

# QUESTIONNAIRE FOR ENVIRONMENTAL APPRAISAL

## *(MINING SECTOR PROJECTS)*

Note 1 : All information given in the form of annexures should be part of this file itself. Annexures as separate files will not be accepted.

Note 2 : Please enter x in appropriate box where answer is Yes/No

### **I. General Information**

- A. Name of the project
- B. Objective of the project
- C. Location of mine (s)

Village	Tehsil	District	State

D. Does the proposal relate to:

- |                                    |     |                          |    |                          |
|------------------------------------|-----|--------------------------|----|--------------------------|
| 1. New mine                        | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| 1. Expansion                       |     |                          |    |                          |
| (i) Increase in ML area            | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| (ii) Increase in annual production | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| 3. Renewal of ML                   | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| 4. Modernisation                   | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |

### **II. Site Information**

A. Geographical Information

- 1. Latitude
- 2. Longitude
- 3. Survey of India Topo sheet No. (optional)
- 4. Elevation above Mean Sea Level

B. Total lease Area (in ha.)

C. Dominant nature of terrain

- |              |     |                          |    |                          |
|--------------|-----|--------------------------|----|--------------------------|
| 1. Flat      | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| 2. Undulated | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| 3. Hilly     | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| 4. Coastal   | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |

**III. Land usage of the lease Area (in ha.)**

- |                         |                      |
|-------------------------|----------------------|
| A. Agricultural         | <input type="text"/> |
| B. Forest               | <input type="text"/> |
| C. Waste land           | <input type="text"/> |
| D. Mangroves            | <input type="text"/> |
| E. Grazing              | <input type="text"/> |
| F. Marshy               | <input type="text"/> |
| G. Surface water bodies | <input type="text"/> |
| H. Others (Specify)     | <input type="text"/> |
| Total                   | <input type="text"/> |

**IV. Whether the mine lease area falls in seismically active zone?**

Yes  No  Zone No.

If yes, earth quakes in last 10 years

- A. Severity (Scale)

B. Impact i.e. Damage to

- |    |               |     |                          |    |                          |
|----|---------------|-----|--------------------------|----|--------------------------|
| 1. | Life          | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| 2. | Property      | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| 3. | Existing mine | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |

V. Whether the proposed project falls in landslide prone zone?

- Yes  No

VI. Break -up of the Land use proposed

A. Mining Lease Area (in hectares)

- |     |  |                      |
|-----|--|----------------------|
| 1.  | Area to be mined                                   | <input type="text"/> |
| 2.  | Storage for top soil                               | <input type="text"/> |
| 3.  | Overburden/Dumps                                   | <input type="text"/> |
| 4.  | Mineral storage                                    | <input type="text"/> |
| 5.  | Infrastructure (Workshop, Administrative Building) | <input type="text"/> |
| 6.  | Roads  | <input type="text"/> |
| 7.  | Rails  | <input type="text"/> |
| 8.  | Green Belt   | <input type="text"/> |
| 9.  | Township   | <input type="text"/> |
| 10. | Tailings pond                                      | <input type="text"/> |

11. Effluent treatment plant
12. Coal handling plant / mineral separation plant
13. Others (Specify)
14. Total Area
- B. Township (outside mine lease)
1. Total Area
2. No. of dwelling units
3. Distance from mine site

**VII. Distance of water bodies (in Km)**

Distance of	River Bank *	Other Water bodies * Sea / creek / lake etc. (specify)
Mine lease boundary		
Ancillary facilities		

\*From highest flood line / high tide line

**VIII. For projects falling within CRZ**

A. Whether the mineral to be mined is of rare/strategic nature and not available outside CRZ?

Yes  No

If so, annex a scaled location map duly certified\* by the Chief Hydrographer indicating low tide line\* (LTL), high tide line\* (HTL), mining lease area and its distance from LTL and HTL, sand dunes and settlements within 10 km.

**IX. Indicate aerial distance from the periphery of core zone / buffer zone of following (up to 10 km):**

S.No.	Areas	Name	Aerial Distance from (in km.)	
			CORE ZONE	BUFFER ZONE
1	National Park			
2	Sanctuary/Tiger Reserve/Elephant/any other Reserve			
3	Core Zone of Biosphere Reserve			
4	Habitat for migratory birds			
5	Archaeological sites (i) Notified (ii) Others			
6	Defence Installation			
7	Industries/Thermal Power Plants			
8	Other Mines			
9	Airports			
10	Railway Lines			
11	National / State Highways			

**X. Description \* of flora & fauna in the core and buffer zones**

[\* Consult the Wildlife (Protection) Act, 1972 as amended subsequently and list species with (1) Common name (2) Scientific name and (3) under which schedule of the Wildlife (Protection) Act, 1972 and as amended subsequently, the identified species fall. Get the list authenticated by an Expert in the field / credible scientific institute / Chief Wildlife Warden office.]

**A. Flora**

1. Agricultural crops
2. Commercial crops
3. Plantation
4. Natural vegetation / forest type
5. Grass lands
6. Endangered species
7. Endemic species
8. Others (Specify)

**B. Fauna**

1. Total listing of faunal elements
2. Endangered species
3. Endemic species
4. Migratory species
5. Route of migratory species
6. Details of aquatic fauna, if applicable

**XI. Details of mineral reserves**

Quantity (in Million tonnes)

A. Proven

B. Indicated

C. Inferred

D. Mineable reserves



**XIV. Type and method of mining operations**

S.No.	A. TYPE		S.No.	B. METHOD	
1	Open-Cast		1	Manual	
2	Underground		2	Semi-mechanised	
3	Both		3	Mechanised	

**XV. Ancillary operations for mineral processing**

- A. Existing
- B. Additional

**XVI. Loading, transportation and unloading of mineral and waste rocks on surface:**

- A. Manual.
- B. Tubs, mine cars, etc.
- C. Scrapper, shovels, dumpers/trucks.
- D. Conveyors (belt, chain, etc.)
- E. Others (specify).

## XVII. Mine details

### A. Open-cast mines

- |    |   |                      |
|----|---|----------------------|
| 1. | Stripping ratio (mineral to over burden in tonne/m <sup>3</sup> ) | <input type="text"/> |
| 2. | Thickness of top soil (in m.)                                     |                      |
|    | (i) Minimum   | <input type="text"/> |
|    | (ii) Maximum  | <input type="text"/> |
|    | (iii) Avg.  | <input type="text"/> |
| 3. | Thickness of overburden (in m.)                                   |                      |
|    | (i) Minimum   | <input type="text"/> |
|    | (ii) Maximum  | <input type="text"/> |
|    | (iii) Avg.  | <input type="text"/> |

### B. Underground mines

- |                                | Depth (m)            | Thickness (m)        |
|--------------------------------|----------------------|----------------------|
| 1. Seam/<br>Ore body           | <input type="text"/> | <input type="text"/> |
| 2. Mode of entry into the mine |                      |                      |
|                                | (i) Shaft            | <input type="text"/> |
|                                | (ii) Adit            | <input type="text"/> |
|                                | (iii) Incline        | <input type="text"/> |

3. Details of machinery to be used

- (i) On surface
- (ii) At Face
- (iii) For transportation
- (iv) Others

4. Method of stoping (metalliferrous mines)

- (i) Open
- (ii) Filled
- (iii) Shrinkage
- (iv) Caving
- (v) Combination of above
- (vi) Others (Specify)

5. Depillaring method

- (i) Caving
- (ii) Stowing
- (iii) Partial extraction

6. Ventilation arrangement

(i) Existing

(ii) Proposed

7. Subsidence

(i) Anticipated subsidence (in m.)

(ii) Magnitude of surface strains

(iii) Slope change

(iv) Identified possible subsidence areas

(v) Major impacts on natural drainage pattern, human habitat, water bodies, etc.

(vi) Salient features of subsidence monitoring and control.

**XVIII. Surface drainage pattern at mine site**

A. What is the pre-mining surface drainage pattern at the site?

B. Do you propose any modification / diversion in the existing natural drainage pattern?

Yes

No

Provide location map indicating contours, direction of flow of water, and proposed route/changes, if any i.e. realignment of river/nallah/ any other water body falling within core zone.

**XIX. Vehicular traffic density**

	Type	No. of vehicles per day
A. Existing	<input type="text"/>	<input type="text"/>
B. After the proposed activity	<input type="text"/>	<input type="text"/>
C. Whether the existing road network is adequate?	Yes <input type="text"/>	No <input type="text"/>
D. If no, provide details of alternative proposal		

**XX. Mineral(s) transportation from the mine site**

	Qty. (in TPD)	Percentage (%)
A. Road	<input type="text"/>	<input type="text"/>
B. Rail	<input type="text"/>	<input type="text"/>
C. Conveyors	<input type="text"/>	<input type="text"/>
D. Rope way	<input type="text"/>	<input type="text"/>
E. Water ways	<input type="text"/>	<input type="text"/>
F. Pipeline	<input type="text"/>	<input type="text"/>
G. Others (Specify)	<input type="text"/>	<input type="text"/>
Total	<input type="text"/>	<input type="text"/>

XXI. Status of mining lease area (in ha.)

Purpose	Required				Acquired				To be acquired			
	Govt.		Private		Govt.		Private		Govt.		Private	
	Forest	Others	Agricultural	Others	Forest	Others	Agricultural	Others	Forest	Others	Agricultural	Others
1. Mining area												
2. Area for storage/dumps												
3. Ancillary facilities (processing plant etc.)												
4. Tailing dam/pond												
5. Township												
6. Area for green belt development												
7. Roads etc.												
8. Other infrastructure (specify)												
Total:												

**XXII. Baseline Meteorological & Air Quality data**

- A. 1. Micro-meteorological data  
(Continuous monitoring for full season except monsoon through autographic instrument)
- 2. Seasonal wind rose pattern (16 points of compass i.e. N, NNE, NE, ---)
  - Day time
  - Night time
  - 24 – hours period
- 3. Site specific monitored data

Month	Hourly Average Wind Speed (kmph) 1 2 3 .....30 / 31 day	Cloud Cover** (Octas of sky)

4. Rainfall (in mm)
- (i) Total (Annual)
  - (ii) 24 hr highest

5. Wind speed (kmph)
- (i) Max.
  - (ii) Mean
  - (ii) % of Calm

6. Temperature (deg. Celsius)
- (i) Min.
  - (ii) Max.
  - (iii) Mean

7. Relative Humidity (%)

**Mean**

\* 24-Hours rainfall should be reported from 08:30 hrs. IST of previous day to 08:30 hrs IST of the day.

\* Rainy day is considered when 24 hrs rainfall is  $\geq 2.5$  mm.

\*\* Visual observations of cloud cover should be recorded four times a day at regular intervals.

B. Ambient air quality data\* (RPM, SPM, SO<sub>2</sub>, NO<sub>x</sub>, CO)

\*Frequency of monitoring should be as per guidelines of CPCB and monitoring should cover one full season except monsoon.

1. Season & period for which monitoring has been carried out
2. Frequency of sampling
3. No. of samples collected at each monitoring station

Day, Time and Location	Wind Speed and Direction	24-hr. concentrations as monitored (in $\mu\text{g}/\text{m}^3$ )						Permissible AAQ Standards		Name of instruments used and sensitivity
		SPM	RPM	SO <sub>2</sub>	NO <sub>x</sub>	CO	Pb**	EPA*	SPCB	

\* EPA – As notified under the Environment (protection) Act , 1986

AAQ as monitored (24 hourly)

	SPM	RPM	SO <sub>2</sub>	NO <sub>x</sub>	CO	Pb**
Max.						
Min.						
Mean						
98 percentile						

\*\* For mineral specific site only

# Annex a location map indicating location of AAQ stations, their direction & distance w.r.t. project site.

# Attach additional sheets as required to provide complete data as monitored for one season.

**XXIII. Stack emission detail , if any**

(Frequency of stack monitoring should be as per CPCB guidelines)

S.No.	Process / unit of operation (e.g. DG Set, Boiler)	Height of Stack (m)	Internal top dia. (m)	Flue Gas Exit Velocity (m/sec)	Emission rate (kg/hr)				Heat emission rate from top of stack (K.cal/hr)	Exhaust / Flue Gas Temperature in degrees celcius.
					SPM	NOx	SO2	CO		

A. Equipment used for stack monitoring

**XXIV. Details of fugitive emissions during mining operations****XXV. Air Quality Impact Prediction (AQIP)**

- A. 1. Details of model(s) used for AQIP including grid size, terrain features, and input meteorological data
2. Maximum incremental GLC values of pollutants based on prediction exercise

(in ug/m3)

S.No.	Pollutants	Incremental Value	Ambient Air Quality	Resultant Air Quality
1.	SPM			
2.	RPM			
3.	SO2			
4.	MOX			
5.	CO			

**XXVI. Water requirement (m<sup>3</sup>/day)**

Purpose	Avg. Demand	Peak Demand
<b>A. <u>Mine site</u></b> 1. Mine operation 2. Land reclamation 3. Dust suppression 4. Drinking 5. Green Belt 6. Beneficiation 7. Washeries 8. Fire Service 9. Others ( pl. specify)		
<b>B. <u>Township</u></b> 1. Green Belt 2. Domestic 3. Other (pl.specify)		
<b>TOTAL</b>		

**XXVII. Source of water supply\***

S.No.	Source	M <sup>3</sup> /day
1	River ( name )	
2	Groundwater	
3	Other surface water bodies (pl. specify)	

\*Annex a copy of sanction letter from the concerned authority for drawing water

**XXVIII. Lean season flow in case of river (cumecs)**

**XXIX. Ground water potential of the area**

A. Average water table (metres) below ground level

1. Pre-monsoon

2. Post-monsoon

B. Annual recharge rate (cubic metres)

C. Avg. withdrawal rate (cubic metres)

**XXX. Physico-chemical analysis\* of water at intake point (\*All parameters as per drinking water standards)**

**XXXI. Competing users of the water source**

S.No.	Usage	Present Consumption including pumping (m <sup>3</sup> /day)		Additional proposed as per local plan (m <sup>3</sup> /day)		Total (m <sup>3</sup> /day)	
		Surface	Ground	Surface	Ground	Surface	Ground
1	Irrigation						
2	Industry						
3	Mining						
4	Domestic						
5	Others (specify)						
Total							

**XXXII. Waste Water Management**

A. Daily discharge (m<sup>3</sup>/day) from different sources

1. Mine discharge

2. Workshop

- 3. Domestic
- 4. Beneficiation
- 5. Washeries
- 6. Others (Specify)
- 7. Total

B. Are you planning to provide waste water treatment plant? Yes  No

If yes, provide a flow sheet for treatment.

C. Quantity of water recycled / reused/  
to be recycled in

- 1. Percentage
- 2. M<sup>3</sup>/day

D. Point of final discharge

Final Point	Quantity discharged (in m <sup>3</sup> /day)
1. Surface	
(i) Agricultural land	
(ii) Waste land	
(iii) Forest land	
(iv) Green belt	
2. River	
3. Lake	
4. Estuary	
5. Sea	
Total	

E. Users of discharge water

1.	Human	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
2.	Livestock	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
3.	Irrigation	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
4.	Industry	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
5.	Others (specify)	<input type="text"/>			

F. Details of the Water body where final effluent is/will be discharged

cumecs

1.	Average flow rate	<input type="text"/>
2.	Lean season flow rate	<input type="text"/>
3.	Aquatic life	<input type="text"/>
4.	Analysis of river water 100 meters upstream and 100 meters downstream of discharge point.	

**XXXIII. Water balance statement in the form of flow diagram indicating source (s), consumption (section-wise) and output.**

**XXXIV. Solid Waste**

**A. Solid waste quantity and quality**

Name (Lump/fines/slurry/ Sludge/others)	Composition	Quantity (m <sup>3</sup> /month)	Method of disposal
1. Mining activity a. Top Soil b. Over burden c. Others (specify)			
2. Effluent Treatment Plant(sludge)			
Total			

Annex layout plan indicating the dump sites

B. 1. Does waste (s) contain any hazardous/toxic substance/ radioactive materials or heavy metals?

Yes  No

2. If yes, provide details and precautionary measures.

C. Recovery and recycling possibilities

D. Possible user (s) of the solid waste

E. 1. Is the solid waste suitable for backfilling?

Yes  No

2. If yes, when do you propose to start backfilling.

Solid waste (s)	Accumulated (A)	To be generated (B)	% of A & B to be backfilled	
			A	B
Over burden				
Others (Specify)				

F. Reclamation & rehabilitation plan

- G. In case waste is to be dumped on the ground, indicate
1. Associated environmental problems
  2. Number & type of waste dumps
    - (i) Height of dumps (metres)
    - (ii) Slope of the dump (angle)
    - (iii) Proposed bio-engg. mitigation measures

**XXXV. Noise level (dB)**

**A. Source**

S.No.	Source	Noise Level (dB)		
		Max.	Min.	Mean

**B. Abatement measures**

**XXXVI. Fuel/Energy requirements**

**A. Total power requirement (MW)**

S.No		Mine Site	Township	Others (specify)	Total
1	Present				
2	Proposed / additional				
Total					

**B. Source of power (MW)**

S.No.		SEB/Grid*	Captive power plant	DG Sets
1	Present			
2	Proposed			
Total				

\* Annex a copy of the sanction letter from the concerned authority  
Mining Sector Projects

C. Details of fuels

S.No.	Fuel**	Daily Consumption(TPD)		Calorific value (Kcals/kg)	% Ash	% Sulphur
		Existing	Proposed			
1	HSD					
2	LSHS					
3	Other (specify)					

\*\*Furnish a copy of fuel analysis report

**XXXVII. Storage of inflammable / explosive materials**

S.No.	Name	Number of Storages	Consumption (in TPD)	Maximum Quantity at any point of time
1	Diesel			
2	Fuel Oil			
3	Explosives			
4	Others (pl. specify)			

**XXXVIII. Occupational and community health, safety and hygiene**

- A. What major occupational and community health and safety hazards (surface and U/G fire, inundation, explosion etc.) are anticipated?
- B. What provisions have been made/ proposed to conform to health and safety requirement?
- C. In case of an existing mine, furnish a comprehensive report on health status of the workers.
- D. Mineralogical composition of RPM (dust)
- E. Details of personal protective equipment provided/ to be provided to the workers
- F. Information on radiation protection measures,if applicable.

**XXXIX. Plantation**

A.	Lease area (in ha.)	<u>Existing mine</u>	<u>New mine</u>
	1. Area broken up	<input type="text"/>	<input type="text"/>
	2. To be broken up	<input type="text"/>	<input type="text"/>
	3. Unbroken area	<input type="text"/>	<input type="text"/>
		<input type="text"/>	
B.	Total Township area (in ha)		
C.	Area afforested and proposed (in ha.)		
		Peripheral	Dumps
		Roads	Township
		Others	
	1. Existing		
	2. Proposed		
D.	No. and type of trees planted & proposed		
	1. Existing		
	(i) When plantation was started?	Date	<input type="text"/>
	(ii) No.	<input type="text"/>	(iii) Survival rate %
			<input type="text"/>
	(iv) Type of species	(v) Avg. height	
		( in m )	
	2. Proposed		
	<input type="text"/>		<input type="text"/>
	Type of Species		Number (per ha)
	<input type="text"/>		<input type="text"/>

**XL . Human Settlement**

	Core Zone	Buffer Zone
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Population*		
Number of households		

(\* As per latest available census record or actual survey)

**XLI. Rehabilitation & Resettlement (R&R) Plan**

A. Name and no. of villages falling within

1. Core zone
2. 500 m from the blasting site (s)
3. Township site

B. Village(s) affected by the project:

S.No.	Village name (within mine lease)	Population		Occupation	Average Annual Income
		Tribal	Others		

C. Population to be displaced / Land oustees

Name of Village(s) falling within	Number of oustees		
	Land (only)	Homestead (only)	Land and Homestead (Both)

<u>Mining Lease</u> 1. 2. ▪ ▪			
Township Site 1. 2. ▪ ▪			

D. Whether R&R plan has been finalised? If yes salient features of R&R plan for oustees

1. Site where the people are proposed to be resettled & facilities to be provided
2. Compensation package including funds earmarked
3. Agency/Authority responsible for their resettlement
4. Period by which resettlement of Project Affected People will be over

**XLII . Pollution Control**

A. Details of pollution control measures

S.No.		Existing	Proposed to be installed
1	Air		
2	Water		
3	Noise		
4	Solid Waste		

B. For existing units  
Mining Sector Projects

1. Difficulties encountered in implementing pollution control measures/Environmental management plan.
2. Efficiency of each of the pollution control equipment/system installed

S.No.	Name of the system/ equipment	Design efficiency %	Present working efficiency %

C. For proposed Units

S.No	Name of the system equipment	Design efficiency %

**XLIII. Capital cost of the project in Rs. Lakh**  
(as proposed to the funding agency/financial institution)

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**XLIV. Cost of environmental protection measures in Rs. Lakh**

S.No.		Capital cost	Recurring Cost per annum
1	Pollution Control		
2	Pollution Monitoring		
3	Occupational Health		
4	Green Belt (Mine+Township)		
5	Reclamation / Rehabilitation of mined out area		
6	Others (specify)		
Total			

**XLV. Amount earmarked / proposed for socio-economic welfare measures for the nearby villages other than R&R plans.**

- A. Villages (name) to be adopted , if any
- B. Socio-economic package.
- C. Amount earmarked ( in Rs. Lakh )



\* (Annex copies)

**XLVIII. Was/Is there any court case relating to the project or related activities?  
If so, details thereof.**

The data and information given in this Performa are true to the best of my knowledge and belief.

**Date:**

Signature of the Applicant with full name & address.

**Place:**

Given under the seal of organisation on behalf of whom the applicant is signing.

**LIST OF DOCUMENTS TO BE ATTACHED WITH THE MINING PROJECTS  
PROFORMA**

S.No.	Documents	Refer Proforma Ques.No.
1.	A scaled map (1 : 2500) duly certified* by the Chief Hydrographer indicating low tide line* (LTL), high tide line* (HTL), mining lease area and its distance from LTL and HTL, sand dunes and settlements within 10 Km.	8(A)
2.	Geological and structural maps.	12 (A)
3.	Geomorphological contour map / section.	12 (B)
4.	Plan and sections	13 (F)
5.	A location map of the mine lease area indicating existing water bodies (river, nallah, other drainage channel), direction of flow of water, contours and proposed changes in alignment of river/stream/nallah/any other water body, if any.	18 (B)
6.	Seasonal wind rose diagrams for day time, night time and 24 hours period.	22(A.2)
7.	A location map indicating AAQ stations, their direction and distance with respect to the project site.	22(B)
8.	Physico-chemical analysis report of water at intake points (all parameters as per drinking water standards)	30
9.	Water balance statement in the form of flow diagram indicating input source(s), consumption (section-wise) and output.	33
10.	Analysis report of water 100 m upstream and 100 m downstream of discharge point	32 (F.4)
11.	Layout map indicating solid waste / top soil dump site(s)	34(A)
12.	Mine site reclamation and rehabilitation plan.	34(F)
13.	Fuel analysis report	36(C)
14.	A report on health status of workers	38(C)
15.	Public hearing report	46(F)
16.	A copy of site clearance letter.	47(A)
17.	A copy of NOC from the State Pollution Control Board	47(B)
18.	A copy of NOC from the Atomic Energy Division	47(C)
19.	A copy of mining plan approval from IBM / Ministry of Coal	47(D)
20.	A copy of forestry clearance	47(E)
21.	A copy of approval of Chief Controller of Explosives	47(F)
22.	Copies of commitments regarding availability of water and power from the concerned State authorities	47(G)