab: JM EnviroLab Pvt. Ltd.
(Certificate No.:TC-6821)

TEAM TEST HOUSE
(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDH

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	100001655	Date :	09-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Mines
Type of sample / Discipline :	Water / Chemical	Date of Sample Collection/Monitoring :	23-09-2023
Point of Collection :	PW-4	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 09-10-2023	Sampling Plan :	IS 3025:1987(Part 1)RA 2014
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol
16	Cobalt [mg/l]	0.02	APHA :2017 :3111- B

Notes :-

The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.

This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.

The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Puran Mal Yogi
Senior Analyst

Rajesh Maheshwari
Authorized Signatory
(Report No: 100001655)

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDI

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	23100001657	Date :	09-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Underground Mines
Type of sample / Discipline :	Water / Chemical & Biological	Date of Sample Collection/Monitoring :	22-09-2023
Point of Collection :	Kayad Pond (Surface water)	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 09-10-2023	Sampling Plan :	IS 3025:1987(Part 1)RA 2014
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
1	Color [Hazen]	Less than 5	IS 3025 (Part 4) : 1983 RA 2017	5.00	15.00
2	Odour	Agreeable	IS 3025 (Part 5) : 2018	Agreeable	Agreeable
3	Taste	Agreeable	IS 3025 (Part 7) : 2017 & (Part8) : 1984 RA 2017	Agreeable	Agreeable
4	Turbidity [NTU]	BDL(<0.1)	IS 3025 (Part 10) : 1984 RA 2017	1.00	5.00
5	pH	8.04	IS 3025 (Part 11) : 1983 RA 2017	6.50 - 8.50	-
6	Hardness (total) [mg/l]	119.27	IS 3025 (Part 21) : 2009 RA 2019	200.00	600.00
7	Iron [mg/l]	BDL(<0.01)	IS 3025 (Part 53) : 2003 RA 2019	1.0	-
8	Chloride [mg/l]	60.8	IS 3025 (Part 32) : 1988 RA 2019	250.00	1000.00
9	Total Dissolved Solids [mg/l]	305	IS 3025 (Part 16) : 1984 RA 2017	500.00	2000.00
10	Calcium [mg/l]	25.69	IS 3025 (Part 40) : 1991 RA 2019	75.00	200.00
11	Magnesium [mg/l]	13.38	IS 3025 (Part 46) : 1994 RA 2019	30.00	100.00
12	Copper [mg/l]	BDL(<0.01)	IS 3025 (Part 42) : 1992 RA 2019	0.05	1.50
13	Manganese [mg/l]	BDL(<0.01)	IS 3025 (Part 59) : 2006 RA 2017	0.1	0.3

Rajesh Maheshwari

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDI

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
14	Sulphate [mg/l]	30.16	IS 3025 (Part 24) : 1986 RA 2019	200.00	400.00
15	Nitrate [mg/l]	3.18	IS 3025 (Part 34) : 1988 RA 2019	45.00	-
16	Fluoride [mg/l]	0.21	IS 3025 (Part 60) : 2008 RA 2019	1.00	1.50
17	Cadmium [mg/l]	BDL(<0.001)	IS 3025 (Part 41) : 1992 RA 2019	0.003	-
18	Arsenic [mg/l]	BDL(<0.001)	IS 3025 (Part 37) : 1988 RA 2019	0.01	-
19	Lead [mg/l]	BDL(<0.01)	IS 3025 (Part 47) : 1994 RA 2019	0.01	-
20	Zinc [mg/l]	BDL(<0.01)	IS 3025 (Part 49) : 1994 RA 2019	5.00	15.00
21	Alkalinity - T [mg/l]	107.25	IS 3025 (Part 23) : 1986 RA 2019	200.00	600.00
22	Aluminum [mg/l]	BDL(<0.01)	IS 3025 (Part 55) : 2003 RA 2019	0.03	0.2
23	Boron [mg/l]	0.50	IS 13428 (Annexure H)	0.5	2.4
24	sulphide [mg/l]	Less than 0.05	IS 3025 (Part 29) : 1986 RA 2019	0.05	-
25	Total Chromium [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.05	-
26	Mercury [mg/l]	BDL(<0.001)	IS 3025 (Part 48) : 1994 RA 2019	0.001	No relaxation
27	Mineral oil [mg/l]	BDL(<0.5)	IS 3025 (Part 39) : 1991 RA 2019	1.0	-
28	Cyanide [mg/l]	BDL(<0.01)	IS 3025 (Part 27) : 1986 RA 2019	0.05	-
29	Anionic Surface Detergents as MBA's [mg/l]	BDL(<0.1)	IS 13428 (Annexure K)	0.20	1.00
30	Nickel [mg/l]	BDL(<0.01)	IS 3025 (Part 54) : 2003 RA 2019	0.02	-
31	Phenolic Compound [mg/l]	BDL(<0.001)	IS 3025 (Part 43) : 1992 RA 2019	0.001	0.002
32	Free residual chlorine [mg/l]	BDL(<0.1)	IS 3025 (Part 26) : 1986 RA 2019	0.2(minimum)	1
33	Barium as Ba++ [mg/l]	BDL(<0.5)	IS 13428 (Annexure F)	0.7	-
34	Ammonia as NH3 [mg/l]	BDL(<0.1)	IS 3025 (Part 34) : 1988 RA 2019	0.5	-
35	Silver as Ag [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.1	-
36	Chloramines [mg/l]	BDL(<0.1)	APHA:2017 : 4500-Cl B	4.0	-

Rajesh Maheshwari

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDI

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
37	Total coliform [MPN/100ml]	Not Detected	IS 1622 : 1981	Shall not be detectable in 100ml Sample	-
38	E. Coli [MPN/100ml]	Not Detected	IS 5887 (Part 1) : 1976 RA 2018	Shall not be detectable in 100ml Sample	-
39	Selenium [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.01	-

Notes :-

Limits mentioned as per IS 10500 : 2012 is of Drinking Water. There is no precribed limit for Surface/Ground water etc.

The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.

This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.

The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Puran Mal Yogi
Senior Analyst

Rajesh Maheshwari
Authorized Signatory

(Report No: 23100001657)

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDH

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	23100001658	Date :	09-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Underground Mines
Type of sample / Discipline :	Water / Chemical & Biological	Date of Sample Collection/Monitoring :	23-09-2023
Point of Collection :	Sarwan Talab (Surface water)	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 09-10-2023	Sampling Plan :	IS 3025:1987(Part 1)RA 2014
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
1	Color [Hazen]	Less than 5	IS 3025 (Part 4) : 1983 RA 2017	5.00	15.00
2	Odour	Agreeable	IS 3025 (Part 5) : 2018	Agreeable	Agreeable
3	Taste	Agreeable	IS 3025 (Part 7) : 2017 & (Part8) : 1984 RA 2017	Agreeable	Agreeable
4	Turbidity [NTU]	BDL(<0.1)	IS 3025 (Part 10) : 1984 RA 2017	1.00	5.00
5	pH	7.14	IS 3025 (Part 11) : 1983 RA 2017	6.50 - 8.50	-
6	Hardness (total) [mg/l]	1467.89	IS 3025 (Part 21) : 2009 RA 2019	200.00	600.00
7	Iron [mg/l]	0.05	IS 3025 (Part 53) : 2003 RA 2019	1.0	-
8	Chloride [mg/l]	1781.36	IS 3025 (Part 32) : 1988 RA 2019	250.00	1000.00
9	Total Dissolved Solids [mg/l]	4440	IS 3025 (Part 16) : 1984 RA 2017	500.00	2000.00
10	Calcium [mg/l]	447.71	IS 3025 (Part 40) : 1991 RA 2019	75.00	200.00
11	Magnesium [mg/l]	84.71	IS 3025 (Part 46) : 1994 RA 2019	30.00	100.00
12	Copper [mg/l]	0.02	IS 3025 (Part 42) : 1992 RA 2019	0.05	1.50
13	Manganese [mg/l]	0.62	IS 3025 (Part 59) : 2006 RA 2017	0.1	0.3

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDI

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
14	Sulphate [mg/l]	1784	IS 3025 (Part 24) : 1986 RA 2019	200.00	400.00
15	Nitrate [mg/l]	58.27	IS 3025 (Part 34) : 1988 RA 2019	45.00	-
16	Fluoride [mg/l]	1.29	IS 3025 (Part 60) : 2008 RA 2019	1.00	1.50
17	Cadmium [mg/l]	0.04	IS 3025 (Part 41) : 1992 RA 2019	0.003	-
18	Arsenic [mg/l]	BDL(<0.001)	IS 3025 (Part 37) : 1988 RA 2019	0.01	-
19	Lead [mg/l]	0.06	IS 3025 (Part 47) : 1994 RA 2019	0.01	-
20	Zinc [mg/l]	29.89	IS 3025 (Part 49) : 1994 RA 2019	5.00	15.00
21	Alkalinity - T [mg/l]	57.75	IS 3025 (Part 23) : 1986 RA 2019	200.00	600.00
22	Aluminum [mg/l]	BDL(<0.01)	IS 3025 (Part 55) : 2003 RA 2019	0.03	0.2
23	Boron [mg/l]	0.61	IS 13428 (Annexure H)	0.5	2.4
24	sulphide [mg/l]	Less than 0.05	IS 3025 (Part 29) : 1986 RA 2019	0.05	-
25	Total Chromium [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.05	-
26	Mercury [mg/l]	BDL(<0.001)	IS 3025 (Part 48) : 1994 RA 2019	0.001	No relaxation
27	Mineral oil [mg/l]	BDL(<0.5)	IS 3025 (Part 39) : 1991 RA 2019	1.0	-
28	Cyanide [mg/l]	BDL(<0.01)	IS 3025 (Part 27) : 1986 RA 2019	0.05	-
29	Anionic Surface Detergents as MBA's [mg/l]	BDL(<0.1)	IS 13428 (Annexure K)	0.20	1.00
30	Nickel [mg/l]	0.06	IS 3025 (Part 54) : 2003 RA 2019	0.02	-
31	Phenolic Compound [mg/l]	BDL(<0.001)	IS 3025 (Part 43) : 1992 RA 2019	0.001	0.002
32	Free residual chlorine [mg/l]	BDL(<0.1)	IS 3025 (Part 26) : 1986 RA 2019	0.2(minimum)	1
33	Barium as Ba++ [mg/l]	BDL(<0.5)	IS 13428 (Annexure F)	0.7	-
34	Ammonia as NH3 [mg/l]	BDL(<0.1)	IS 3025 (Part 34) : 1988 RA 2019	0.5	-
35	Silver as Ag [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.1	-
36	Chloramines [mg/l]	BDL(<0.1)	APHA:2017 : 4500-Cl B	4.0	-

Rajesh Maheshwari

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDI

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
37	Total coliform [MPN/100ml]	Not Detected	IS 1622 : 1981	Shall not be detectable in 100ml Sample	-
38	E. Coli [MPN/100ml]	Not Detected	IS 5887 (Part 1) : 1976 RA 2018	Shall not be detectable in 100ml Sample	-
39	Selenium [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.01	-

Notes :-

Limits mentioned as per IS 10500 : 2012 is of Drinking Water. There is no precribed limit for Surface/Ground water etc.

The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.

This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.

The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Puran Mal Yogi
Senior Analyst

Rajesh Maheshwari
Authorized Signatory
(Report No: 23100001658)

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDI

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	23100001659	Date :	09-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Underground Mines
Type of sample / Discipline :	Water / Chemical & Biological	Date of Sample Collection/Monitoring :	22-09-2023
Point of Collection :	Phool Sagar (Surface water)	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 09-10-2023	Sampling Plan :	IS 3025:1987(Part 1)RA 2014
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
1	Color [Hazen]	Less than 5	IS 3025 (Part 4) : 1983 RA 2017	5.00	15.00
2	Odour	Agreeable	IS 3025 (Part 5) : 2018	Agreeable	Agreeable
3	Taste	Agreeable	IS 3025 (Part 7) : 2017 & (Part8) : 1984 RA 2017	Agreeable	Agreeable
4	Turbidity [NTU]	BDL(<0.1)	IS 3025 (Part 10) : 1984 RA 2017	1.00	5.00
5	pH	7.28	IS 3025 (Part 11) : 1983 RA 2017	6.50 - 8.50	-
6	Hardness (total) [mg/l]	1467.89	IS 3025 (Part 21) : 2009 RA 2019	200.00	600.00
7	Iron [mg/l]	0.03	IS 3025 (Part 53) : 2003 RA 2019	1.0	-
8	Chloride [mg/l]	1472.59	IS 3025 (Part 32) : 1988 RA 2019	250.00	1000.00
9	Total Dissolved Solids [mg/l]	4128	IS 3025 (Part 16) : 1984 RA 2017	500.00	2000.00
10	Calcium [mg/l]	418.35	IS 3025 (Part 40) : 1991 RA 2019	75.00	200.00
11	Magnesium [mg/l]	102.55	IS 3025 (Part 46) : 1994 RA 2019	30.00	100.00
12	Copper [mg/l]	0.02	IS 3025 (Part 42) : 1992 RA 2019	0.05	1.50
13	Manganese [mg/l]	0.55	IS 3025 (Part 59) : 2006 RA 2017	0.1	0.3

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDI

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
14	Sulphate [mg/l]	1525	IS 3025 (Part 24) : 1986 RA 2019	200.00	400.00
15	Nitrate [mg/l]	61.45	IS 3025 (Part 34) : 1988 RA 2019	45.00	-
16	Fluoride [mg/l]	1.20	IS 3025 (Part 60) : 2008 RA 2019	1.00	1.50
17	Cadmium [mg/l]	0.03	IS 3025 (Part 41) : 1992 RA 2019	0.003	-
18	Arsenic [mg/l]	BDL(<0.001)	IS 3025 (Part 37) : 1988 RA 2019	0.01	-
19	Lead [mg/l]	0.05	IS 3025 (Part 47) : 1994 RA 2019	0.01	-
20	Zinc [mg/l]	29.15	IS 3025 (Part 49) : 1994 RA 2019	5.00	15.00
21	Alkalinity - T [mg/l]	34.65	IS 3025 (Part 23) : 1986 RA 2019	200.00	600.00
22	Aluminum [mg/l]	BDL(<0.01)	IS 3025 (Part 55) : 2003 RA 2019	0.03	0.2
23	Boron [mg/l]	0.53	IS 13428 (Annexure H)	0.5	2.4
24	sulphide [mg/l]	Less than 0.05	IS 3025 (Part 29) : 1986 RA 2019	0.05	-
25	Total Chromium [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.05	-
26	Mercury [mg/l]	BDL(<0.001)	IS 3025 (Part 48) : 1994 RA 2019	0.001	No relaxation
27	Mineral oil [mg/l]	BDL(<0.5)	IS 3025 (Part 39) : 1991 RA 2019	1.0	-
28	Cyanide [mg/l]	BDL(<0.01)	IS 3025 (Part 27) : 1986 RA 2019	0.05	-
29	Anionic Surface Detergents as MBA's [mg/l]	BDL(<0.1)	IS 13428 (Annexure K)	0.20	1.00
30	Nickel [mg/l]	0.05	IS 3025 (Part 54) : 2003 RA 2019	0.02	-
31	Phenolic Compound [mg/l]	BDL(<0.001)	IS 3025 (Part 43) : 1992 RA 2019	0.001	0.002
32	Free residual chlorine [mg/l]	BDL(<0.1)	IS 3025 (Part 26) : 1986 RA 2019	0.2(minimum)	1
33	Barium as Ba++ [mg/l]	BDL(<0.5)	IS 13428 (Annexure F)	0.7	-
34	Ammonia as NH3 [mg/l]	BDL(<0.1)	IS 3025 (Part 34) : 1988 RA 2019	0.5	-
35	Silver as Ag [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.1	-
36	Chloramines [mg/l]	BDL(<0.1)	APHA:2017 : 4500-Cl B	4.0	-

Rajesh Maheshwa

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S) JDA/UDI

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

Laboratory : G1-584, RIICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
37	Total coliform [MPN/100ml]	Not Detected	IS 1622 : 1981	Shall not be detectable in 100ml Sample	-
38	E. Coli [MPN/100ml]	Not Detected	IS 5887 (Part 1) : 1976 RA 2018	Shall not be detectable in 100ml Sample	-
39	Selenium [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.01	-

Notes :-

Limits mentioned as per IS 10500 : 2012 is of Drinking Water. There is no precribed limit for Surface/Ground water etc.

The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.

This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.

The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Puran Mal Yogi
Senior Analyst

Rajesh Maheshwari
Authorized Signatory
(Report No: 23100001659)

vedanta
transforming for good

HINDUSTAN ZINC
Zinc & Silver of India

Ref: HZL/Kayad/ENV/2023-24/112

Date: 26/09/ 2023

Member secretary
Raj. Pollution Control Board
4, Institutional Area
Jhalan Doongri
JAIPUR

Sub: Environmental Statement of Kayad Mine for year 2022-23.

Ref: CTO granted vide File No. F(Mines)/Ajmer (Ajmer)/303(1)/2017-2018/ 9550-9554 dated 17.02.2018.
CTO granted vide File No. F(Mines)/Ajmer (Ajmer)/303(1)/2017-2018/ 5559-5563 dated 06.01.2023.

Dear Sir

Please find enclosed herewith the environmental statement for financial year ending on 31st March 2023.

Thanking you

Yours truly,

K.C. MEENA
Director (SBU)
Hindustan Zinc Ltd.
Kayad Mine-305023
Dist.-Ajmer (Raj.)

(K.C. Meena)
Director SBU (Kayad Mine)

cc to: Regional Officer : for kind information please.
Raj. State Pollution Control Board
SPL-II, RIICO Industrial Area, Phase-V,
Kishangarh, Dist. Ajmer

The Deputy Director (s) / Scientist – C
Ministry of Environment, Forest & Climate Changes,
Integrated Regional Office, A-209 & 218, Aranya Bhawan,
Jhalana Institutional Area Jaipur- 302004

Baseline - Needs Assessment Report - Final

Business Unit –Hindustan Zinc Limited (HZL) - Kayad, Ajmer, Rajasthan

Submitted to

vedanta

Submitted by

Taru Leading Edge

New Delhi, India

March 2019

Table of Contents

List of Tables

List of Tables

Abbreviations and Acronyms

Agri	Agriculture
AWC	Anganwadi Centre
AWW	Anganwadi Worker
BU	Business Unit
CSR	Corporate Social Responsibility
CAPI	Computer-assisted personal interviewing
CHC	Community Health Centre
DH	District Hospital
FGD	Focused Group Discussion
HH	Household
HZL	Hindustan Zinc Ltd
IDI	In-depth interview
ITI	Industrial Training Institute
KII	Key Informant Interview
LPG	Liquid Petroleum Gas
NGO	Non-Governmental Organisation
NSDC	National Skill Development Corporation
OBC	Other Backward Caste
ODF	Open Defecation Free
PG	Post-Graduation
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
PR	Public Relations
PwD	Person with Disability
PHC	Primary Health Centre
SBM	Swachh Bharat Mission
SC	Sub Centre
SHG	Self Help Group
SPSS	Statistical Package for the Social Sciences
UG	Under Graduate
VL	Vedanta Limited
VCT	Vocational Training

1.Introduction and Background

Vedanta Resources PLC is a global diversified metals and mining company. It owns the largest mining and non-ferrous metals company in India and has mining operations in Australia and Africa. The company is also developing commercial power stations in India in Odisha and Punjab.With a long history of creating consistent value for their stakeholders and with operations spread across four continents, Vedanta continues to increase its global footprint as a diversified natural resources company.

With changing times, there is a heavy shift from charity/philanthropy-based model towards a long-term engagement with CSR that ties in with their philosophy, values and business. There is a move towards sustainable development involving both social and ecological impacts, which in turn result in positive impacts into corporates' business models. The ability to show that organization gains resulting from investment in sustainability initiatives are in real incredibly appealing and this provides fresh impetus for organizations to address the missing gaps. There is also a focus on:

- Balancing the creating of economic value with that of societal value
- How to manage their stakeholder relationships (especially those with competing values)
- Identifying and responding to threats and opportunities facing their stakeholders
- Developing sustainable business practices
- Deciding the organization's capacity for CSR activities
- The need for not only identifying risks and negative impacts, but also for discovering "unintended positive impacts" through evaluation of companies' CSR activities

1.1. The Vedanta Limited CSR Initiative

Vedanta Limited has maintained the standards of its social commitment towards development of the community. The Vedanta Group has been actively involved in many CSR activities for the past many years through its Business Units (BU's) in various locations spread across different states of India. Focus of Vedanta's CSR initiatives has been majorly in Health, Education, Economic Development, Infrastructure Development and Sports & Culture.

For effective planning and implementation of its CSR program initiatives in chosen locations, it was essential for Vedanta toassess and establish the baseline data and information of the community and understanding the socio-economic scenario of the project areas.The present baseline/needs assessment study is part of this effort by the Business Unit (BU) - Hindustan Zinc Ltd. (HZL),which is a subsidiary of Vedanta Limited.

1.2. Profile of Business Unit – Hindustan Zinc Limited (HZL)

HZL is world's second largest zinc producer and is engaged in the segments of mining and smelting of zinc, lead, silver and cadmium metals and wind energy in India. With its headquarters in Udaipur Rajasthan, HZL operates its units in four districts of Rajasthan. Among the Company's operations include approximately five zinc-lead mines, over four zinc smelters, 1 lead smelter, 1 zinc-lead smelter, about 7 sulphuric acid plans, 1 silver refinery plant and over 6 captive plants in the state of Rajasthan. Additionally, the Company also has a rock-sulphate mine in Udaipur, Rajasthan and zinc, lead and silver processing and refining facilities in Uttarakhand. Apart from these, the Company has wind power plants in the states of Rajasthan, Gujarat, Karnataka, Tamil Nadu and Maharashtra. HZL has a metal production capacity of over 1 million tons per annum with its key lead-zinc mines in Rampura, Agucha and Sindesar Khurd and smelting complexes in Chanderiya and Dariba in the state of Rajasthan.

1.3. HZL CSR Initiative – Vision and Objective

CSR Mission

Facilitate collaborative development for improving the quality of life of people at large, particularly in the neighbourhood and state for achieving business goals and managing reputation.

CSR objective

Hindustan Zinc Limited understand the importance of CSR and aims its CSR programs to:

1. Enhance the quality of lives and economic wellbeing of the communities (CSR).
2. Maintain excellent Public or community relations (PR).
3. Demonstrate responsible corporate citizenship.

HZL believes that good CSR is also good PR -Being good is good but building mutual trust and making an impactful contribution to the local people is also rewarded in form of smooth operations. HZL CSR aims to closely align its CSR plans with the Millennium Development Goals or from 2015, the Sustainable Development Goals. HZL CSR ensures planning and reporting aligns well with the provisions of the Companies Act 2013.

Each of the unit locations has a dedicated Corporate Social responsibility (CSR) team working closely with the CSR management team based in Udaipur. As a socially responsible company it believes in sustainable development and its community development initiatives are prioritized based on local needs. The present baseline/needs assessment study of the community was conducted in Kayad HZL plant locationsduring June-July 2018.

A new underground mine near Ajmer, Rajasthan was opened at Kayad in the third quarter of FY 2014. Kayad mine is a small but high-grade deposit. It has an ore production capacity of 1 million MT and produced 93,939 MT of mined metal in FY 2017. The ore from Kayad mine is treated at Rampura Agucha Mine's mills. Its total reserve and resource are 7.1 million MT as on 31st March 2017 with zinc-lead reserve grade of 8.9%.

This baseline study will inform the CSR implementing organization the current needs of the community and the baseline status at the study location.

1.4. Objectives of the Baseline/Needs Assessment

The baseline/needs assessment of the community in select HZL plant location was conducted with the objective to understand the baseline and socio-economic scenario of the project areas and the community needs.

1.5. The Kayad Plant Area

Demographic Profile

Kayad is situated in the Ajmer District of Rajasthan which is one of the major and oldest cities in India. It is in the centre of Rajasthan and the districtis surrounded by the Aravalli Mountains. To the north, its boundaries touch Nagaur; Tonk and Jaipur districts lie on the eastern side; Pali is located on its western boundaries, while Rajsamand is situated on the south. The nearby town of Kishangarh stands as one of the largest markets for marble and marble products.

According to the Census 2011 data the Ajmer district had 4,91,565 households and a population of about 25,83,052 (Table 1). The population consisted of 13,24,085 males and 12,58,967females which derived a sex ratio of about 951 females per 1000 males. The sex-ratio was comparatively higher than the state average of 928 females per 1000 males. The district had children population of 3,81,167 in the age group 0-6 years. It had a working population of 10,53,722 of which the female workforce formed to 29.20%

Table 1: Demographic Indicators of the Kayad Region/Ajmer District

Particulars

Population	
Male	13,24,085
Female	12,58,967
Total	25,83,052
Number of Households	4,91,565
Children in age group of 0-6 years	
Male	2,00,511
Female	1,80,656
Total	3,81,167
Sex Ratio	**951**
Working Population	
Male	6,86,149
Female	3,67,573
Total	10,53,722

Source: Census 2011

Socio-economic Profile

The social indicators of Ajmer district were just average and required focused effort to bring about a further improvement in them. The literacy rate of the district was 69.33% which was slightly higher than the state average of 66.11%. The female literacy rate was much lower at 55.68% against the male literacy that stood at 82.44%. However, the female literacy rate in the district was better than the state average of 52.12% (Census, 2011).

Among the total population of 25, 83,052 in Ajmer, 4,79,027 (3.91%) persons belonged to scheduled caste and 63,482 (0.69%) to scheduled tribes. As presented in Table 2 the district had a rural population of 59.92% and an urban population of 40.08%. (Census 2011)

The district had a total cropped area of 8,42,994 hectares. The forest cover and non-agricultural land stood with 57,792 and 53,695 hectares respectively and there was 1, 48,097 hectares of cultivated barren land in the district. Ajmerdistrict has been growing as the economic hub with 17663 registered Industries. As per the MSME report, 87,420 persons were estimated averagenumber of daily workersemployed in small scale and 3,529 in large and medium industries in the districts.

Table 2: Status of Socio-economic Indicators in the KayadRegion/Ajmer District

Social indicators	
Literacy	
Male	82.44
Female	55.68
Total	69.33
Proportion of	
Scheduled Caste	4,79,027
Scheduled Tribe	63482
Place of Residence	
Rural	59.92%
Urban	40.08%
Agriculture (Land Utilization)	
Total Area	8,42,994 Hectares
Forest Cover	57,792 Hectares
Non-Agricultural Land	53,695 Hectares

Uncultivable barren land	1,48,097 Hectares
Industries	
Registered Industries	17663
Total Industrial Unit	19221
Medium and Large Unit	08
Total employment in registered small-scale industry	7732
Estimated Avg. No. Of Daily Worker Employed in Small Scale Industries	87,420
Total employment in Large and medium Industries	3,529

Source: Brief Industrial Profile of Ajmer District 2012, MSME- Development Institute, Census 2011

Infrastructure Facilities

The secondary data analysis conducted under the study showed that various infrastructure facilities like institutions, schools, colleges, banks, and the road connectivity and communication facilities including telecommunication were available in district.

The district had 996 primary schools, 1312 middle, 370 secondary and 509 senior secondary schools. There were as many as 40 colleges and 6 engineering colleges. There were also 4 medical college and 53 Vocational training centres available in the district.There was sufficiency of banking facilities in the region as about with 258 commercial banking branches served the population. There were 29 rural bank branches and three co-operative banks

About to the health infrastructure the district had been equipped with one district headquarter hospital. It had 485 Allopathic Hospital and 153 Ayurvedic Hospital. There were 20 community health centres and 63 Primary health centres to cater the population of the district with health care services.

As for the communication facility there were about 40646connections of landline phones and 60 post officesin the district. The region was well connected with road facility. There was a National Highway passing through the district covering about 300.50 kms and rural roads covering 2360.15 kms. The infrastructure details are provided in Table 3 given below;

Table 3: Infrastructure and Sanitation Facilities in the Kayad Region/Ajmer District

Infrastructure	
Education	
Primary school	996
Middle school	1312
Secondary school	370
Senior secondary school (SS)	509
Degree college of arts science& commerce	40
Degree college of engineering	6
Medical college	4
Vocational training centres	53
Banks	
Commercial Bank	258
Rural Bank Branches	29
Co-operative Bank	3
Health	
District Hqr. Hospital	1
Allopathic hospitals	485

Ayurvedic Hospital	153
Community health Centres	20
Primary Health Centres	63
Communication	
Telephone Connection	40646
Post Offices	60
Roads (in KMs)	
(a) National Highway	300.50
(b) State Highway	666.95
(c) Main District Highway	449.80
(d) Other district & Rural Roads	361.10
(e) Rural road	2360.15
(f) Agriculture Marketing Board Roads	599.00

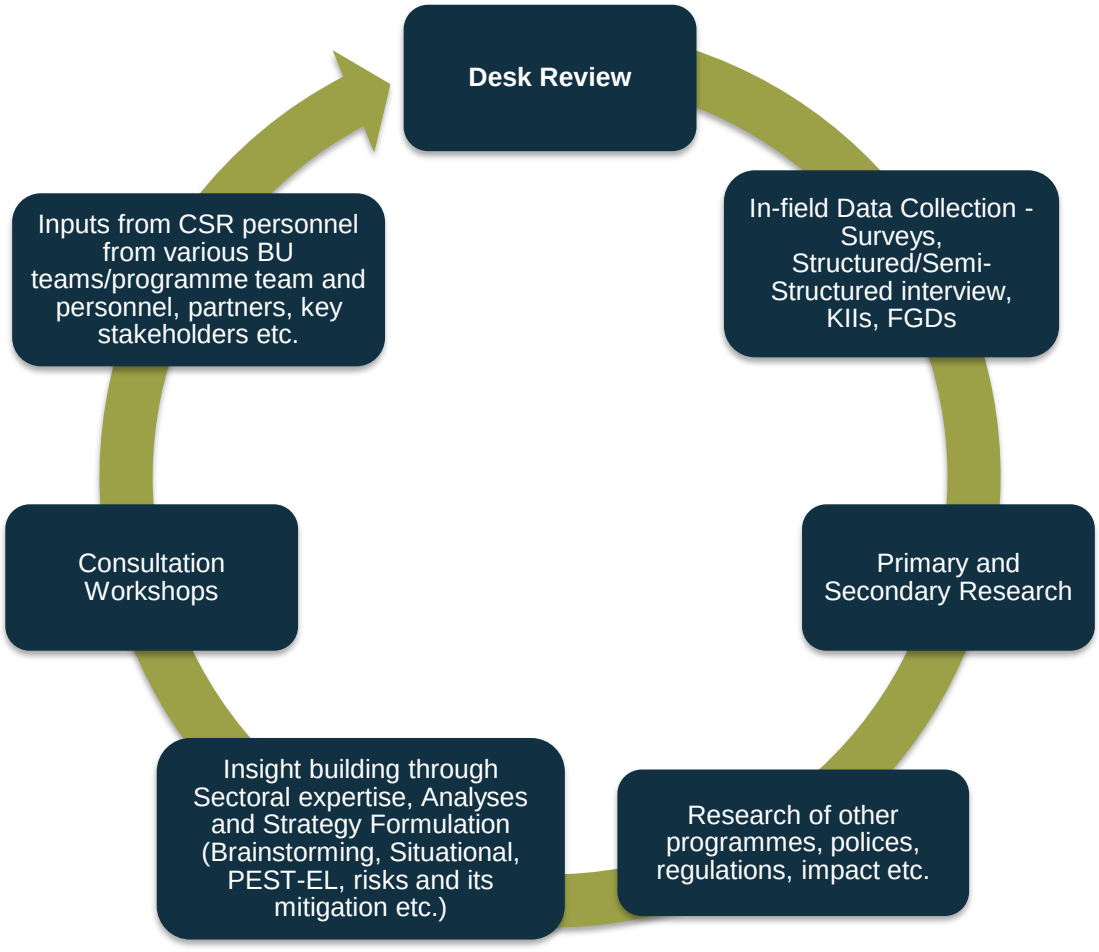
Source: http://statistics.rajasthan.gov.in/

2. Assessment Approach and Methodology

The study team adopted a research-based scientific approach for conducting the study which consistentlyfocused on evidence building. The approach and methodology used for the baseline assessment of the socio-economic status and needs of the community in the study location is detailed in the following sections.

2.1 Assessment Approach

The baseline/needs assessment study was conducted using a mixed methods approach including quantitative, qualitative and observational methods using both primary and secondary research with a view on strong evidence building. Following a consultative approach followed under the study, the study team conducted interactions with concerned personnel of Vedanta Group and the Business Unit under. The overall approach adopted for conducting the study is depicted below:



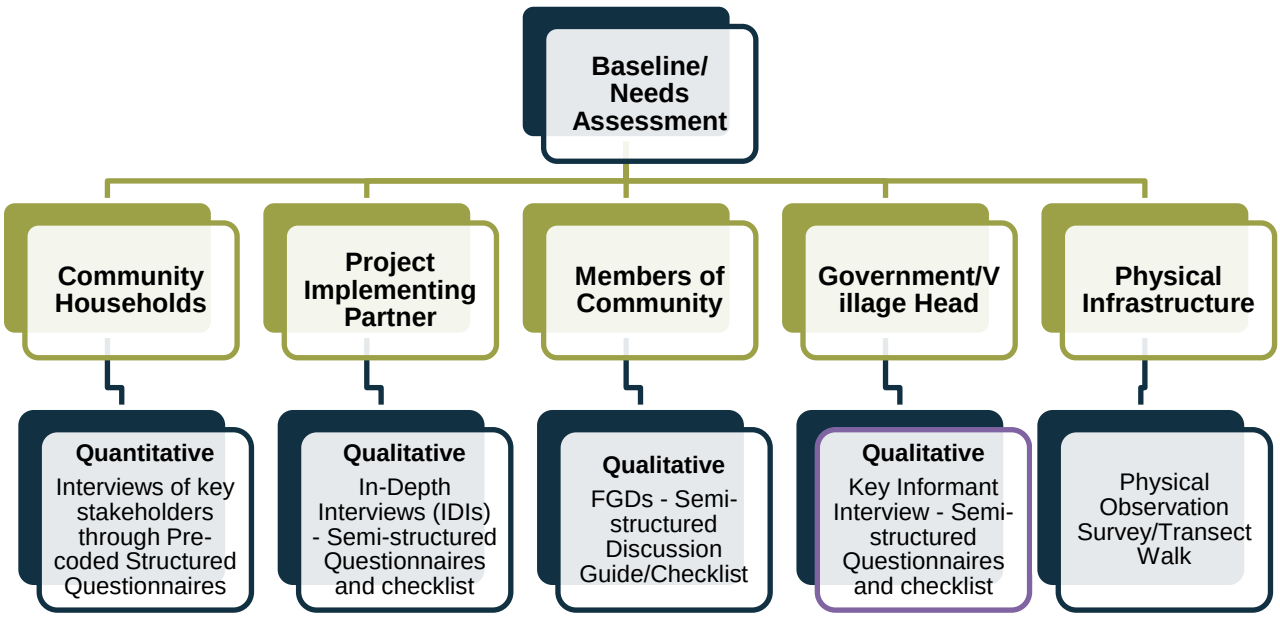
The socio-economic status and the needs of the community were assessed by analysing the data collected.

2.2 Methodology and Implementation Framework

The sampling for the study was divided on priority basis with primary focus on the core villages which were within <5 kms of the plant location. Accordingly, 80% of the sample was from core villages. About 15% of the sample was selected from the periphery villages which were within 5-10 kms of the plant location. Data was collected from a total of 50 HHs in each sampled village for the baseline/need's assessment.

Secondary focus was given to the outreach villages which were >10 kms distance from theplant location. About 5% of the sample was from these outreach villages.

Questionnaire was developed for baseline assessment of needs of the community and used for data collection. The quantitative and qualitative data was captured in the study as per the framework shown below;



Sample Coverage:

The baseline assessment study covered a sample of 200 households surrounding the Kayad plant area. Depending on the proximity of the villages from the plant location, 4 villages were selected as sample for the study and 50 households from each village was surveyed for assessing their social and economic status and thereby assessing their needs. The four sample villages covered for the baseline study were: (1) Kayad; (2) Chchiyawas; (3) Ghooghra; and (4) Gagwana.

Table 4: Details of the Sample Villages Surveyed

Sr. No	State	Plant	District	Block	Village	Category
1.	Rajasthan	Kayad	Ajmer	Shrinagar	Kayad	Core
2.	Rajasthan	Kayad	Ajmer	Shrinagar	Chchiyawas	Periphery
3.	Rajasthan	Kayad	Ajmer	Shrinagar	Ghooghra	Periphery
4.	Rajasthan	Kayad	Ajmer	Shrinagar	Gagwana	Periphery

The study captured quantitative information from this location through household survey using CAPI technique. In addition, qualitative data was also collected through 12 Key Informant interviews, 4 focus group discussions with separate male and female groups and village level observations through transect walks in each of the four villages.

Study Tools and Research Instruments Used:
The study tools in the form of structured pre-coded questionnaires, the Key Informant Interview (KII) and In-depth Interview (IDI) questionnaire and FGD guide were designed and developed for the study[1] (both quantitative and qualitative) to collect primary data. The tools were translated to Hindi language and were digitizedin ODK software and pre-tested before conducting the main survey.

Training of Field Team:
Training modules were prepared separately for Field Coordinators, Supervisors and Investigators. A one-day training session was conducted for the investigative team by the core team members to familiarize the field team with field protocols and research tools. The field team was also instructed about the importance of maintaining confidentiality of the respondent's answers and any other comments made by them during their interview. A plant-wise field movement plan was prepared such that each Supervisor and Investigator was mapped during the field work.

Data Collection:
The research tools were administered to the different stakeholders as per the sampling framework adopted to garner information on various aspects of the assessment.A CAPI-based data collection on Tablet PCs was used to collect data from householdsusing survey questionnaires. Structured pre-coded questionnaires were loaded on each tablet using an application that allowed geo-tagging, time stamping, collation and analysis in excel, R, and SPSS. Collected data was uploaded or transferred from the tablet to a cloud server every day on availability of internet services. When such services were not available at the collection site, the data was loaded after returning from the field on that day. Advanced systems were used for collection of data including ODK software, Tablet PCs, Android OS, in-house IT teams to ensure seamless design and interface, including data collection, analysis, viewing etc.

Qualitative data was gathered in the form of IDIs, KIIs, FGDs and interactions with key stakeholders. An assessment of physical infrastructure in the villages was done through observation surveys/transect walks. Interaction and discussion checklists were developed to guide the discussions and ensure that it is managed effectively to gather maximum quality information.

Analysis of Data:
The quantitative data collected was analysed plant-wise using SPSS software. The information gathered through the KIIs, IDIs, FGDs, interactions and observations were cleaned analyzed and corroborated to the findings of the quantitative analysis.

[1]Structured pre-coded questionnaires and detailed Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs), In Depth Interviews (IDIs), survey questionnaires and guides were developed to gather relevant information and primary data from HHs, community members, project implementing partner, government/village for the baseline/needs assessment study.

3. Analysis and Key Findings

The quantitative and qualitative data collected from the surveyed areas were analysed to assess the needs of the community.

3.1 Basic Household Characteristics

In the sample households surveyed, the total household respondents who wereinterviewed consistedof 49.5% males and 50.5% females. Of the respondents, only36.5% of them were the chief wage earner of the household. Most of the respondents were Hindus (74.5%) and the other 25.5%belonged to Muslim faith ofreligion.

The households were also chosen such that enough numbers were in different income categories and social groups in the locality such that it would facilitate a comparison between income groups and caste groups. Accordingly, there were 15 households from the income group with less than INR 50,000, 36 households from the INR 50,000 to INR1,00,000 income group, 104 households from INR 1,00,000 to INR 2,50,000 income group and about 45 households from above INR 2,50,000 income group.

Thus selected 200 sample households when grouped based on the social groups showed that 68% of them belong from the other backward castes, 20.5% belong to the scheduled casteand 11.5% belong to the general category.

Table 5: Percent Distribution of Households According to Background Characteristics by Income and Social Groups

Income/Social Group		Gender of the respondent (%)		Respondent the Chief Wage Earner (%)	Religion of the respondent (%)		Number of HH
		Male	Female		Hindu	Muslim	
Income Group	Less than INR 50K	66.7	33.3	73.3	60.0	40.0	15
	INR 50K - 1L	44.4	55.6	36.1	72.2	27.8	36
	INR 1L - 2.5L	48.1	51.9	31.7	74.0	26.0	104
	Above INR 2.5L	51.1	48.9	35.6	82.2	17.8	45
Social Group	General	43.5	56.5	47.8	78.3	21.7	23
	Schedule Caste	53.7	46.3	41.5	100.0	0.0	41
	Others (Incl. OBC)	49.3	50.7	33.1	66.2	33.8	136
Total		**49.5**	**50.5**	**36.5**	**74.5**	**25.5**	**200**

In total, there were 1291 members in the 200 households that were surveyed of which 662 were males (51.2%) and 629 (48.7%) were females. A look at the age structure of the household members reveals that majority of the members (41.8%) were in the age group 15-35 years and were in the most productive years of life. This was similar for both males (40.5%) and females (43.2%).

There were 20.6% members in the 35-59 years age group. About 18.4% of members were in of the age groups 7-14 years and 9.6% members were above 60 years. In the younger age group4.6% were in the 0-2 years' category and 7.8% in the age group of 3-6 years.

Table 6: Percent Distribution of Household Members by Age Group and Sex

Age-Group	Male(%)	Female(%)	Total (%)
Up to 2 Years	4.5	4.6	4.6
3-6 Years	8.0	7.6	7.8

7-14 Years	19.0	17.8	18.4
15-35 Years	40.5	43.2	41.8
35-59 Years	21.0	20.2	20.6
60+ Years	6.9	6.5	6.7
Number of Persons	**662**	**629**	**1,291**

3.2 Socio-economic Status of Households

Educational Status

The educational status of the sample households was assessed by taking into consideration the education levels of all the members of the households. Thus, the educational levels of 1291 members in total were assessed in the study of which it was found that 297 of them were illiterate, 528 were literate and 417 of them were drop-outs. The overall illiteracy level in the locality was 23.0% (297 of 1291). The illiteracy level was found to be high among females as 221 of them were illiterate as compared to 76 males. The data reveals a high rate of school drop out of 32.3% (417 of 1291). The drop-outs included both those dropped out before class 8 and those dropped after class 8.

Table 7: Distribution of household members by Literacy Status

Particulars	Sex of Family Members (in numbers)		Total
	Male	Female	
Literate	292	236	528
Illiterate	76	221	297
Too young to be in school	26	23	49
Drop out	268	149	417
Total	**662**	**629**	**1291**

The trend shows that there was a high rate of drop out after class 8 with 26.6% of male and 11.3% of female members were dropping out of school. We can see in the table that dropout rates were also high before completing class 8 as it was13.9% among males and 12.4% for females. Also, a total of only 2.2% were post graduates and 4.3% graduates. This could be primarily related to the availability of the facilities in the villages for higher education.

The illiterates in the location was 23% overall and this was higher among females with 35.1% of illiterates as compared to 11.5% illiterates among males. Thus, overall the literacy rate was about 77%.

Table 8: Level of Education of Children Currently Studying and Those Completed Education in the Households

Level of Education	Male (%)	Female (%)	Total (%)	Total (No.)
Children Currently Studying				
Goes to Anganwadi	2.9	3.8	3.3	43
Studying in Class 1-5	17.1	14.0	15.6	201
Studying in Class 6-8	6.8	6.8	6.8	88
Studying in Class 9-10	4.1	4.6	4.3	56
Studying in Class 11-12	3.6	3.2	3.4	44
Studying or completed Vocation Training	0.3	0.2	0.2	3
Studying or completed Technical Training	1.2	0.2	0.7	9
UG	5.7	2.9	4.3	56
PG	2.4	1.9	2.2	28
Illiterate	11.5	35.1	23	297

Too young to be in School	3.9	3.7	3.8	49
Drop out after class 8	26.6	11.3	19.1	247
Drop out before class 8	13.9	12.4	13.2	170
Total (N)	**100.0**	**100.0**	**100.0**	**1,291**

The major reasons stated by members for dropout were requirement for household work (43.2%), requirement on farm or household business (36.7%), child lacking interest in schooling (8.6%), and not important to study (3.8%). The other reasons cited were high education costs, getting married and fear of failing in class.

A cross tabulation of the data across income groups showed that the maximum number of drop-outs were in the INR 1l-2.5L income group followed by the 2.5L-5L income group. The main reasons stated by these households for dropping out were requirement for household work, farm or household business

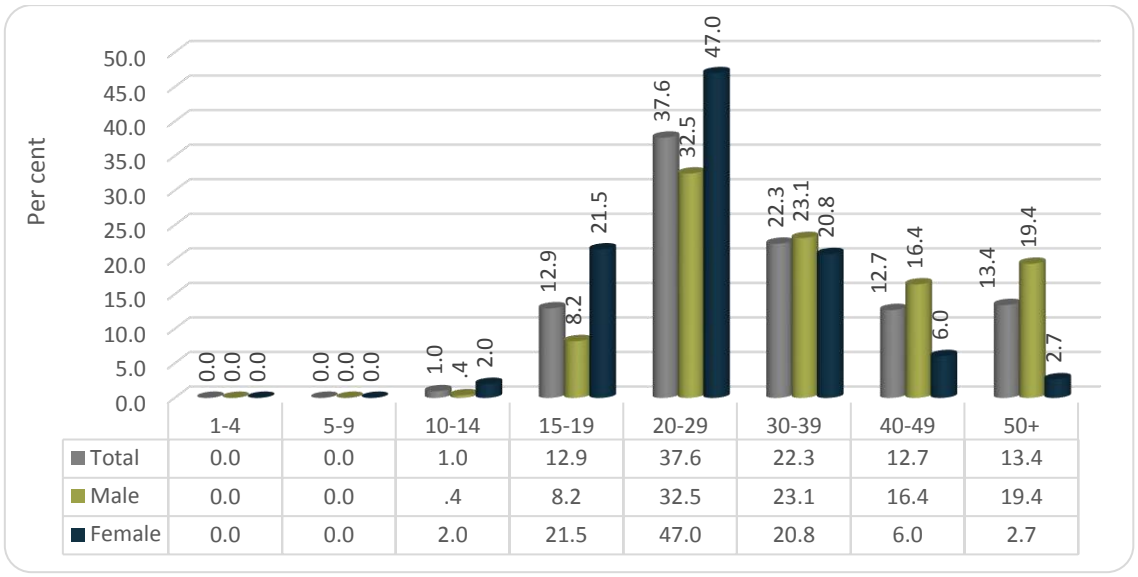
Table 9: Percent Distribution of Household Members Dropped Out of School and the Reasons for Dropping Out by Income Group

Reason for dropping out of school	Less than 20K	20K- 50K	50K - 1L	1L - 2.5L	2.5L- 5L	Above 5L	Total
School is too far	0.0	0.0	2.2	0.0	0.0	0.0	0.2
No transport for school	0.0	0.0	0.0	0.5	0.0	0.0	0.2
Not important to study	25.0	0.0	10.9	4.1	0.0	3.0	3.8
No separate school for boys and girls	0.0	0.0	0.0	0.0	0.0	3.0	0.2
No working toilet in the school	0.0	0.0	0.0	0.0	1.0	0.0	0.2
Required for household work	75.0	57.1	30.4	43.4	38.6	63.6	43.2
Required on farm or household business	0.0	42.9	41.3	36.1	39.6	27.3	36.7
Costs too much	0.0	0.0	4.3	3.2	2.0	0.0	2.6
Child not interested in schooling	0.0	0.0	8.7	8.7	11.9	3.0	8.6
Non-Availability of teacher in School	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scared of failing or failed once	0.0	0.0	0.0	2.3	0.0	0.0	1.2
Getting married	0.0	0.0	2.2	1.8	3.0	0.0	1.9
Others Specify	0.0	0.0	0.0	0.0	4.0	0.0	1.1
Number of HH member dropped out of school	**4**	**14**	**46**	**219**	**101**	**33**	**417**

An age-group wise analysis of the number of drop-outs and illiterates was conducted in the surveyed households. Overall, there was higher proportion of drop-outs in the higher age groups. The dropout rates were starkly high (47.0%) in case of female in the age group of 20-29 years. It was found that there were almost 13% drop-outs in the age group 15-19 years (Figure 1).

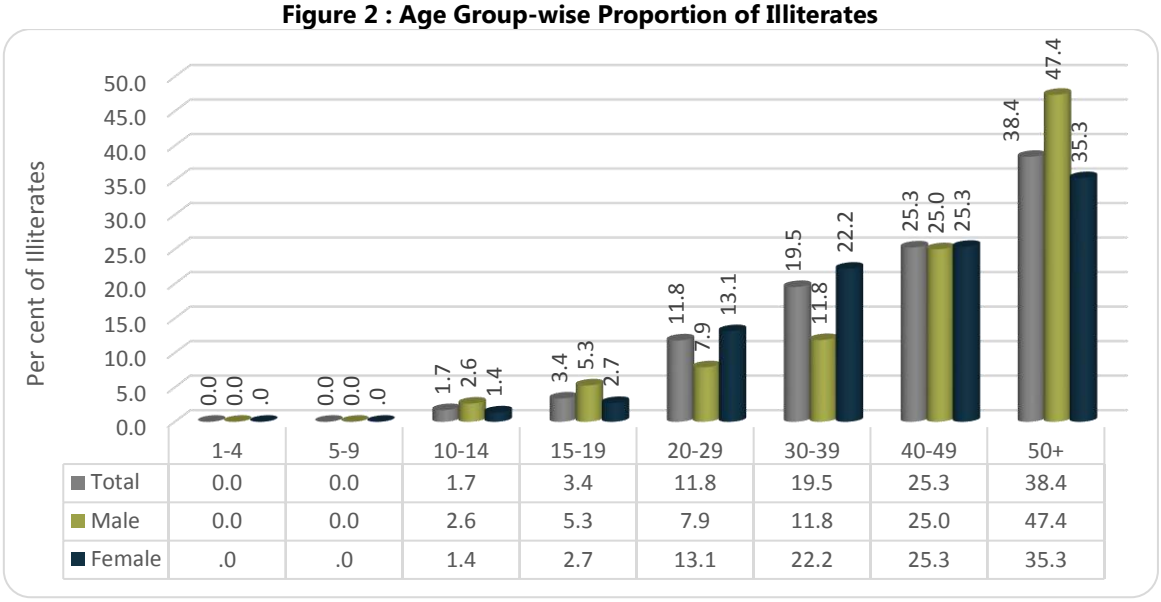
Few illiterates (3.4%) were found in the age group of 15-19 years (Figure 2). It is evident from Fig 2 that the proportion of illiterates increased for higher age groups. The survey also brought into light that there were also a few children in the 10-19-year age group who were either drop-out or were illiterate which required interventions for bringing these children in main stream education through bridge course or providing them vocational or technical training.

Figure 1 : Age Group-wise Proportion of Drop-outs



	1-4	5-9	10-14	15-19	20-29	30-39	40-49	50+
Total	0.0	0.0	1.0	12.9	37.6	22.3	12.7	13.4
Male	0.0	0.0	.4	8.2	32.5	23.1	16.4	19.4
Female	0.0	0.0	2.0	21.5	47.0	20.8	6.0	2.7

Figure 2 : Age Group-wise Proportion of Illiterates



	1-4	5-9	10-14	15-19	20-29	30-39	40-49	50+
Total	0.0	0.0	1.7	3.4	11.8	19.5	25.3	38.4
Male	0.0	0.0	2.6	5.3	7.9	11.8	25.0	47.4
Female	.0	.0	1.4	2.7	13.1	22.2	25.3	35.3

Income Status

A look at the number of earning members in the household shows that 51% of households hadonly one earning member and 29% of households had two earning members. About14.5% of the households had three earning members and only 5.5% had four household earning members. The finding suggests that thehighest number of households with three earning members belonged to the Other category which includes OBC and four members earning household were from Schedule caste.

Table 10: Number of Earning Members in Households

Income/Social Group		Number of Earning Members in Family (%)				Number of HH
		One member	Two members	Three members	Four Members	
Income Group (INR)	Less than 50K	93.3	6.7	0.0	0.0	15
	50K - 1L	83.3	16.7	0.0	0.0	36
	1L - 2.5L	47.1	34.6	15.4	2.9	104

	Above 2.5L	20.0	33.3	28.9	17.8	45
Social Group	General	56.5	26.1	13.0	4.3	23
	Schedule Caste	43.9	41.5	4.9	9.8	41
	Others (Incl. OBC)	52.2	25.7	17.6	4.4	136
Total		**51.0**	**29.0**	**14.5**	**5.5**	**200**

An enquiry into the income distribution of the households shows that 11.5% of the households earn less then Rs. 50,000 per annum. While,20.5% of the total households are earning between INR 50,000 to 1,00,000 per annum, 3.5% of them earns between INR 1,00,000 to 2,50,000 and a majority 68.0% earn more than 2,50,000 per annum. In the income bracket of above INR 250,000, majority of the social group households are from other (OBC) castes (68.9%) and schedule caste (20.0).

Table 11: Annual Income of Households

Social Group	Income Group (in %)				Number of HH
	Less than INR 50K	INR 50K - 1L	INR 1L - 2.5L	Above INR 2.5L	
General	0.0	5.6	15.4	11.1	23
Schedule Caste	20.0	27.8	18.3	20.0	41
Others (Incl. OBC)	80.0	66.7	66.3	68.9	136
Total	**11.5**	**20.5**	**3.5**	**68.0**	**200**

The study area showed that 51.5% of the source of income was from the non- agriculture sector wherein they provided skilled and independent work in the economy.The agrarian economy was also reflected as another source of income as well.

For about 39.5% of households in the study, the source of income was from agriculture and animal husbandry also was 26.5% amongst the households. This means that larger chunk of population is dependent on agriculture and animal husbandry. About 22% of the total households had salaried jobs.

This proportion of the salaried group was more among the higher income groups.15.5% households earned income from small shop or business. About 5.5% of the households reported working with Vedanta or its ancillary unit.

Figure 3: Occupational Pattern of the Households

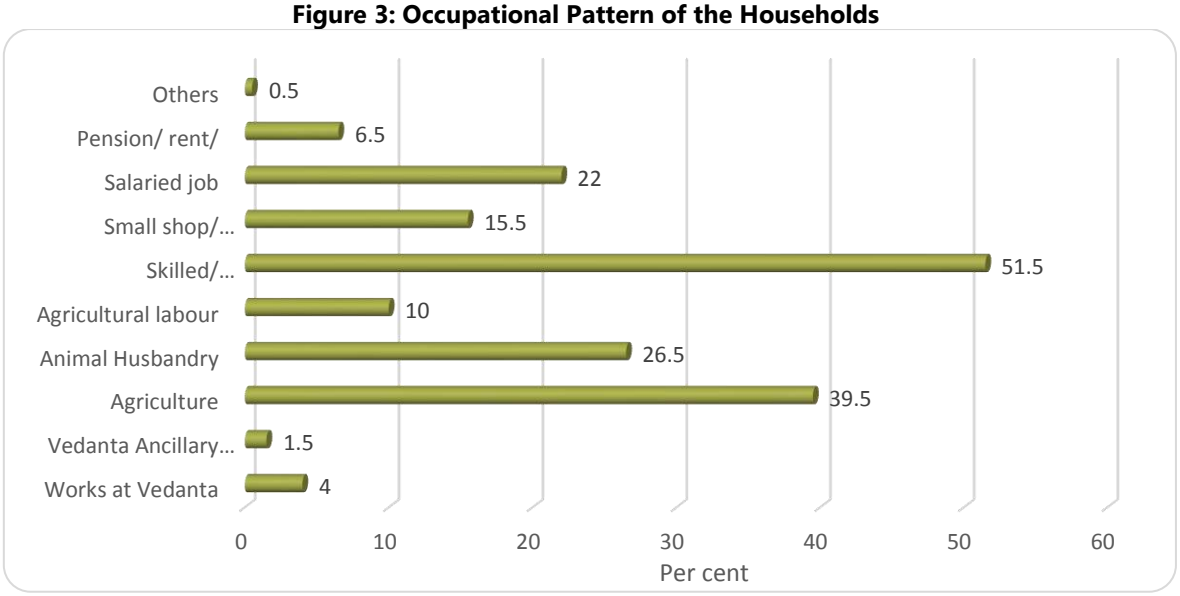


Table 12: Source of Income of Households

Income/Social Group		Source of Income of Households (%)										Number of HH
		Works at Vedanta	Vedanta Ancillary unit	Agriculture	Animal Husbandry	Agricultural labour	Skilled/ Independent work	Small shop/ business	Salaried job	Pension/ rent/ shares	Others	
Income Group	Less than 50K	0.0	0.0	26.7	13.3	6.7	46.7	6.7	13.3	6.7	0.0	15
	50K - 1L	0.0	0.0	27.8	25.0	5.6	72.2	2.8	5.6	2.8	0.0	36
	1L - 2.5L	2.9	1.9	41.3	27.9	13.5	50.0	16.3	17.3	2.9	1.0	104
	Above 2.5L	11.1	2.2	48.9	28.9	6.7	40.0	26.7	48.9	17.8	0.0	45
Social Group	General	13	0.0	34.8	26.1	21.7	26.1	8.7	21.7	0.0	4.3	23
	Schedule Caste	4.9	0.0	26.8	9.8	4.9	68.3	17.1	29.3	7.3	0.0	41
	Others (Incl. OBC)	2.2	2.2	44.1	31.6	9.6	50.7	16.2	19.9	7.4	0.0	136
Total		**4.0**	**1.5**	**39.5**	**26.5**	**10.0**	**51.5**	**15.5**	**22.0**	**6.5**	**0.5**	**200**

Housing Status

As can be observed from table 13, most of the households, that is93% of them had own house. Only 7% of the households were staying in rented houses and these were in the lowest income groups and 8.1% were from Others (incl. OBC) and 4.9% belonged to the scheduled caste among the social groups.

Table 13: Housing Status of the Households

Income/Social Group		Housing Status (%)		Number of HH
		Rented	Own house	
Income Group	Less than INR 50K	20.0	80.0	15
	INR 50K - 1L	5.6	94.4	36
	INR 1L - 2.5L	7.7	92.3	104
	Above INR 2.5L	2.2	97.8	45
Social Group	General	4.3	95.7	23
	Schedule Caste	4.9	95.1	41
	Others (Incl. OBC)	8.1	91.9	136
Total		**7.0**	**93.0**	**200**

Livestock Ownership Status of Households

Of the total households, livestock was owned by 62.5% of the households. Amongst that, 60.8% of the household had up to 5 numbers of livestock, 21.6% had 6 to 10 numbers and 17.6 has above 10 numbers of livestock. It can be seen from the table that households in income group above 2.5 lakh had the maximum number of livestock as also animal husbandry is one of the key sources of income for the households.

Table 14: Livestock Owned by Households

Income/Social Group		Livestock Ownership (%)	Number of Livestock Owned (%)			Number of HH
			Up to 5	6 - 10	Above 10	
Income Group	Less than 50K	60.0	33.3	44.4	22.2	15
	50K - 1L	61.1	81.8	4.5	13.6	36
	1L - 2.5L	59.6	58.1	24.2	17.7	104

	Above 2.5L	71.1	59.4	21.9	18.8	45
Social Group	General	43.5	60.0	10.0	30.0	23
	Schedule Caste	51.2	71.4	19.0	9.5	41
	Others (Incl. OBC)	69.1	58.5	23.4	18.1	136
Total		**62.5**	**60.8**	**21.6**	**17.6**	**200**

Land Ownership among Farming Households

Among the households that were engaged in farming activity, 27.8% had small land holding i.e. less than one acre of cultivable land. While, 31.6% of households had marginal land holding (between 1 to 2 acres). About 36.7% of them had medium holdings (between 2 to 5 acres)and 3.8% had cultivated large holdings i.e. more than 5 acres.

Table 15: Per cent Distribution of Household Having Agriculture Land According to Size of Cultivated Land among People in Farming Activity

Income/Social Group		Estimated Size of Land Cultivated (%)				Number of HH having agriculture land
		Less than one acre (small)	1 -2 acre (marginal)	2-5 acre (medium)	More than 5 acre (large)	
Income Group	Less than 50K	25.0	25.0	50.0	0.0	4
	50K - 1L	30.0	40.0	30.0	0.0	10
	1L - 2.5L	32.6	30.2	34.9	2.3	43
	Above 2.5L	18.2	31.8	40.9	9.1	22
Social Group	General	25.0	25.0	50.0	0.0	8
	Schedule Caste	45.5	27.3	27.3	0.0	11
	Others (Incl. OBC)	25.0	33.3	36.7	5.0	60
Total		**27.8**	**31.6**	**36.7**	**3.8**	**79**

Household Asset Mapping

The ownership of assets by the households was also mapped as part of the baseline needs assessment study. It was found from the data that 99% of the households were electrified and had pucca houses.Manyof the households, more than 80% had television, fan and a normal mobile. There were76% of the householdsthat had LPG connection. There were two wheelers in 68.5% households and22.5% of the households had internet access.

Table 16: Status of Household Assets Owned by the Households

Asset Particulars	Income Group (%)				Social Group (%)			Total (%)
	Less than 50K	50K - 1L	1L - 2.5L	Above 2.5L	General	Scheduled Caste	Others (Incl. OBC)	
Electricity connection	93.3	97.2	100.0	100.0	100.0	95.1	100.0	99.0
Geyser	0.0	0.0	0.0	8.9	8.7	0.0	1.5	2.0
Fan	86.7	97.2	99.0	100.0	100.0	95.1	98.5	98.0
TV	40.0	69.4	89.4	93.3	91.3	73.2	84.6	83.0
Mobile phone (normal)	93.3	77.8	88.5	95.6	87.0	90.2	88.2	88.5
Smart Phone	6.7	16.7	43.3	64.4	52.2	41.5	38.2	40.5
LPG	53.3	69.4	77.9	84.4	87.0	85.4	71.3	76.0

connection								
Cooler	13.3	41.7	49.0	82.2	47.8	53.7	52.9	52.5
AC	0.0	0.0	0.0	2.2	4.3	0.0	0.0	.5
refrigerator	13.3	25.0	33.7	55.6	39.1	34.1	35.3	35.5
Washing Machine	0.0	0.0	2.9	13.3	13.0	2.4	3.7	4.5
Own a Credit Card	0.0	0.0	1.0	6.7	4.3	2.4	1.5	2.0
Life Insurance (Health)	0.0	0.0	1.0	13.3	4.3	2.4	3.7	3.5
Animal cart	0.0	0.0	1.9	0.0	0.0	0.0	1.5	1.0
Two-wheeler	20.0	58.3	66.3	97.8	65.2	70.7	68.4	68.5
Cycle	26.7	19.4	24.0	35.6	26.1	17.1	28.7	26.0
Four-wheeler	0.0	0.0	11.5	20.0	21.7	2.4	11.0	10.5
Tractor	0.0	2.8	3.8	8.9	0.0	0.0	6.6	4.5
Kutcha House	0.0	5.6	1.9	0.0	0.0	0.0	2.9	2.0
Pucca House	100.0	94.4	98.1	100.0	100.0	100.0	97.1	98.0
Water Filter	0.0	0.0	0.0	2.2	4.3	0.0	0.0	.5
Computer/ laptop	0.0	0.0	0.0	6.7	0.0	0.0	2.2	1.5
Internet Access	6.7	13.9	21.2	37.8	26.1	19.5	22.8	22.5

A general opinion that emerged from the community was that due to mining activities, many houses have developed cracks on the wall.

Financial Burden of Households

All the households surveyed had bank accounts and were familiar with the banking activity. It was interesting to note that in 88.5% of the households the bank account was accessed by both male and female members of the household.

It was in 6.5% of households that only the male members of the household were accessing the bank account and female members were accessing bank account in 5% of households.

Table 17: Accessibility of Bank Accounts by Households

Income/Social Group		Accessing the bank account by(%)			Number of HH
		Male member	Female member	Both	
Income Group	Less than 50K	13.3	33.3	53.3	15
	50K - 1L	11.1	5.6	83.3	36
	1L - 2.5L	2.9	2.9	94.2	104
	Above 2.5L	8.9	0.0	91.1	45
Social Group	General	4.3	4.3	91.3	23
	Schedule Caste	2.4	4.9	92.7	41
	Others (Incl. OBC)	8.1	5.1	86.8	136
Total		**6.5**	**5.0**	**88.5**	**200**

The debt burden of the households was observed to be quite high in the study area. Among the total households, 32.5% of the households had taken loan and a majority(67.7%) of them had availed it from a bank. Loans were also taken from SHGs (35.4%). Loan taken from other sources was a negligible 1.5% only. As we can see from Table 18, 76.92% of the households were not able to repay the debts.

Figure 4 :Debt Burden of Households

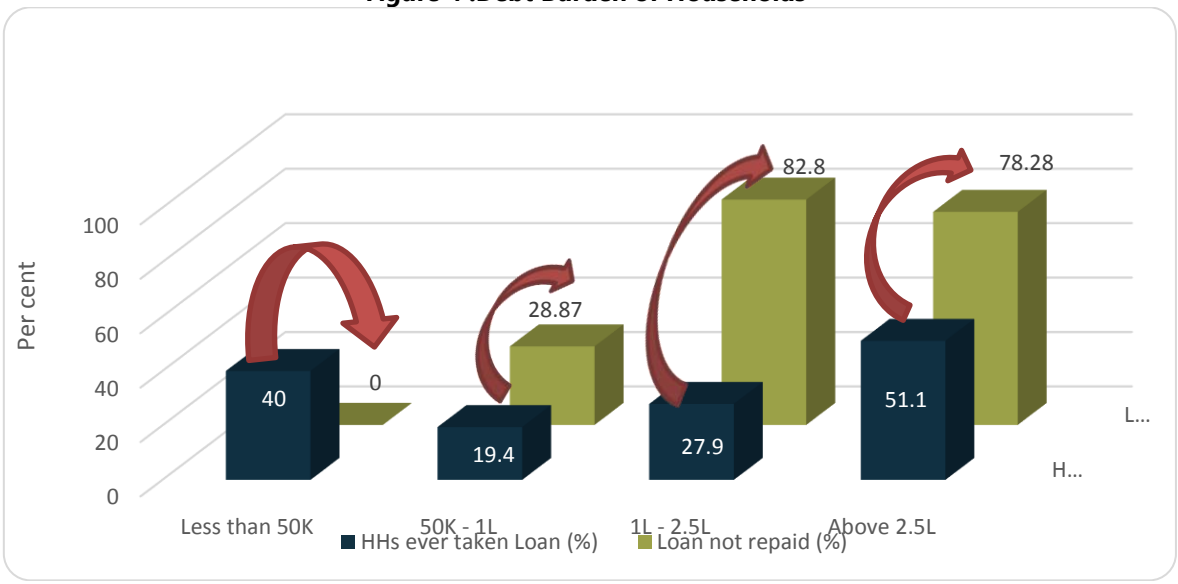


Table 18: Sources of Loan Availed by Households and the Repayment Status

Income/Social Group		HHs ever taken Loan (%)	Source of loan (%)			Loan not repaid (%)
			SHG	Bank	Others	
Income Group	Less than 50K	40.0	33.3	66.7	0.0	0.00
	50K - 1L	19.4	42.9	57.1	0.0	28.87
	1L - 2.5L	27.9	34.5	65.5	0.0	82.80
	Above 2.5L	51.1	34.8	73.9	0.0	78.28
Social Group	General	39.1	11.1	77.8	0.0	77.75
	Schedule Caste	43.9	55.6	55.6	0.0	77.68
	Others (Incl. OBC)	27.9	31.6	71.1	0.0	75.78
Total		**32.5**	**35.4**	**67.7**	**1.5**	**76.92**

A deeper look into the occupational background of the households that availed loans (Table 19), the maximum number of loans (32) were availed by the households in skilled/independent work followed by those inagriculture (24), salaried job (19) and Animal Husbandry (17). An obvious finding is that households of all professions preferred loans from banks.

Table 19: Percent Distribution of Household Ever Took Loan by Source of Loan Availed and Source of Income

Income/Social Group		Source of loan (%)			Number of HH ever took loan
		SHG	Bank	Others	
Source of Income	Works at Vedanta	40.0	60.0	20.0	5
	Works at Vedanta Ancillary Unit	0.0	0.0	0.0	0
	Agriculture	37.5	75.0	0.0	24
	Animal Husbandry	41.2	58.8	0.0	17

	Agricultural Labour	14.3	85.7	0.0	7
	Skilled/Independent Work	40.6	65.6	0.0	32
	Small Shop/business	27.3	81.8	0.0	11
	Salaried job	47.4	57.9	0.0	19
	Pension/rent/shares	42.9	57.1	0.0	7
	Others	0.0	100.00	0.0	1
Total		**35.4**	**67.7**	**1.5**	**65**

Different reasons were quoted by the households for availing loans and increasing their debt burden. The prominent reason for availing loans was for household expenses (38.5%) followed for buying or improving property (15.4%). The other reasons cited were for buying vehicle (12.3%) andboth business-related and farming related purpose (10.8%) each. Loans for marriage purpose were 7.7% while borrowings for medical and health purpose were 4.6%.

Table 20: Percent of Households who have Ever Taken Loan and Reasons for Availing Loan by Income and Social Groups

Particulars	Income Group (%)				Social Group (%)			Total (%)
	Less than 50K	50K - 1L	1L - 2.5L	Above 2.5L	General	Scheduled Caste	Others (Incl. OBC)	
Marriage	16.7	0.0	6.9	8.7	0.0	5.6	10.5	**7.7**
Medical or Health	16.7	0.0	3.4	4.3	0.0	11.1	2.6	**4.6**
Household Expenses	33.3	71.4	41.4	26.1	44.4	50.0	31.6	**38.5**
Buying Assets	0.0	0.0	0.0	4.3	0.0	0.0	2.6	**1.5**
Education	0.0	0.0	6.9	0.0	0.0	0.0	5.3	**3.1**
Buying or Improving Property	0.0	0.0	17.2	21.7	22.2	11.1	15.8	**15.4**
Business related	16.7	14.3	6.9	13.0	0.0	16.7	10.5	**10.8**
Farming related	16.7	0.0	3.4	21.7	11.1	11.1	10.5	**10.8**
Vehicle	0.0	14.3	24.1	0.0	22.2	5.6	13.2	**12.3**
Others	0.0	0.0	3.4	4.3	11.1	0.0	2.6	**3.1**
Number of HH who ever took loan	**6**	**7**	**29**	**23**	**9**	**18**	**38**	**65**

3.3 Infrastructure and Sanitation Facilities

A transect walk was conducted as part of the study in each of the surveyed areas, to understand the availability of basic facilities and amenities in the surveyed areas and identify their basic infrastructure needs. The surveyed areas had 1 Primary, 2 Middle and 3 High schools. The schools were all equipped with primary facilities of drinking water, sanitation and blackboards. The primary and the middle schools lacked laboratories; while 2 out of 3 high schools were equipped with laboratories. Libraries and playgrounds were available in 1Middle school and in all the High Schools. Virtual classrooms were available in 2 high schools.

Table 21: Availability of Schools and School Infrastructure

Theme	Particulars	Availability (in numbers)		
Education		Primary school	Middle School	High School
	No. of Schools	1	2	3
	Drinking water Facilities	1	2	3
	Sanitation	1	2	3
	Blackboards	1	2	3
	Virtual classrooms*	0	0	2
	Laboratories	0	0	2
	Libraries	0	1	3
	Playgrounds	0	1	3

* Note: There were computers available and learning sessions were conducted using computers.

There were *Anganwadi* Centres in all the surveyed areas of Kayad. About 3 of the centres had access to safe drinking water and having functional toilets. 3 of the AWCs had their own building and there were 99 children registered in the AWCs. Weighing machine was available in all the AWCs.

Table 22: Availability of *Anganwadis* and Facilities in the *Anganwadis*

Theme	Particulars	Availability (in numbers)
Nutrition	Anganwadis Centre	4
	Safe drinking water	3
	Own building	3
	Rented building	1
	Functional Toilets	3
	No. of children registered	99
	Availability of weighing Machine	9

Open defecation was evident in 1 surveyed area and none of the areas had community toilets. There were no dustbins in the area nor were there any mechanism for Solid Waste Management Systems in the surveyed area.

Table 23: Availability of Sanitation Facilities

Theme	Particulars	Availability (in numbers)
Water and Sanitation	Community toilets	0
	Open Defecation	1
	Dustbins	0
	Garbage-transport vehicles	0
	Sanitation staff	0
	Solid Liquid Waste Management	0
	Availability of solid/liquid waste segregation and management system linked to production of power and manure from waste	0

The area had 100% road coverage. About 2 of the surveyed areas had access to health care centre and water facility. Water tank was available in 3 of the surveyed areas. There was 1 skill development training camps and no computer training centre. Other facility such as playground, village markets, banks, post offices, libraries were available in 1, 3, 3, 2 and 1 respectively. Broadband connectivity was available in 1 and functional information Centre at GP/Ward was available in 2 of the surveyed areas.

Theme	Particulars	Availability (in numbers)

Infrastructure	100% Road coverage	4
	Public park	1
	Public bus stand	2
	Health Care Centre	2
	Water facility	2
	Water tank	3
	Skill development training camp	1
	Children's park in the village	0
	Solid waste management system	0
	Community halls	2
	Buildings for SHG federations	2
	Playgrounds	1
	Village markets	3
	Micro/mini banks	3
	Post offices	2
	Libraries	1
	Broadband connectivity	1
	Information kiosk	1
	Availability of functional information Centre at GP/Ward	2
	No. of computer training centres	0
	GP / Ward having functional computer internet connectivity	3

Table 24: Availability of Other Infrastructure Facilities

3.4 Sustainable Livelihood

Agriculture

Agriculture was the prime occupation of the households covered under the study. The study of the cropping pattern in the regions showed that the crop grown in the area during Rabi season was wheat (30.4%) by all income groups while 5.1% preferred to grow maize and 3.8% preferred black gram. During Kharif season,84.8% and 82.3% of households preferred to Bajra and Jowar respectively. During Zaid season,91.1%of household preferred to grownothing and some grew vegetables, bajra, jowar and wheat.

Table 25: Percent Distribution of Households According to Crops Grown During Rabi, Kharif and Zaid Seasons by Income Group

Income Group		Less than 50K	50K - 1L	1L - 2.5L	Above 2.5L	Total
Rabi season	Wheat	25.0	20.0	30.2	36.4	30.4
	Gram	0.0	10.0	0.0	9.1	3.8
	Mustard	0.0	10.0	0.0	0.0	1.3
	Vegetables	0.0	0.0	0.0	4.5	1.3
	Barley	0.0	10.0	0.0	0.0	1.3
	Chillies	0.0	0.0	2.3	0.0	1.3
	Maize	25.0	10.0	0.0	9.1	5.1
	No crops	50.0	60.0	69.8	50.0	62.0
Kharif season	Rice	0.0	10.0	0.0	9.1	3.8
	Wheat	0.0	0.0	2.3	0.0	1.3
	Jowar	75.0	50.0	88.4	86.4	82.3
	Bajra	100.0	70.0	86.0	86.4	84.8

	Pulses	0.0	0.0	0.0	4.5	1.3
	Soya bean	0.0	0.0	0.0	4.5	1.3
	Groundnut	25.0	0.0	0.0	0.0	1.3
	Maize	50.0	10.0	4.7	18.2	11.4
	Sesame	0.0	0.0	2.3	0.0	1.3
	Other	0.0	0.0	4.7	0.0	2.5
Zaid season	Wheat	0.0	10.0	0.0	0.0	1.3
	Jowar	0.0	20.0	0.0	0.0	2.5
	Bajra	0.0	10.0	7.0	0.0	5.1
	Vegetables	0.0	0.0	0.0	4.5	1.3
	Others-No crop*	100.0	70.0	93.0	95.5	91.1
Number of HH where agriculture is source of Income		**4**	**10**	**43**	**22**	**79**

*** Others-No Crops**

There were various schemes and programs in the agricultural sector run by various agencies like government, NGOs, corporates etc. Among these varied programs and schemes 27.8% of the households had accessed high yield seeds scheme and 16.5% households' accessed information good saplings, 7.6% on modern agricultural practices and 1.3% on micro irrigation methods.

Also, about 10.1% households received training in modern methods of agricultural practices. However, 58.2% of households accessed none of these schemes & programs.

Figure 5 :Agricultural Households' Accessibility to Schemes/Programs Conducted by Different Agencies

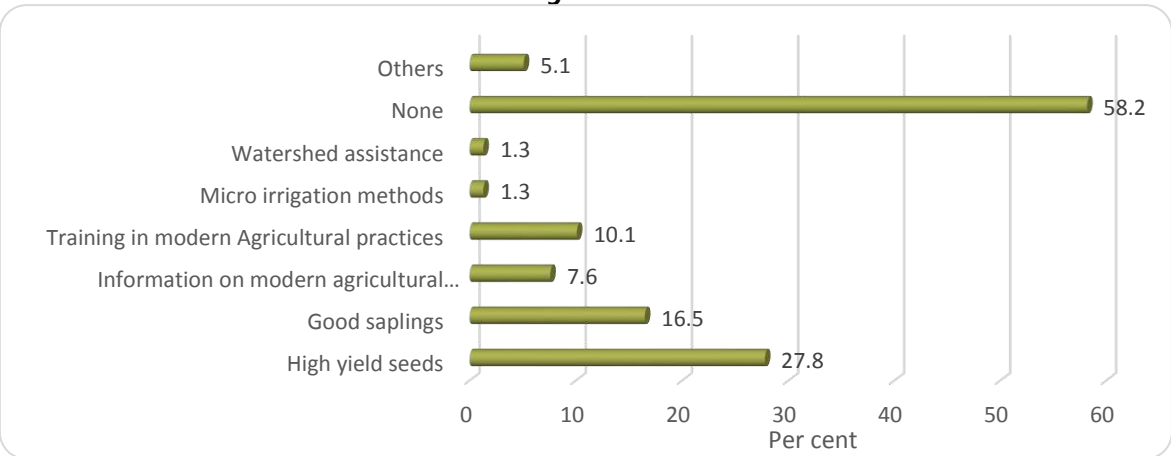


Table 26: Percent Distribution of Households in Agriculture having Accessibility to Schemes/Programs Conducted by Different Agencies

Income Group	Agriculture-related Schemes/ Programs Conducted by Govt./ NGO/ Corporates Accessed (%)								Number of HH having agriculture source of income
	High yield seeds	Good saplings	Information on modern agricultural practices	Training in modern Agricultural practices	Micro irrigation methods	Watershed assistance	None	Others	
Less than	0.0	0.0	25.0	25.0	25.0	0.0	75.0	0.0	4

50K									
50K - 1L	10.0	10.0	0.0	0.0	0.0	0.0	90.0	0.0	10
1L - 2.5L	37.2	18.6	7.0	4.7	0.0	2.3	55.8	4.7	43
Above 2.5L	22.7	18.2	9.1	22.7	0.0	0.0	45.5	9.1	22
Total	**27.8**	**16.5**	**7.6**	**10.1**	**1.3**	**1.3**	**58.2**	**5.1**	**79**

About the challenges that the households faced in existing agricultural practices, it was found that majority (63.3%) of the households faced challenges in availing surface water for irrigation.36.7% of them faced challenges with getting correct selling price for the crop. Nearly 19% of the households faced issues with access electricity and 15% with availability of agricultural tools. About 10% of them experienced challenges in procuring agricultural inputs.

Table 27: Challenges Faced in Existing Agricultural Practices

Challenges faced	Income Group(%)				Total
	Less than 50K	50K - 1L	1L - 2.5L	Above 2.5L	
Availability of surface water (irrigation)	50.0	80.0	58.1	68.2	**63.3**
Knowledge of new technology-based farming methods	0.0	30.0	2.3	4.5	**6.3**
Access to market	0.0	0.0	2.3	0.0	**1.3**
Correct selling price of the crop	0.0	40.0	37.2	40.9	**36.7**
Yield	0.0	10.0	0.0	0.0	**1.3**
Electricity	25.0	10.0	11.6	36.4	**19.0**
Availability of agricultural tools	25.0	0.0	20.9	9.1	**15.2**
Availability of agricultural inputs	0.0	0.0	14.0	9.1	**10.1**
Weather Forecast Information Availability	25.0	20.0	9.3	0.0	**8.9**
Post-harvest- Storage	0.0	0.0	2.3	0.0	**1.3**
Number of HH where agriculture is source of income	**4**	**10**	**43**	**22**	**79**

Livestock

Rearing livestock is one of the means of livelihood in rural areas. It was observed that the livestock owners were mostly in all the income categories. Majority of households (59.2%) owned cows, (47.2%) owned buffaloesand goats were ownedby 58.4% households. A negligible proportion owned hens (4%), pigs (0.8%) and camels (0.8%).

Table 28: Species of Livestock Owned by Households and Source of Fodder

Income Group	Species of Livestock owned(%)							Source of Fodder(%)				Number of HH
	Cow	Buffalo	Goat	Hen	Pig	Camel	Others	Produce Own Fodder	Procure Fodder	Buy & Produce Some	Others	
Less than 50K	55.6	55.6	88.9	0.0	0.0	0.0	0.0	0.0	88.9	11.1	0.0	9
50K - 1L	31.8	36.4	54.4	4.5	0.0	0.0	0.0	9.1	54.5	31.8	4.5	22
1L - 2.5L	56.5	45.2	59.7	3.2	1.6	0.0	1.6	16.1	38.7	41.9	3.2	62
Above 2.5L	84.4	56.3	50.0	6.3	0.0	3.1	0.0	15.6	15.6	68.8	0.0	32

Total	**59.2**	**47.2**	**58.4**	**4.0**	**0.8**	**0.8**	**0.8**	**13.6**	**39.2**	**44.8**	**2.4**	**125**

Disease treatment of livestock was one of the key challenges faced by majority (44.8%) households. Availability of fodder was a constraint among 40.8% householdand vaccinationof the livestock also emerged as a challenge with 40.8% of households. 43.2% households faced issues with availability of Para vet.

Table 29: Challenges Faced in Livestock Management (% HH)

Income Group	Disease Treatment	Vaccination	Availability of Paravet	Knowledge on Management	Availability of Fodder	Others	Number of HH
Less than 50K	66.7	66.7	66.7	22.2	66.7	11.1	9
50K - 1L	40.9	31.8	36.4	36.4	54.5	4.5	22
1L - 2.5L	43.5	35.5	40.3	25.8	30.6	4.8	62
Above 2.5L	43.8	50.0	46.9	21.9	43.8	3.1	32
Total	**44.8**	**40.8**	**43.2**	**26.4**	**40.8**	**4.8**	**125**

Mining

A general observation in the study area was that a very small proportion of the households had members engaged in mining activity or members working within a mining zone. Only7% households had a member engaged in mining and about 6.5% households had members working within a mining zone. These members belonged to the lower income groups of households surveyed andbelonged to the general social group.

Table 30: Percent Distribution of HouseholdsAccording to the Members Engaged in Mining or Working within a Mining Zone by Income and Social Groups

Income/Social Group		HH Member engaged in Mining (%)	HH Member Working Within a Mining Zone (%)	Number of HH
Income Group	Less than 50K	6.7	0.0	15
	50K - 1L	0.0	0.0	36
	1L - 2.5L	7.7	9.6	104
	Above 2.5L	11.1	6.7	45
Social Group	General	17.4	17.4	23
	Schedule Caste	2.4	2.4	41
	Others (Incl. OBC)	6.6	5.9	136
Total		**7.0**	**6.5**	**200**

Employment and Skill Development Opportunities

The baseline study also assessed the awareness of the employment and skill development opportunities among the households in the study area. Out of the 200 households studied, only 30.5% of the households had at least one family member as part of the SHG.

Table 31: Percent Distribution of Households According to their Membership in SHGs in the Area

Income/Social Group		Anyone in family part of SHG (%)		Number of HH
		Yes	No	
Income Group	Less than 50K	33.3	66.7	15
	50K - 1L	25.0	75.0	36
	1L - 2.5L	28.8	71.2	104
	Above 2.5L	37.8	62.2	45
Social Group	General	30.4	69.6	23
	Schedule Caste	31.7	68.3	41

	Others (Incl. OBC)	30.1	69.9	136
Total		**30.5**	**69.5**	**200**

It was found that a total of 46.5% of households were aware of the employment opportunities available in the study area. About the awareness on the type of employment opportunities available, data showed that close to 81.7% of respondent households were aware of the employment opportunities of daily wage labourer in non- agriculture. About 69.9% of households were aware of opportunities for daily wage labourer in agriculture and only20.4% of them were aware of salaried job in the private sector. Whereas, there was no awareness of salaried jobs available with government among respondents.

Table 32: Awareness of the Types of Employment Opportunities Available in Area

Income/Social Group		Aware of employment opportunities available(%)	Employment opportunities available(%)			Number of HH aware of the employment opportunity
			Daily wage labourer-Non-Agriculture	Daily wage labourer-Agriculture	Salaried organized job (Pvt.)	
Income Group	Less than 50K	26.7	100.0	100.0	0.0	4
	50K - 1L	50.0	94.4	72.2	16.7	18
	1L - 2.5L	50.0	84.6	67.3	21.2	52
	Above 2.5L	42.2	57.9	68.4	26.3	19
Social Group	General	39.1	66.7	44.4	33.3	9
	Schedule Caste	61.0	96.0	88.0	8.0	25
	Others (Incl. OBC)	43.4	78.0	66.1	23.7	59
Total		**46.5**	**81.7**	**69.9**	**20.4**	**93**

About the availability of skill development opportunities available in the study locations, majority of the respondents were not aware ofopportunities (82.8%) and about 12.9% of them were aware of the opportunities available with the sewing and handloom sector. Few of the households were aware of the opportunities in agriculture, IT and healthcare.

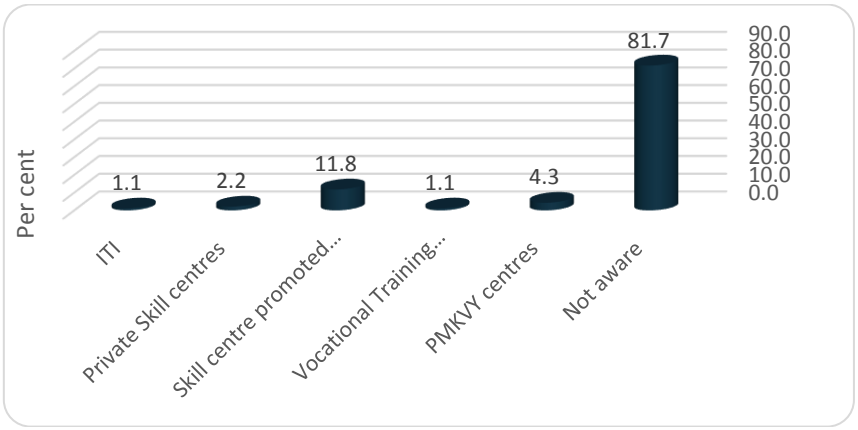
Table 33: Availability of Skill Development Opportunities and Centres in the Area

Particulars		Income Group(%)				Total
		Less than 50K	50K - 1L	1L - 2.5L	Above 2.5L	
Skill Development Opportunities available	Agriculture	0.0	5.6	9.6	0.0	**6.5**
	IT	0.0	0.0	0.0	5.3	**1.1**
	Healthcare	0.0	0.0	0.0	5.3	**1.1**
	Sewing and Handloom	50.0	0.0	15.4	10.5	**12.9**
	Others*	50.0	100.0	76.9	89.5	**82.8**
Skill development centres available	ITI	0.0	0.0	0.0	5.3	**1.1**
	Private Skill centres	0.0	0.0	3.8	0.0	**2.2**
	Skill centre promoted by Vedanta	50.0	0.0	17.3	0.0	**11.8**
	Vocational Training School	0.0	0.0	0.0	5.3	**1.1**
	PMKVY centres	0.0	0.0	1.9	15.8	**4.3**
	Others (Not Aware) @	50.0	100.0	76.9	84.2	**81.7**

Note: *- Others include majorly not known and scanty numbers being aware of skilling opportunity through MGNREGA
@ - Others included majorly not known

The respondents aware of the skill centres promoted by Vedanta in the location was very less (11.8%). The PMKVY centres were the second known skill centres to the households as about 4.3% of them were aware of it. Only some households were aware of the Vocational Training School (1.1%) and ITI (1.1%). About 2.2% households knew about private skill centres.

Figure 6 :Household Awareness of the Existing Skill Development Centres



Needs of the community:
The requirement and needs as per the FGDs and IDIs indicated that most of the villages felt the need for training and exposure visits for the farmers. They have also requested for camps where all agricultural needs can be addressed under one roof.

Issues in thematic area of livelihood that emerged through KII & FGDs:

- Poor knowledge in new modern farming techniques
- No or lack of Veterinary doctor/specialist
- Lack of capacity building for modern agriculture

3.5 Educational Facilities

The educational infrastructure available in the surveyed villages in the area was at accessible limits. It was observed that the school, Anganwadis and college in these villages were not very far from the households that were part of the survey. The average distance of the school from the households was 1.80 kilometers and that of the Anganwadis was 0.84 kilometers. The average distance of college from the survey households was 5.90 kilometers.

It was also observed in the study that the children in about 59.2% of the households studied in government schools. Children in about 40.8% households went to private schools. Another fact observed is that higher proportions of children in lower income households were in government schools

Table 34: Percent Distribution of Household where Children go to School and Average Distance of School, Anganwadi and College from the Households

Income/Social Group			Children of the HH go to		Number of HH where children go to school	Average Distance of School (in Kms.)	Average Distance of Anganwadi (in Kms.)	Average Distance of College (In Kms.)
			Govt. School	Pvt. School				
Income	Less	than	77.8	22.2	9	0.89	0.88	12.33

Group	50K						
	50K - 1L	85.2	14.8	27	1.15	0.90	2.20
	1L - 2.5L	59.0	41.0	78	1.61	0.86	5.88
	Above 2.5L	36.8	63.2	38	2.87	0.76	5.89
Social Group	General	56.3	43.8	16	4.00	0.84	8.22
	Schedule Caste	66.7	33.3	30	1.07	0.77	8.29
	Others (Incl. OBC)	57.5	42.5	106	1.68	0.85	5.20
Total		**59.2**	**40.8**	**152**	**1.80**	**0.84**	**5.90**

About to the facilities available in the schools where the children studied in the surveyed villages, most of the households, that is about 84.9% of them, felt there was safe drinking water facilities in schools. About67.1% of the households opined of enough sports infrastructure facilities.

About 21.1% of households reported that there were paid tuition facilities in schools and 68.4% stated the availability of functional and separate toilets for girls and boys.However, the data indicates that the households were not happy with disposal facility for sanitary napkins, school transport facilities, sponsored or free remedial classes and the availability of first aid kit in schools.

Table 35: Percent Distribution of Household According to Facilities Available in Schools Attended by Children in the Area by Income and Social Groups

Facilities Available	Income Group (%)				Social Group (%)			Total
	Less than 50K	50K - 1L	1L - 2.5L	Above 2.5L	General	SC	Others (Incl. OBC)	
Paid tuition classes	0.0	7.4	28.2	21.1	25.0	13.3	22.6	**21.1**
Sponsored or free Remedial classes	33.3	22.2	16.7	7.9	12.5	16.7	17.0	**16.4**
Computer classes	11.1	22.2	35.9	44.7	50.0	16.7	36.8	**34.2**
Functional and separate toilets for girls and boys	55.6	74.1	70.5	63.2	75.0	63.3	68.9	**68.4**
Library	22.2	29.6	43.6	42.1	56.3	33.3	38.7	**39.5**
School Transport (Bus/ Van/ etc.)	0.0	3.7	15.4	36.8	25.0	6.7	19.8	**17.8**
Sports Infrastructure	33.3	55.6	69.2	78.9	62.5	43.3	74.5	**67.1**
Safe Drinking Water	100.0	85.2	80.8	89.5	81.3	76.7	87.7	**84.9**
Mid-Day Meal	66.7	48.1	37.2	23.7	6.3	30.0	44.3	**37.5**
Sanitary Napkins	11.1	0.0	3.8	10.5	0.0	3.3	6.6	**5.3**
First Aid Kit	0.0	0.0	20.5	23.7	6.3	6.7	20.8	**16.4**
Not Applicable	0.0	0.0	1.3	0.0	0.0	0.0	0.9	**0.7**
Total Number of HH Where Children go to School	**9**	**27**	**78**	**38**	**16**	**30**	**106**	**152**

The households stated displeasure of certain facilities at the schools and *Anganwadis* which required improvement. The main factor that required improvement in the schools as stated by the households was in increasing number of teachers and improvement in quality of teaching as about 53.8% and 50.6%

households felt so respectively. Other aspects that required improvement included sports facilities and toilet facilities.

In Anganwadis, quality of teaching and care was the greatest concern expressed by the households followed by improvement in infrastructure and toilet facilities. However, almost 100% of the households stated that their children did not complain about the quality of food provided in the Anganwadis.

Table 36: Percent Distribution of Households According to Improvements Required in the Schools and Anganwadis in the Area

Particulars	Income Group (%)				Total (%)
	Less than 50K	50K - 1L	1L - 2.5L	Above 2.5L	
Schools					
Infrastructure	63.6	21.4	24.4	35.9	**29.4**
Sports facilities	63.6	32.1	40.2	51.3	**43.1**
Toilets	63.6	17.9	31.7	35.9	**32.5**
No. of teachers	72.7	42.9	53.7	59.0	**54.4**
Quality of teaching	63.6	67.9	45.1	46.2	**50.6**
Quality of Food (if provided) and Water	9.1	17.9	7.3	15.4	**11.3**
Others	9.1	3.6	8.5	7.7	**7.5**
Not Applicable	0.0	0.0	1.2	0.0	**0.6**
Anganwadis					
Infrastructure	85.7	35.7	50.0	58.3	**52.7**
Health facility	71.4	35.7	28.3	54.2	**39.6**
Toilets	85.7	42.9	47.8	50.0	**50.5**
Quality of teaching and care	71.4	71.4	45.7	54.2	**53.8**
Others	14.3	7.1	4.3	4.2	**5.5**
Not Applicable	0.0	0.0	0.0	4.2	**1.1**
Children not complaining about quality of food available to him/her at the Anganwadi	100.0	100.0	100.0	100.0	**100.0**

Needs of the community: The community came up with needs as per the issues that they have raised like the need for improvements in Anganwadi Centres in almost all the villages. This would also help in raising the nutrition level of the children; mothers and adolescents with food distribution facility taking place in the AW centres.
The FDGs and IDIs also discussed need of quality teachers for raising the dismal education system in the area which may be a reason of high dropout rates. There had been specific requirement for scholarships to the poor children and suggestion for having extra classes apart from the regular ones.

Issues in thematic area of education that emerged through KIIs & FGDs:

- The quality in the education system is low and dropout rate are high.
- There are schools, but quality education and teachers are needed.

3.6 Health and Nutrition

Majority of the households surveyed, that is about 88.5%, stated that they had to travel more than 5 kilometers to access service at a health facility. About 7.7% of the households had health facility within 1-kilometer distance from their house and about 3.8% of them had to travel 3-5 kilometers for accessing health care services at the health facility.

Table 37: Distance of Health Facility from Households in the Area

Distance of health facility from the household (%)			Number of HH
Less than 1 km	Above 3 km to 5 km	More than 5 km	
7.7	3.8	88.5	200

Among the medical care services accessed by households, the immunization services were the most sought service as about 52.5% households reported so. Family planning services (48%), medical counseling services (45.5%), ante-natal and post-natal services (26%), nutrition counseling and feeding programs (22.5%) were the other medical care services frequently accessed by households in the area. The trend was similar among all the different income groups.

Figure 7 :Household Access to Medical Care Services

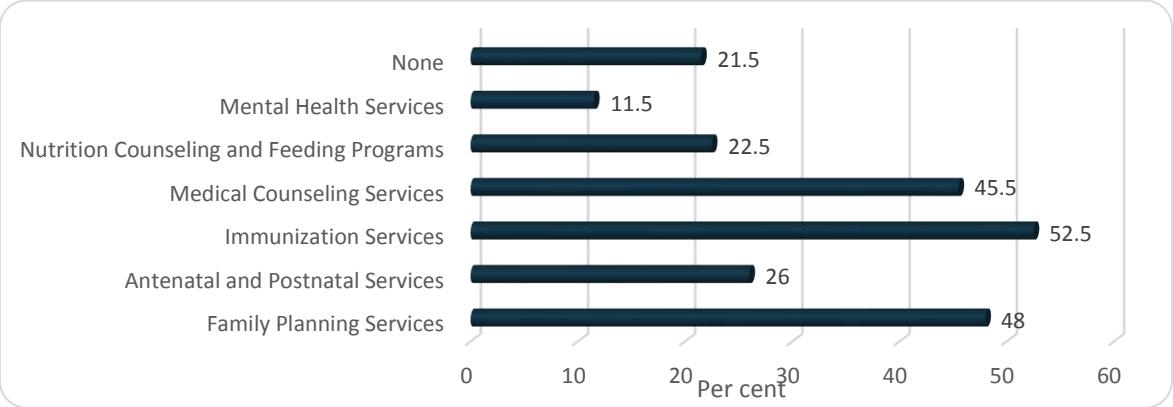


Table 38: Household Access to Medical Care Services in the Area

Income/Social Group		Family Planning Services	Antenatal and Postnatal Services	Immunization Services	Medical Counseling Services	Nutrition Counseling and Feeding Programs	Mental Health Services	None
Income Group	Less than 50K	13.3	0.0	20.0	46.7	26.7	26.7	40.0
	50K - 1L	38.9	22.2	47.2	52.8	33.3	22.2	16.7
	1L - 2.5L	51.9	26.0	56.7	42.3	20.2	7.7	20.2
	Above 2.5L	57.8	37.8	57.8	46.7	17.8	6.7	22.2
Social Group	General	30.4	13.0	39.1	39.1	0.0	0.0	43.5
	Schedule Caste	56.1	17.1	63.4	51.2	22.0	9.8	7.3
	Others (Incl. OBC)	48.5	30.9	51.5	44.9	26.5	14.0	22.1
Total		**48.0**	**26.0**	**52.5**	**45.5**	**22.5**	**11.5**	**21.5**

A general observation in the study area was that the disease incidence was quite high among the population. Close to 13% of the households expressed that they experienced instances of health problems among their family members in the past 1 year which made them unable to go for work or attend school for more than a week.

The most common type of illnesses that people encountered were malaria/dengue, diarrhea, T.B and respiratory diseases. People also encountered traffic accidents in the area.

Table 39: Disease Incidence and Type of Health Problems in the Past Year in the Area

Income Group	Health Problems in past 1 year & inability to work or go school for 1 week or more (% HH)	Type of health problem (% HH)										Number of HH having Health Problems in Last 1 Yr.
		Dengue/ Malaria	Diarrhoea	Typhoid Fever	TB	Respiratory Disease	Blood Pressure	Nose/ Throat Disease	Injury	Traffic Accident	Others	
Less than 50K	40.0	16.7	16.7	0.0	0.0	16.7	0.0	16.7	16.7	0.0	33.3	6
50K - 1L	8.3	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	3
1L - 2.5L	11.5	0.0	0.0	8.3	8.3	0.0	8.3	8.3	0.0	16.7	50.0	12
Above 2.5L	11.1	40.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	5
Total	**13.0**	**19.2**	**7.7**	**3.8**	**7.7**	**3.8**	**3.8**	**7.7**	**3.8**	**7.7**	**38.5**	**26**

The health seeking behavior of the population in the study area seemed to be very good. Almost, 100% of the households reported that they had sought necessary treatment for episodes of health problems that they faced.

As regards the type of treatment sought, most of the households (about 65.4%) preferred and sought treatment in a public health facility and about 34.6% households availed services from a private health facility. This behavior was observed in households belonging to all income groups.

Table 40: Health Seeking Behaviour of the Households in the Area

Income Group	Having sought treatment for health problems (%)	Type of treatment sought (% HH)				Number of HH who seek treatment for the health problem
		Public Health Facility (SC/PHC/CHC/DH)	Private Health Facility	Regional Medical Practitioner/Zhola Chap Doctors	Faith healer	
Less than 50K	100.0	50.0	50.0	0.0	0.0	6
50K - 1L	100.0	66.7	33.3	0.0	0.0	3
1L - 2.5L	100.0	66.7	33.3	0.0	0.0	12
Above 2.5L	100.0	80.0	20.0	0.0	0.0	5
Total	**100.0**	**65.4**	**34.6**	**0.0**	**0.0**	**26**

Data shows that the costs of treatment in hospitals were expensive in the study area. A proportion of 34.6% stated the costs of treatment per episode of illness to be up to Rs. 2000. About 11.5% households spent in the range of Rs. 2000-5000 for treatment per episode. These could be for the general illnesses like Diarrhoea, malaria and respiratory diseases etc. It was also observed that about 26.9% of households had spent in the range of Rs. 10000-50000 and about 3.8% spent above 50000 for treatment of episodes of diseases.

These could be for treatment of non-communicable lifestyle diseases like TB, blood pressure etc. and accidents and injuries. This implies that the prevalence of non-communicable diseases and disabilities is higher in the area.

The major source for meeting the treatment costs by the families wasthrough cash in hand/out-of-pocket expenses (38.5%). Other sources for payment of treatment costs included help from friends and family (3.8%), from savings (34.6%) and loans (11.5%).

Table 41: Cost of Treatment and Modes of Paying for Treatment Expenses in the Area

Income Group	Cost of Treatment (% HH)					Mode of Payment for Treatment Expenses (% HH)					Number of HH who seek treatment for health problems
	Up to 2K	2K - 5K	5K - 10K	10K - 50K	Above50 K	No money spent	Cash on hand	Savings	Help from friends and family	Loan	
Less than 50K	33.3	33.3	0.0	33.3	0.0	16.7	50.0	16.7	16.7	0.0	6
50K - 1L	33.3	0.0	33.3	0.0	33.3	0.0	66.7	33.3	0.0	0.0	3
1L - 2.5L	25.0	8.3	25.0	41.7	0.0	0.0	33.3	41.7	0.0	25.0	12
Above 2.5L	60.0	0.0	40.0	0.0	0.0	40.0	20.0	40.0	0.0	0.0	5
Total	**34.6**	**11.5**	**23.1**	**26.9**	**3.8**	**11.5**	**38.5**	**34.6**	**3.8**	**11.5**	**26**

Among the households surveyed, about 7.5% of them had members who were physically challenged. The most common type of disability was leg impairment followed by mental disability, hand impairment and speech impairment. There were also cases of epilepsy in the surveyed households.

Table 42: Households with Physically Challenged Members and Type of Disability

Income Group	HH having member physically challenged (% HH)	Type of Disability (% HH)					
		Mental Disability	Epilepsy (Mirgi)	Leg Impairment	Hand Impairment	Speech Impairment	Others
Less than 50K	13.3	0.0	50.0	50.0	0.0	0.0	0.0
50K - 1L	5.6	50.0	0.0	0.0	0.0	0.0	50.0
1L - 2.5L	8.7	33.3	0.0	44.4	22.2	11.1	0.0
Above 2.5L	4.4	0.0	0.0	50.0	0.0	50.0	0.0
Total	**7.5**	**26.7**	**6.7**	**40.0**	**13.3**	**13.3**	**6.7**

The household access of the maternal healthcare services in the area was quite good. About 9% (Table 43) of the households surveyed had pregnant women in the last year. As reported by the households, 100% of these mothers had taken clinical check-ups during ante-natal period.

Among these pregnant women who deliveredlast year all births were live births. Only 5.6% deliveries happened at home. Almost 94.5% of the deliveries were institutional deliveries with 66.7% seeking services in government health facility and 27.8% in private health facility.77.8% of the mother and child hadsought health check-up after 2 months of delivery. Overall, the maternal health indicators weregood in the study area.

Figure 8 :Pregnancy Outcomes and the Rate of Institutional Deliveries

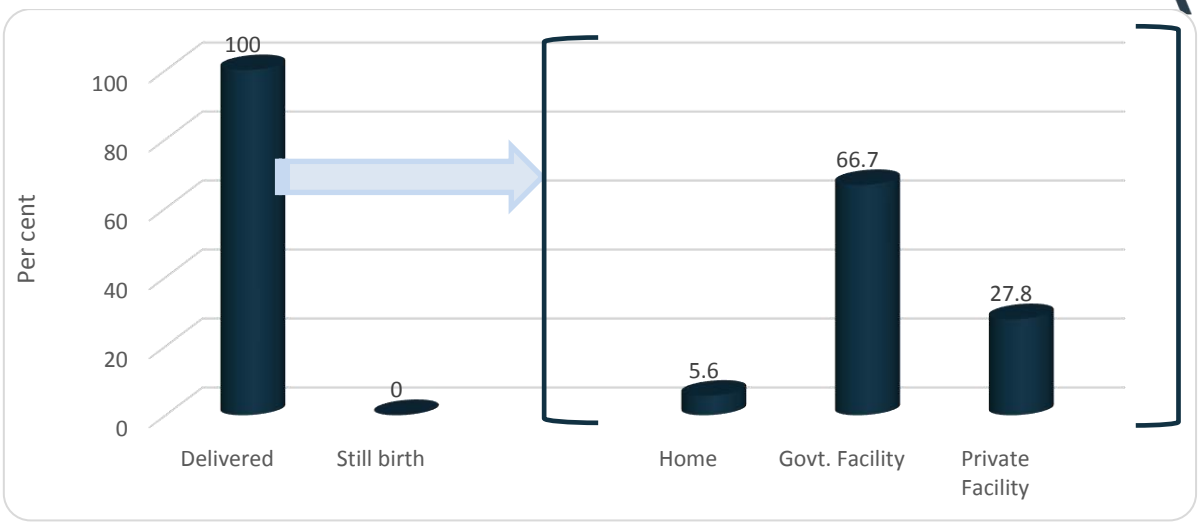


Table 43: Access to Maternal Health Care Services in the Area

Income/Social Group		HHs that had pregnant women in last year (%)	Mother received ANC check-up (%)	Outcome of pregnancy (%)		Place of Delivery (%)			Mother & Child taken health check-up after 2 months of delivery
				Delivered	Still birth	Home	Govt. Facility	Private Facility	
Income Group	Less than 50K	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	50K - 1L	11.1	100.0	100.0	0.0	25.0	75.0	0.0	100.0
	1L - 2.5L	7.7	100.0	100.0	0.0	0.0	62.5	37.5	62.5
	Above 2.5L	13.3	100.0	100.0	0.0	0.0	66.7	33.3	83.3
Social Group	General	8.7	100.0	100.0	0.0	0.0	50.0	50.0	50.0
	Schedule Caste	7.3	100.0	100.0	0.0	0.0	100.0	0.0	66.7
	Others (Incl. OBC)	9.6	100.0	100.0	0.0	7.7	61.5	30.8	84.6
Total		**9.0**	**100.0**	**100.0**	**0.0**	**5.6**	**66.7**	**27.8**	**77.8**

The households' access of child healthcare services was good in the study area as compared to the maternal care services. Nearly 33.5%of the households surveyed had children below 5 years of age. Of this, about 5.0% of children experienced incidence of Diarrhoea in the past one month and all of these cases had sought medical advice or treatment. Both Public and Private facilities were the most preferred type of treatment sought as about 50% of the cases had sought treatment in private and the same proportion of 50% had sought treatment in public facilities.

Table 44: Percent Distribution of Households having Children under 5 years and Access to Child Health Care Services in the Area

Income/Social	HH	Incidence	Advise/	Type of advice/treatment sought	Number of

Group		having children below 5 years of age	of Diarrhoea among under 5 children in last month	treatment was sought against this episode of Diarrhoea	Public Health Facility (SC/PHC/ CHC/DH)	Private Health Facility	Regional Medical Practitioner/Zhola Chap Doctors	HH where Children under 5 having Diarrhoea in last 1 month
Income Group	Less than 50K	6.7	0.0	0.0	0.0	0.0	0.0	0
	50K - 1L	36.1	5.6	5.6	50.0	50.0	0.0	2
	1L - 2.5L	32.7	4.8	4.8	60.0	40.0	0.0	5
	Above 2.5L	42.2	6.7	6.7	33.3	66.7	0.0	3
Social Group	General	13.0	4.3	4.3	0.0	100.0	0.0	1
	SC	36.6	4.9	4.9	100.0	0.0	0.0	2
	Others (Incl. OBC)	36.0	5.1	5.1	42.9	57.1	0.0	7
Total		**33.5**	**5.0**	**5.0**	**50.0**	**50.0**	**0.0**	**10**

The women in the households were asked about the family planning measures adopted in the family. The study observed that about 36.5% of the households were currently using contraception.Different methods of contraception were being used by the families. Of these, the most popular method adopted was the permanent method – Female Sterilization which is aboutas about 53.4% of women adopting. Condom usage was adopted by 23.3% of the families. Only 1.4% of families had taken up male sterilization as a measure of contraception. Intra uterine device (Copper – T) was adopted by 2.7% of the families.

A large proportion of 19.2% of families had adopted the calendar method as family planning measure. It was evident that a basket of choiceswas available for family planning in the locality. Measures for promoting the less accessed methods through creating awareness of the benefits are needed.

Table 45: Access and Utilization of Family Planning Services in the Area

Income/Social Group		Currently using a method of contraception	Type of contraceptive currently being used (% HH)					Number of HH
			IUD	Sterilization (Nasbandhi in woman)	Condom	Vasectomy (Nasbandhi in man)	Calendar Method	
Income Group	Less than 50K	26.7	0.0	50.0	50.0	0.0	0.0	15
	50K - 1L	30.6	0.0	45.5	18.2	9.1	27.3	36
	1L - 2.5L	40.4	4.8	52.4	23.8	0.0	19.0	104
	Above 2.5L	35.6	0.0	62.5	18.8	0.0	18.8	45
Social Group	General	47.8	0.0	63.6	18.2	0.0	18.2	23
	Schedule Caste	39.0	0.0	56.3	6.3	6.3	31.3	41
	Others (Incl. OBC)	33.8	4.3	50.0	30.4	0.0	15.2	129
Total		**36.5**	**2.7**	**53.4**	**23.3**	**1.4**	**19.2**	**200**

About the decision making on matters of healthcare, it was observed that in majority of the households, that is, in 56.5% of households the head of the family was the prime decision maker. Joint decisions were

taken in 37.5% of the households surveyed and in about 6.0% of households the spouse of the household head was given the rights of deciding on issues of healthcare of family.

Table 46: Decision Makers about Healthcare in Households in the Area

Income/Social Group		Decisions about Healthcare in HH (%)			Number of HH
		Head of the Family	Spouse	Together	
Income Group	Less than 50K	86.7	6.7	6.7	15
	50K - 1L	75.0	2.8	22.2	36
	1L - 2.5L	50.0	5.8	44.2	104
	Above 2.5L	46.7	8.9	44.4	45
Social Group	General	39.1	8.7	52.2	23
	Schedule Caste	61.0	9.8	29.3	41
	Others (Incl. OBC)	58.1	4.4	37.5	136
Total		**56.5**	**6.0**	**37.5**	**200**

Nutrition

Analysis of data revealed that there were food shortages in few of the households surveyed. It could be observed from table that only 2% of households had to worry about availability of enough food in the household in the past 30 days. This was more severe in households of lower income groups. Across the various social groups, only 3.1% of the households in othersincluding OBC category faced food shortages in the past month.

Table 47: Food Sufficiency in Households in the Area

Income/Social Group		Instances of worrying about enough food in HH in past 30 days (%)		Number of HH
		Yes	No	
Income Group	Less than 50K	13.3	86.7	15
	50K - 1L	5.6	94.4	36
	1L - 2.5L	0.0	100.0	104
	Above 2.5L	0.0	100.0	45
Social Group	General	0.0	100.0	23
	Schedule Caste	0.0	100.0	41
	Others (Incl. OBC)	2.9	97.1	136
Total		**2.0**	**98.0**	**200**

Needs of the community: The villages while discussing the issues have come up with their needs and requirement regarding their health specific needs. The stakeholders in almost all the four villages have asked for increase in quality of health care facilities.

While looking into the specific requirement, Kayad have a need for 5 bedded health centre and a doctor and compounder.

Issues in thematic area of health and nutrition that emerged through KIIs & FGDs:

- There was lack of cleanliness in the village hence there were more diseases like Diarrhoea, dengue etc. It was a breeding ground for mosquitoes
- There were more cases of Diarrhoea, malaria, respiratory ailments and TB

3.7 Energy Use, Environment, Water and Sanitation

Different sources of drinking water- piped water, hand pump/public stand post and water tankers etc. were available in the villages and households surveyed. The most common source of drinking water was through piped water supply as 52.5% of households in the study had stated this as the source of drinking water. 40.5% used hand pump/public stand post as source of drinking water. As against this, only 7% of the households had to suffice their drinking water needs through water tankers.

Only41.5% of the households had water available at home. The other 24.0%, 34.0% and 0.5% households were spending less than 30 minutes, 30 – 60 minutes and more than an hour time per day for collection of water from source respectively.Women were majorly made responsible for collection of water in all the income groups.

Figure 9 :Source of Drinking Water of Households

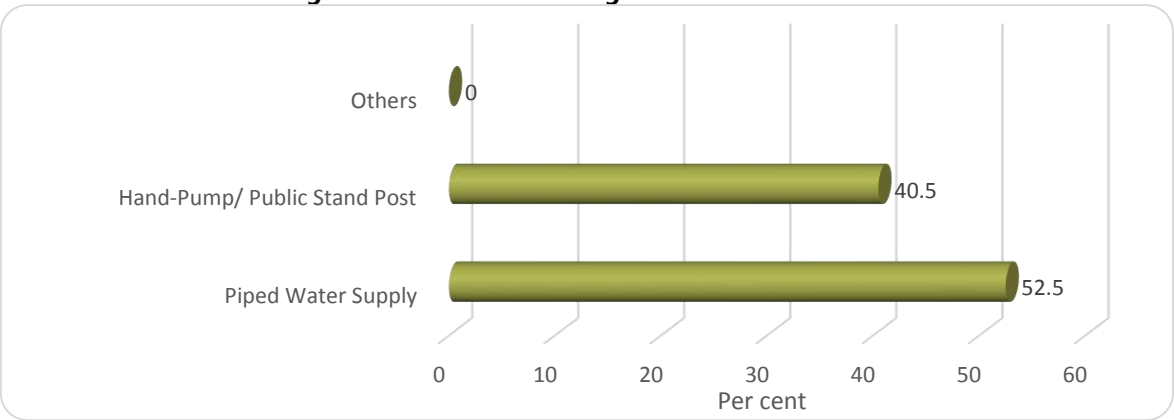


Table 48: Time Taken for Collection of Water from Source by Income Groups

Income Group	Average time per day for collection of water from the source (%)			
	Less than 30 minutes	30 minutes-1 hours	1 hour-2.5 hours	Water available at home
Less than 50K	13.3	46.7	6.7	33.3
50K - 1L	13.9	61.1	0.0	25.0
1L - 2.5L	25.0	26.9	0.0	48.1
Above 2.5L	33.3	24.4	0.0	42.2
Total	**24.0**	**34.0**	**0.5**	**41.5**

There was no availability of community filter in the village. About 89.5% households felt that the water they were using was safe for drinking.

Table 49: Availability of Community Water Filter in the Village

Income/Social Group		Availability of community water filter (%)	Drinking water safe (%)	Number of HH
Income Group	Less than 50K	0.0	93.3	15
	50K - 1L	0.0	94.4	36
	1L - 2.5L	0.0	88.5	104

	Above 2.5L	0.0	86.7	45
Social Group	General	0.0	87.0	23
	Schedule Caste	0.0	95.1	41
	Others (Incl. OBC)	0.0	88.2	136
Total		**0.0**	**89.5**	**200**

The villages surveyed were predominantly agrarian and water availability for irrigational purposes wasmostly rainfed (84.8%). The other main source of water for agricultural irrigation in the villages surveyedwas bore-well (20.3%) and wells (22.8%).Only 1.3% depended on piped water supply for irrigation.

Table 50: Percent Distribution of Agricultural Households by the Source of Water for Agricultural Use in the Villages and Income Groups

Income Group	Source of Water for Agricultural Use				Number of HH where Agriculture is Source of Income
	Bore well – Tube well	Rainfed	Piped Supply	Well	
Less than 50K	0.0	100.0	0.0	25.0	4
50K - 1L	10.0	100.0	0.0	30.0	10
1L - 2.5L	20.9	81.4	2.3	16.3	43
Above 2.5L	27.3	81.8	0.0	31.8	22
Total	**20.3**	**84.8**	**1.3**	**22.8**	**79**

The hand washing practices were very good in the households surveyed. Close to 99% of the households stated that they washed hands at all five critical times –after using the toilet, after cleaning a child's bottom, before feeding a child, before eating and before preparing food.About the material used for washing hands, about 91.1% of the households used soap to wash hands and about 8.1% usedmud for washing hands.

Table 51: Hand Washing Practices and Material Used for Hand Washing inHousehold

Income Group	Wash hands at 5 critical times(%)	Material Used to Wash Hands(%)		Number of HH
		Soap	Mud	
Less than 50K	86.7	92.3	7.7	15
50K - 1L	100.0	86.1	13.9	36
1L - 2.5L	100.0	92.3	7.7	104
Above 2.5L	100.0	95.6	4.4	45
Total	**99.0**	**91.9**	**8.1**	**200**

The baseline assessment study also examined the usage of toilets by the households in the study area. It was observed that open defecation was continuously practiced in the locality as about 28.5% of the households stated that they defecated in open. Nearly 70.5% of the households used the toilet at home for defecation and 0.5% households used either neighbour's or community toilets for defecation.

Table 52: Toilet Usage of Households for Defecation

Income/Social Group		Place of Defecation(%)				Number of HH
		In Open	Toilet at Home	Neighbour's Toilet	Community Toilet	
Income Group	Less than 50K	60.0	40.0	0.0	0.0	15
	50K - 1L	44.4	55.6	0.0	0.0	36

	1L - 2.5L	25.0	73.1	1.0	1.0	104
	Above 2.5L	13.3	86.7	0.0	0.0	45
Social Group	General	26.1	73.9	0.0	0.0	23
	Schedule Caste	26.8	73.2	0.0	0.0	41
	Others (Incl. OBC)	29.4	69.1	0.8	0.8	136
Total		**28.5**	**70.5**	**0.5**	**0.5**	**200**

Looking at the waste disposal mechanisms and practices followed in the study area, there is need for creating awareness among the households for safe disposal of household solid waste. This is because nearly 59.5% of the households stated that they threw the household waste in open. About 25% disposedit in the compost pit and11% handed it to the waste collectors.

There is need for creating a system for waste collection on a day-to-day basis in the study area.Waste from toilet is disposed of in majority of households through septic tank (72%). However, 24% of households disposed toilet waste by letting it flow out in open ground, drain or road which posed a serious health concern.

Bathroom and kitchen waste water was also disposed majorly in open drain (61.5%) and open area (15%). Some households disposed waste water in a covered drain (19.5%) and a minor proportion of households disposedit in a soak pit (3.5%)

Table 53: Waste Disposal Mechanisms in Households in the Area

Income Group	Waste Disposal from Toilet(%)				Disposal of HH Solid Waste(%)					Disposal of Bathroom & Kitchen Waste Water(%)				
	Public Sewer	Septic Tank	Flows out in open ground/	Others	Compost pit	Community Waste site	Waste collectors	Thrown in Open	Others	Soak Pit	Open drain	Covered drain	Kitchen garden	Open area
Less than 50K	0.0	73.3	20.0	6.7	0.0	0.0	46.7	53.3	0.0	0.0	66.7	26.7	0.0	6.7
50K - 1L	2.8	52.8	33.3	11.1	36.1	2.8	11.1	50.0	0.0	0.0	72.2	8.3	0.0	19.4
1L - 2.5L	1.9	73.1	25.0	0.0	24.0	2.9	9.6	61.5	1.9	5.8	59.6	20.2	1.0	13.5
Above 2.5L	0.0	84.4	15.6	0.0	26.7	6.7	2.2	64.4	0.0	2.2	55.6	24.4	0.0	17.8
Total	**1.5**	**72.0**	**24.0**	**2.5**	**25.0**	**3.5**	**11.0**	**59.5**	**1.0**	**3.5**	**61.5**	**19.5**	**0.5**	**15.0**

Energy Use Pattern

Electricity was the major source of energy consumed by households for lighting. A look at the energy usage data of households shows that nearly 98.5% of the households used electricity for lighting. Apart from that few households used kerosene lamps (1%) and batteries (0.5%) for lighting.

About to the fuel used for cooking, multiple sources of fuel were used by households. Of these, LPG (83%) and firewood (92.5%) were the major sources of fuel used. Cow dung was also used by 34.5% of households. Kerosene was used by the lower income group for cooking.

Table 54: Energy Use Pattern of Households in the Area

Income Group	Source of Lighting (%)			Type of Fuel Used for Cooking (%)			
	Electricity Connection	Kerosene Lamp	Batteries	Gas	Kerosene	Fire wood	Cow Dung
Less than 50K	93.3	0.0	6.7	46.7	6.7	93.3	60.0
50K - 1L	97.2	2.8	0.0	77.8	0.0	97.2	47.2
1L - 2.5L	99.0	1.0	0.0	84.6	0.0	90.4	26.9
Above 2.5L	100.0	0.0	0.0	95.6	0.0	93.3	33.3
Total	**98.5**	**1.0**	**0.5**	**83.0**	**0.5**	**92.5**	**34.5**

Needs of the community: While discussing the needs improvement of the drainage system unanimously came as a requirement in all the villages. Proper carrying of garbage and dumping facility has also emerged as an enormous requirement for the entire area.

Issues in thematic area of energy, environment, water and sanitation that emerged through KIIs & FGDs

- No drainage system
- Lack of proper water and sanitation system
- No proper garbage carrying or dumping facility
- Lack of public toilets

4. Conclusions

Domain 1 – Sustainable Livelihood

The household data suggested that in Agriculture there was low utilization of schemes run by various agencies especially on provisioning of good quality saplings, trainings in modern agricultural practices, micro irrigation methods and watershed assistance. There were challenges that the households faced in existing agricultural practices like availability of surface water for irrigation and correct selling price for crops. There were also issues with electricity, availability of agricultural tools and inputs, and availability of weather forecast information.

Challenges were faced in livestock management mostly in the disease treatment of livestockand availability of fodder. There is a constraint regarding livestock vaccination and availability of Para vet as well. On the awareness of employment and skill opportunities, the awareness on salaried jobs available with the government was less among the respondents.

Domain 2 - Education

The households expressed displeasure about the safe drinking water availability, toilet facilities, sports infrastructure availability, mid-day meal scheme, and library and computer classes in the schools. Also, there were only elementary schools in the villages and education becomes costly if the children had to travel long distances.

The main factor that required improvement in the schools as stated by the households was improvement in the number of teachers and obviously the quality of teaching. Other aspects that required improvement included the sports and health facilities. In *Anganwadis*, improvement in quality of teaching and care was the greatest concern expressed by the households followed by the infrastructure, toilet facilities and health facilities.

Domain 3 – Health and Nutrition

The household data analysis among the households showed that the disease incidence of dengue/malaria was substantial in the region. Their access tonutrition counselling, feeding programs and the antenatal and postnatal services were also low which is a matter of concern. Households have availed loans for health and medical purposes. Households having health insurance were almost nil. While analysing the data we could also find the prevalence of higher leg impairment and mental disabilities. Community also raised the concern of pain in the ears due to mining activities.

Domain 4 – Energy, Environment, Water and Sanitation

The open defecation was continuously practiced in the locality as about 28.5% of the households stated that they defecate in open. There is also a need for creating a system for waste collection on a day-to-day basis in the study area. About 24% of households reported disposal of toilet waste by letting it flow out in open ground, drain or road which is a serious health concern. During discussion with the community, concern for the groundwater pollution emerged.

Domain 5 – Women related issues

- Lack of proper wage for women labourers
- Lack of proper education and health facility
- Employment for women
- Skill based vocational trainings on tailoring, livelihoods etc.
- Men in the community drinking alcohol

Needs of the community: Constraints related to women empowerment were many times because of limited access to resources and other domestic responsibilities they have. Women's potential is not fully explored as they are prevented from taking part or are undermined on many occasions.
They are mostly engaged in low earned jobs and less mobility. Requirements as emerged during the discussions were trainings and exposure visits. There was also requirement for various skill related as well as vocational related activities. Special emphasis was also given to increase the quality of education with special focus for women and girls. Employment generation in general as well as livelihood options from home were also discussed as a requirement. Special discussion was also on problem of alcoholism in the community and how to tackle the menace was focused by a group of women. The health facilities should provide for better women centric services as well as recruitment of female doctors also came up as a special need in discussion.

Sustainable Livelihood

HINDUSTAN ZINC
Zinc & Silver of India

❑ Zinc Kaushal Kendra

Zinc Kaushal Kendra, Kayad has been initiated with the purpose of providing employment to the youth in the trades of assistant electrician, microfinance and customer relationship manager as well as inculcating industry relevant skills among them. The Zinc Kendra, Kayad has trained more 500+ youth till now with an average placement package of 12k+.

❑ Samadhan

The main objective of this project is to provide sustainable livelihood to the farmers in core as well as in periphery villages through integrated farming system and livestock development.

More than 1200 farmers are the beneficiary of this project

Education

HINDUSTAN ZINC
Zinc & Silver of India

- **Shiksha Sambhal Program:**

  The objective of the programme is to improve the learning environment and outcomes (with special focus on science, maths and English) among children studying in classes 9th to 12th in the government schools in HZL's operational area.

- **Nandghars**

  This project aims at strengthening the efficacy of Government ICDS scheme to improve the health, well-being and quality of pre-school education of children below 6 years of age.

- **Unchi Udaan**

  Children of classes 8th are given an opportunity for a 4 year IIT coaching classes at Vidya Bhawan Udaipur.

Women empowerment

HINDUSTAN ZINC
Zinc & Silver of India

❑ Sakhi women

The main objective of this project is to promote women run financial institutions and Individual/ collective microenterprises in operational areas of HZL for uplifting the women population.

❑ Pickle unit

With the purpose of providing income opportunity to women, a pickle unit which is run and managed entirely by women is functional in Kayad. The unit employes more than 14 women from the village and produces 12 different varieties of pickle.