HINDUSTAN ZINC LIMITED
RAMPURA AGUCHA MINE
P.O.- Agucha – 311029
Distt.- BHILWARA (RAJASTHAN)

FORM- 1
FOR
EXPANSION OF MINE
AND
BENEFICIATION PLANT

Mine Expansion From 5.00 Mtpa To 6.15 Mtpa
By Opencast and Underground Mining

and

Beneficiation Plant Expansion
From 5.00 Mtpa to 6.50 Mtpa

JUNE- 2008

APPENDIX I

(See paragraph – 6)

FORM 1

(I) Basic Information

Name of the Project: **Hindustan Zinc Limited, Rampura Agucha Lead and Zinc opencast Mine**

Location / site alternatives under consideration: **P.O.- Agucha, Tehsil- Hurda, Distt.- Bhilwara (Rajasthan)**

Size of the Project: ***Expansion of existing Mine From 5.00 Mtpa To 6.15 Mtpa ore production By Opencast and Underground Mining & Beneficiation plant From 5.00 Mtpa to 6.50 Mtpa ore treatment**

Cost of the project: **Rs. 882 Crores**

Contact Information: **Akhilesh Joshi, Vice President**
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P.O.- Agucha, Tehsil- Hurda,311029
Distt.- Bhilwara (Rajasthan)
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Screening Category: **A**

** Capacity corresponding to sectoral activity (such as production capacity for manufacturing, mining lease area and production capacity for mineral production, area for mineral exploration, length for linear transport infrastructure, generation capacity for power generation etc.,)*

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data.
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	**Yes**	**Present acquired land is 869.5 Ha. Additional 155 Ha land will be acquired within the leasehold area of 1200 Ha.**

1.2	Clearance of existing land, vegetation and buildings?	**Yes**	**155 Ha of additional land will be acquired including shifting of Bherukhera-I village. Approx. 114 houses (15 pucca + 99 Kuchcha) to be demolished.**
1.3	Creation of new land uses?	**Yes**	**155 Ha of additional land will be acquired for disposal of waste dump.**
1.4	Pre-construction investigations e.g. bore houses, soil testing?	**No**	
1.5	Construction works?	**Yes**	**Construction of New building for Beneficiation Plant.**
1.6	Demolition works?	**No**	
1.7	Temporary sites used for construction works or housing of construction workers?	**No**	
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	**Yes**	**Construction of foundations for machines and plant equipment**
1.9	Underground works including mining or tunneling?	**Yes**	**Underground development work and mining will done**
1.10	Reclamation works?	**No**	
1.11	Dredging?	**No**	
1.12	Offshore structures?	**No**	
1.13	Production and manufacturing processes?	**Yes**	**Production of Lead & Zinc Concentrates.**
1.14	Facilities for storage of goods or materials?	**Yes**	**Shed for storage of concentrates through froth flotation method.**
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	**No**	**Existing tailing dam will be used for disposal of solids & liquid wastes.**
1.16	Facilities for long term housing of operational workers?	**No**	**Existing residential colony has adequate houses.**
1.17	New road, rail or sea traffic during construction or operation?	**No**	
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	**No**	
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	**No**	
1.20	New or diverted transmission lines or pipelines?	**No**	
1.21	Impoundment, damming, culverting, realignment or other changes to the	**No**	

	hydrology of watercourses or aquifers?		
1.22	Stream crossings?	**No**	
1.23	Abstraction or transfers of water form ground or surface waters?	**Yes**	**Existing system of water drawl from radial well at banas river**
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	**No**	
1.25	Transport of personnel or materials for construction, operation or decommissioning?	**Yes**	**Existing system is adequate.**
1.26	Long-term dismantling or decommissioning or restoration works?	**No**	
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	**No**	
1.28	Influx of people to an area in either temporarily or permanently?	**Yes**	**Additional 250 – 300 manpower will be required.**
1.29	Introduction of alien species?	**No**	
1.30	Loss of native species or genetic diversity?	**No**	
1.31	Any other actions?	**No**	

2. **Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):**

S.No.	Information/checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	**Yes**	**155 Ha**
2.2	Water (expected source & competing users) unit: KLD	**Yes**	**No additional water is required, existing permission of CGWA for drawl of 11700 KLD water from radial well at Banas River is sufficient.**
2.3	Minerals (MT)	**Yes**	**Additional 1.15 Mtpa ore production and 1.50 Mtpa Beneficiation to produce lead and zinc concentrates.**
2.4	Construction material – stone, aggregates, sand / soil (expected source – MT)	**Yes**	**Aggregates- 37000 cum, sand-30000 cum from local sources.**
2.5	Forests and timber (source – MT)	**No**	
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	**Yes**	**Additional Energy :1. 20 MW from captive power plant of HZL** **2. Fuel (HSD)- 2700 TPA**
2.7	Any other natural resources (use appropriate standard units)	**No**	

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	**Yes**	**Copper Sulphate , Sodium Cyanide**
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	**No**	
3.3	Affect the welfare of people e.g. by changing living conditions?	**No**	
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	**No**	
3.5	Any other causes	**No**	

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	**Yes**	**Overburden of mine waste approx 25 Lacs MT/month, to be disposed in the existing earmarked locations.**
4.2	Municipal waste (domestic and or commercial wastes)	**Yes**	**Sewage treatment plants are already installed at residential colony as well as mine area. Dry sludge of 5 kgs / month is used for horticulture.**
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	**Yes**	**Additional quantity of Hazardous Wastes : Tailings 108000 Mtpm Burnt Oil 1200 Lit/month Discarded Containers 120 Nos. per month**
4.4	Other industrial process wastes	**No**	
4.5	Surplus product	**No**	
4.6	Sewage sludge or other sludge from effluent treatment	**Yes**	**Sewage sludge (5 kgs/month) is used as manure in**

			plantation.
4.7	Construction or demolition wastes	**No**	
4.8	Redundant machinery or equipment	**No**	
4.9	Contaminated soils or other materials	**No**	
4.10	Agricultural wastes	**No**	
4.11	Other solid wastes	**No**	

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

S.No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	**Yes**	**Additional mining equipments will be procured.**
5.2	Emissions from production processes	**No**	**Existing control measures are adequate**
5.3	Emissions from materials handling including storage or transport	**Yes**	**SPM from concentrate handling and transportation**
5.4	Emissions from construction activities including plant and equipment	**No**	
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	**No**	
5.6	Emissions from incineration of waste	**No**	
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	**No**	
5.8	Emissions from any other sources	**No**	

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S.No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data with source of information data**
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	**Yes**	**Operation of mining equipments and crusher**
6.2	From industrial or similar processes	**Yes**	**Operation of beneficiation plant.**
6.3	From construction or demolition	**No**	
6.4	From blasting or piling	**Yes**	**Blasting operation in mine for breaking of the rocks.**
6.5	From construction or operational traffic	**No**	
6.6	From lighting or cooling systems	**No**	
6.7	From any other sources	**No**	

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	**No**	
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	**No**	**Zero discharge system , treated water will be used for horticulture works**
7.3	By deposition of pollutants emitted to air into the land or into water	**No**	
7.4	From any other sources	**No**	
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	**No**	

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	**No**	
8.2	From any other causes	**Nil**	
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	**No**	

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:	**No**	**No impact on the environment as existing systems are adequate and effective**

	• Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other		
9.2	Lead to after-use of the site, which could have an impact on the environment	**No**	**Mine will be closed as per Conceptual Final Mine Closure Plan**
9.3	Set a precedent for later developments	**Yes**	**Handover the mine after the life of mine in an Eco-friendly manner**
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	**No**	

(III) Environmental Sensitivity

S.No.	**Areas**	**Name/ Identity**	**Aerial distance (within 15 km.) Proposed project location boundary**
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	**No**	
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	**No**	
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	**No**	
4	Inland, coastal, marine or underground waters	**No**	
5	State, National boundaries	**No**	
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	**No**	
7	Defense installations	**No**	
8	Densely populated or built-up area	**No**	
9	Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*	**No**	
10	Areas containing important, high quality or scarce resources *(ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)*	**No**	

11	Areas already subjected to pollution or environmental damage. *(those where existing legal environmental standards are exceeded)*	**No**	
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (*earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions*)	**No**	

IV). Proposed Terms of Reference for EIA studies

For preparation & Submission of an Environment Impact Assessment Report on the proposed expansion of Rampura Agucha Mine of Hindustan Zinc Limited at P.O. Agucha, in Bhilwara Distt. of Rajasthan State, following "Terms of Reference" are proposed:

SCOPING STUDY

The Government of Rajasthan granted mining lease ML-1/2000 for 1200 Ha in village Agucha Tehsil- Hurda & Distt. Bhilwara of Lead-Zinc deposit to Hindustan Zinc Limited (HZL) on 13.03.1980. The same was renewed for 20 years in the year 2000.

The Proposed Project

The proposed project is expansion of Mine from existing capacity of 5.00 Mtpa to 6.15 Mtpa ore production and Beneficiation Plant from 5.00 Mtpa to 6.50 Mtpa ore treatment including 0.35 Mtpa ore from Kayar Lead Zinc Underground Mine Distt Ajmer.

The environmental clearances were granted on 27.07.2007 for 5.00 Mtpa ore production and beneficiation plant. R.A. Mine has all the valid Air & Water consent to operate and authorization for Hazardous waste from Rajasthan State Pollution Control Board. Water withdrawal permission from CGWA for 11700 KL/day is valid upto 2010.

Site Selection

Proposed project is located at about 15 km from Gulabpura town in Hurda & Shahpura Tehsils in Bhilwara Distt. Since it is a mining Project and based on natural resource occurrence of Lead – Zinc mineral it is the only option for site selection.

Description and Environmental Settings of the site

The area covering 10 km radius around the proposed project site is devoid of any ecologically sensitive.

The environmental attributes/settings of the project site are given in the following table.

Sr. No.	Particulars	Details
1	Location	Rampura Agucha Mine
	Village	Agucha
	Tehsil	Hurda, Shahpura
	District	Bhilwara
	State	Rajasthan
2	Latitude	N 25° 50’ 00”
3	Longitude	E 74° 44’ 15”
4	Geographical Location in Toposheet	45 K/9 & 45 K/13
5	Elevation above Mean Sea Level	390 m
6	Climatic Conditions as per IMD	Tropical, semi-arid and hot, experiences bitter cold in winter and intensely warm in summer.
	Temperature	Max. 46.8^0C Min. 2.8^0C
	Relative Humidity	35.30 % (Average)
	Atmospheric Pressure	950.8 (Average) Range – 943.6 -958.8 Pa.
	Wind Speed range	2.3 to 4.6 Kmph
	Total Annual rainfall	450 mm average
7	Distance from the sea coast	Approx. 800 km
8	Nearest Highway	NH 79 (Approx. at 15 km distance)
9	Nearest railhead	Rupaheli
10	Nearest railway line	Ajmer - Chittorgarh (Broad Gauge) 11 km)
11	Nearest airport	Jaipur 200 km.
12	Other Historical / Religious places	No
13	Defense installations	Nasirabad Cantonment at 60 kms.
14	Ecologically sensitive areas (National Parks / Wild life sanctuaries / bio-sphere reserves)	No National Park / Wild life sanctuaries / bio-sphere reserves exist within 15km radius.
15	Reserved / Protected Forest	No reserved / protected forests
16	Nearest village	Agucha
17	Villages within 1 km radius	Agucha, Bherukhera, Rampura
18	Nearest town	Gulabpura
19	Nearest city	Gulabpura
20	Nearest major city with 2,00,000 population	Bhilwara – 70 kms Ajmer – 85 kms
21	Nearest Tourist place	Ajmer 85 kms
22	Hills / valleys	Delhi fold
23	List of Industries	Mayur Mill, Raj. Coop. Mill
24	Seismicity	Sesmic Zone III
25	Nearest IMD Station	Ajmer
26	Nearest river	Mansi (Seasonal)
27	Nearest lake / ponds	Agucha Pond – 1km
28	Nearest port	Kandla Port (800 Kms)
29	Soil type	Sandy loam

Sr. No.	Particulars	Details
30	Depth of water table	15-25 m (Approximately)
31	Major crops	Wheat, Maize, Jowar, Mustard and Gram
32	Rehabilitation & Resettlement	R&R plan for resettlement of one village will be prepared.
33	Population Core Area Buffer Zone	 900 1.04 Lac as per 2001 census (from Bhilwara & Ajmer districts)

Environmental Impacts from the project.

Resource Requirements of the proposed project

Present acquired land of Rampura Agucha Mine is 869.5 Ha. Around 155 Ha of additional land will be required for the proposed expansion project. Construction of the project will also require quantity of stone aggregate, sand and cement. The proposed project will require about 20 MW Electricity during operational phase of the project. Apart from this, resources like vehicles, machineries and fuel will be required during the construction and running of the project.

Resource requirements of the proposed expansion project will have bearing on the traffic generation and natural resources and calls for traffic study and aquatic ecology study. Impact of mining on ground water regime will be insignificant, because the ground water table is already intersected and due to expansion only the pace of the excavation will increase. Requirement of the green belt will be dealt in detail in the EMP.

Process details

The process of proposed mining activities is as follows:

Products of the proposed mine

SN	Particulars	Capacity
1	Mining of Lead – Zinc Ore and Associated Minerals	6.15 million tones per annum
2	Beneficiation of Lead – Zinc Ore to produce Lead & Zinc Concentrates	6.50 Mtpa Ore beneficiation and approx 1.7 Mtpa Lead & Zinc Concentrate production.

Pollution Aspects

Air pollution: The ambient air quality with respect to the buffer zone of 10-km radius around the periphery of the mine represents rural and urban environment. The main sources of pollution in the area are emissions from vehicular traffic, fuel-burning etc from rural / urban sources. The pollutants released in the atmosphere are SPM, SO_2, NO_x and CO.

Water pollution: The water from surrounding surface water bodies and wells of existing mining lease area will be regularly monitored for assessing the water environment.

The main generation in the proposed project will be from mining activities. The quality of the mine seepage will be good enough for use in process plant and existing mining activity. The mine seepage generation will be around 250 cum/day is proposed to be used / recycled in mining process. Zero discharge will be maintained.

Solid Waste: The existing mining produces following solid wastes

- Waste rock generated from the mine.
- The waste rocks are stored at earmarked place and matured dump area is stabilized by plantation. Same practice will be continued.
- Tailings from beneficiation plant, which are disposed off in the tailing dam. Same practice will be continued.

Noise Pollution: In the proposed capacity expansion project, few mining equipments will be added to achieve the expanded capacity. All the equipments will be procured along with performance guarantee for noise levels.

Risk Assessment: The risks involved in the proposed project will be assessed for hazards in process. The EIA will cover the risk assessment of the proposed project. Appropriate disaster management plan will be prepared.

General: The proposed expansion project will have a bearing on the surrounding environment and calls for the detailed study of ecology which will be a part of EIA.
Hence depending on the above scoping study the final TOR evolved is summarized below:

Terms of Reference for the EIA study

Terms of reference of the Environment Impact Assessment study is arrived after the scoping study. Core zone is the proposed project site and the buffer zone is the 10 Km radius from the edge of the lease boundary.

1- **Scheme for environment attributes to be studied for base line quality mapping**

a. **Micro Meteorology:** One weather station will be installed at the mine site to measure wind speed, direction, temperature, rainfall, humidity and cloud cover at an interval of 30 minutes. Other details like inversion height, stability class will be taken from Ajmer/Jodhpur IMD Observatories.

b. **Ambient Air Quality Monitoring:** 6 permanent and 5 mobile locations will be selected for ambient air quality monitoring. Pollutants measured are SO_2, NO_x, CO, SPM and RSPM and lead content in SPM. The monitoring will be done as per NAAQM standards. The locations will be selected, keeping in view the topography of the area and also the upwind, downwind, crosswind directions along with sensitive areas to cover various distances from the core zone.

c. **Dustfall :** At 6 locations in the study area.

d. **Surface Water Monitoring:** 3 locations will be selected for surface water sampling. These samples will be analyzed as per IS10500. The sampling points include the major perennial surface water bodies of the area.

e. **Ground Water Monitoring:** 10 locations will be selected for Ground water sampling. These samples will be analyzed as per IS10500. The sampling points cover the hydraulic gradient as prevalent in this area and also cover hand-pumps, dug-wells and bore-wells.

f. **Soil Analysis:** 6 locations will be selected for soil sampling. The soil samples will be drawn from three different levels up to a depth of 100 cms and will be analyzed for the parameters such as, soil type, texture, colour, pH, bulk density, particle size, porosity electrical conductivity, organic matter, N,P,K,Na, Mg, Ca, Pb, Zn, Fe, Cd, Chloride, Sulphate, etc.

g. **Noise :** 10 locations will be selected based on sensitive areas with respect to the location of the lease.

h. **Traffic:** 10 locations will be selected based on the high traffic areas in the vicinity of the proposed mine for assessment of traffic survey.

i. **Ecology :** Terrestrial ecology will be studied in the buffer zone and available secondary data will be studied.

j. **Socio Economic Survey :** The survey will be carried out in the buffer zone and available secondary data shall be utilized.

2- The impacts of the air pollution will be dealt in EIA by conducting micro meteorology study and base line concentration of the concerned pollutants like SO2, NOx, SPM, RPM, CO and lead content in SPM. Necessary modeling exercise will be done to know the impact on the air environment.

3- Since the mine will be continued to be operated on zero discharge basis, there will be negligible impact on the ground water and surface water. But however to know the impacts on the long term, necessary qualitative analysis will be done on the present ground water and surface water sources.

4- The solid wastes from the proposed project are waste rocks, tailings etc. Standard operating procedure for handling of solid waste will be followed.

5- Noise study will be carried out in the core/buffer zone and modeling will be done to know the impacts. Necessary control measures will be explored as part of the EMP.

6- Quantifiable impacts are to be assessed on the basis of magnitude, prevalence, frequency and duration and non-quantifiable impacts (such as aesthetic or recreational value). The areas, where the project could have significant impact, shall be identified, the baseline status of these shall be monitored and then the likely changes in these on account of the construction and operation of the proposed project shall be predicted.

7- Impacts shall be predicted by using appropriate methods including mathematical modeling for air and noise pollution.

8- Environmental Management Plan for mitigation of the environmental impacts shall be prepared depending on the impact predictions. EMP shall involve detailed description of the pollution control measures of the proposed project, efficiency, conformance to the permissible limits, reliability and efficacy of environment management plan.

   The total expenditure on environment protection measures shall be declared and documented.

   EMP shall also include the recurring expenditure for operation and maintenance of the pollution control measures.

9- Post project monitoring schemes shall include selected environmental attributes for construction, commissioning and operation phases. Monitoring plan shall include the type of pollutant to be monitored, frequency of sampling & analysis, sampling & analytical methods. Reports to be generated and control of documents shall also be included in the Environment monitoring scheme. The agency (including the organization chart) responsible for the compliance monitoring and the infrastructure required if any than the present environmental laboratory shall be finalized and documented.

10- Risk Assessment and Disaster Management Plan shall be finalized and documented as part of the EIA.

Additional studies proposed to be carried out as part of EIA:

1. Study on project affected persons (R&R Plan).
2. Stability study of waste dump.
3. Stability Study of Tailing dam.
4. AVI Study of Tailing dam.

2.0 Methodology of the Study

The agency conducting various studies and preparation of the EIA Report shall along with HZL officials conduct a reconnaissance survey and identify sampling locations on the basis of:

- Predominant wind directions in the study area as recorded by Indian Meteorological Department (IMD);
- Topography, location of surface water bodies like ponds, canals and rivers, places of tourist interest, National monuments;
- Location of villages/towns/sensitive areas;
- Accessibility, power availability and security of monitoring equipment, pollution pockets in the area;
- Areas which represent baseline conditions; and
- Collection, collation and analysis of baseline data for various environmental attributes.

Field studies shall be conducted for a period representing Post monsoon and winter season to determine existing conditions of various environmental attributes as outlined in **Table-1**. Latest applicable environmental standards for the project as prescribed by various statutory agencies shall be considered for conducting the study, analysis & comparison of data and depiction of same in the report.

Table-1

ENVIRONMENTAL ATTRIBUTES AND FREQUENCY OF MONITORING

PROPOSED TO BE ADOPTED

S.No.	Attribute	Parameters	Frequency of Monitoring
1	Ambient air quality	TSPM, RPM, SO2, NOx, CO, Lead, Zinc and Cadmium	24 hours monitoring at minimum 6 fixed and 5 mobile locations at a frequency of twice a week for 5 months covering winter and post-monsoon season. CO samples collection on 8 hourly basis.
2	Dustfall	Quantity of dustfall	Monthly in each season at six locations
3	Meteorology	Wind Speed and Direction, Temperature, Relative Humidity, Rainfall and other non instrumental observations like visibility, hail, thunder storms, dust storms, fog and smog.	a] Continuous for two seasons with hourly recording through setting up of a site meteorological station; b] Collection & Review of Data from secondary sources like IMD - Ajmer.
4	Water quality	Physical, Chemical and Bacteriological Parameters.	Once in a season at thirteen (3 SW and 10 GW) locations.
5	Ecology	Terrestrial and aquatic ecology.	Through field visits (once during study period).
6	Noise levels	Noise levels in dB (A).	Twice during study period at Ten locations (along with traffic study).
7	Traffic Survey		Twice during study period at Two locations.
8	Soil characteristics	Soil profile, characteristics, soil type and texture, heavy metal, NKP value etc.	Twice during study period at six locations.
9	Land use	Land use for different categories.	Collection & Review of data published in district census handbooks (subject to availability of the latest data). Remote sensing study for landuse / landcover.
10	Socio-economic aspects	Socio-economic characteristics, labor force characteristics, boom town effects, R&R measures proposed.	Collection & Review of data published in district census handbooks (subject to availability of the latest data), and primary sample household survey. Feed back through public hearing.
11	Hydrology (Surface and Ground)	Drainage area and pattern, nature of streams, aquifer characteristics, recharge and discharge areas.	Collection & Review of data from secondary sources.
12	Risk assessment, Disaster Management Plan and Occupational Health and Safety	Identification of areas where disaster can and occupational hazards take place	Based on assessment.