

**SUMMARY
OF
EIA OF NAWAPARA UNDERGROUND PROJECT
(0.18 MTY TO 0.36 (0.55 MTY PEAK PERIOD)
FOR
PUBLIC HEARING**

1.0 PROJECT DESCRIPTION

The existing Nawapara U/G Mine is located in toposheet of GSI 64M / III , 64M / IV and bounded by latitude 23° 20' 00", 23° 14' 53"N and longitude 83° 04' 23" & 83° 05' 53". The area falls in Surguja district of Chattisgarh State. It is in Sendurpara Geological Block of Bistrampur Coalfields of Bhatgaon area of South Eastern Coalfields Limited. Its Revenue Development Block or Tehsil is Surajpurr. The address of the Projects is P.O. Nawapara, Bhatgaon area, District- Surguja (C.G). Refer to Location Plan, **Fig -1**.

The nearest rail head is Bishrampur of SEC Railway and is located about 25 km from the project.

Ambikapur - Varanasi state highway is 500eters from the Nawapara project. Ambikapur is about 35 km east of the project.

The nearest meteorological observatory is at Ambikapur. The climate of this area is sub-tropical one with three main seasons. Season during April to June is the summer with temperature rising to maximum 44 °C in the month of May. July to September is the monsoon season with an average rainfall of 1456 mm. Winter is short and temperature during this season dips to 1.8°C in the month of December. Relative humidity during winter ranges from 24 % to 78 %.

1.01 GEOLOGY

Within the workable part of the area only 3 seams viz., Dhejagir(Top), Local 2 and Pasang attain workable thickness (>0.9 m) in a sizeable area of the geological Block. Due to poor grade of Dhejagir (Top) and patchy deposition of L-2 seam, only Pasang seam is considered for mining in this project.

1.02 FAULT AND THROW

Fault & throw of pasang seam is 2m to 40m and the strike of the fault envisaged is N10W-S 10E in the northern part and swerves to N10 E-S 10 W in the southern part with local undulations

1.03 Mine Boundary

- North - The block boundary of 1.5m thickness line of the Pasang Seam which passes through North of borehole nos. 98, 84 and 80 of MN series.
- East - Arbitrary mine boundary line considering a distance of about 1000 m from main dip. The block boundary is at further east passing through east of BH No. 102, 107, 82, 86 of MN series.
- South - 1.5 thickness line of Pasang Seam which passes south of borehole nos. 8, 21, 9, 26 and 31 of MN series or Ambikapur – Bishrampur Road, passing near the southern boundary of the block.
- West - 1.2 m thickness line of Pasang Seam which passes West of borehole nos. 26, 9, 21, 25, 63 of MN series.

1.04 SEAM DETAILS

DEPTH OF SEAM

Depth of Pasang seam in project boundaries varies from 94.62 m to 169.96 m. General seam thickness varies from 1.2 m to 2.5 m.

DIP OF THE SEAMS :

The dip is usually 1.5° to 3° in underground Project

THICKNESS OF THE SEAM:

Name of the seam being worked	:	In Nawapara UG Pasang seam
Seam thickness range (m)	:	1.2 to 2.5m (1.9 m Average)
Grade of coal	:	Grade C
Balance reserves (as on 01.04.2008)	:	12.65MT

2.0 MINING METHOD :

Nawapara mine is being worked by Bord & Pillar method with SDL and coal will be transport from the face to surface with the help of poney belt, trunck belt and gate belt conveyor.

I. DESCRIPTION OF THE ENVIRONMENT

SOCIO-ECONOMIC ASPECTS

A study of socio-economic profile in buffer zone including core zone (based on available census data) reveals that the total population of the area consists of about 101151 persons, of which 50.85% are male and 49.15% are female.

Scheduled castes account for 43.54% of total population and Scheduled tribes 5.08%, whereas 46.33% population is literate.

The data reveals that 27.83% of the population are main workers and 14.98% are marginal workers, the rest 57.19% are non-workers. Main workers and Non-workers ratio is 1:2.05

LAND

A. REQUIREMENT

The land use pattern, as per the present scenario is as given in the Table given below

Sl. No.	Type of Land	Area in Ha.
1	Government Land	23.69
2	Tenancy Land	346.47
3	Forest Land	71.98
4	Total Land	442.14

B LAND USE

Buffer Zone of the project is the area of 10 kms. radius from the periphery of the project area . The entire area of core & buffer zone is called study area for environmental impact. Total area thereof is around 38316Ha.

The summarised details are as follows:-

Sl.No.	Landuse	Area (in ha.)	% of total area
a	Forest land	4152	10.84
b	Irrigated agricultural land	2027	5.28
c	Unirrigated agricultural land	21131	55.15
d	Cultivable Waste land	7183	18.75
e	Area not available for cultivation	3823	9.98
	TOTAL	38316	100.00

The data reveals that, out of total study area of 38316 Ha. around 10.84 % is forest land, 55.15 % is agricultural land, 18.75 % is cultivable waste land and 9.98 % is not available for cultivation.

HYDROGEOLOGY

Year-wise static water levels, as inferred from the ground water level study of last 17 years (1991 – 2008) at Hydrograph Stations during pre and post-monsoon as recorded by Ground Water Survey Unit, Irrigation Department, 7.34 m (pre-monsoon average). and 4.07m (post-monsoon average). The average fluctuation in GWL observed from the data of permanent observation wells is about 4.72 m.

Rainfall is the principal source of recharge. The calculation of the ground water recharge has been done based on the GEC norms for rainfall infiltration index as 11.5% and for water level fluctuation method assuming specified yield as 8% for hard rocks. Based on the rainfall infiltration method the recharge works out to **60.15** M.cu.m. Discharge of the area works out to **16.55** M.cu.m. From this it is seen that the surplus water available in the area is 22.74 M.cu.m.

ENVIRONMENTAL QUALITY

A AMBIENT AIR QUALITY

Ambient air quality data at the project site shows maximum concentration of SPM, RPM, NO_x, SO_x in winter as 254, 100, 21 & 22.6 µg/cum respectively, and which is within the permissible limits.

B WATER QUALITY

Water samples were collected and analysed from different locations representing surface sources and adjoining mine discharge. The analytical result shows that the physical and chemical parameters are within prescribed limits of IS:10500 for drinking water. The effluent quality of the UG mines is regularly monitored and their quality are well within the limit prescribed by MOEF/CPCB standard.

C NOISE LEVEL

The ranges of day time and night time equivalent noise levels recorded in the area are 39.9 to 55.5 dB(A) & 46.2 to 58.5 dB(A) respectively. These are well within the limits prescribed as per standards of MOEF (vide no G.S.R 742 (E) dated 25.09.2000).

The main sources of noise pollution are Coal Bunker, workshop and mine fans. Green belt development and other control measures are recommended to keep the noise levels within permissible limits.

COMPOSITION OF FLORA AND FAUNA.

In the study area, the forest cover is 4152 ha, which is only 10.84 %.The flora and fauna presented is based on the field survey and discussions held with the local forest officials up to grass root level regarding availability of flora and fauna in buffer zone of the proposed project.

II. ANTICIPATED ENVIRONMENTAL IMPACT & MITIGATION MEASURES

SOCIO ECONOMIC IMPACT

The project will have on the whole a positive impact on socio-economic profile of the area due to increase in employment opportunities, trade and business, community development, improved communication link etc.

IMPACT ON LAND USE

Important surface features within core zone will not be affected since, no depillaring operation will be undertaken, and developed pillars will be left standing after isolating them. Crop compensation would be paid during the period when depillaring of panels damage tenancy land at surface due to subsidence.

Subsided land and cracks would be filled with soil to maintain the original topography of the area.

IMPACT ON ENVIRONMENT

Air environment:- Air quality in respect of SPM, RPM, SO₂ & NO_x within and around the project area are found to be within the prescribed limits of MOEF. These parameters may increase their values if proper mitigative measures are not taken care of may cause pulmonary infections like pneumoconiosis, silicosis etc, irritation of eyes, poor visibility etc.

Water environment : - Untreated mine water, Workshop & Domestic effluent water could cause pollution to surface & ground water courses with excess of Suspended solids, Oil & Grease, COD and BOD, Dissolved solids, Sulphates, Chlorides, Bacterial contamination leading to serious problems to aquatic life & human health hazard.

Lowering of ground water table are the likely impacts on surface & ground water courses leading to water scarcity in the area..

Noise environment :- The impact of continued exposure of higher noise levels on humans and fauna are as follows:

- * Annoyance and irritation
- * Mental and Physical fatigue
- * Interference in normal activities.
- * Health hazards resulting from impaired hearing
- * In extreme cases, cardio-vascular diseases etc.
- * Task interference.
- * Interference with communication i.e masking.
- * Hypertension and higher blood cholesterol.

FLORA & FAUNA :- There are following identified impacts on flora & fauna

There will not be any adverse effect on the existing habitat due to underground mining operations at greater depth. However, some indirect impact due to developmental activity and population growth is expected which will be controlled by adopting strict protective measures by area authorities.

HYDROGEOLOGICAL ASPECT : - As mentioned earlier, because of the low permeability of aquifers, the impact of mining on local water regime will be marginal and the radius of influence will be limited to a small distance. So also, due to stratification, the individual permeable beds develop individual drawdown cones and the impact is usually limited to few hundred meters.

IV ENVIRONMENTAL MONITORING PROGRAM

The implementation and monitoring of pollution control measures and for overall environmental management, environmental cell at the area and Corporate level will take all necessary care. It will look after the following aspects of environmental management.

- * Generation of environmental data bank.
- * Evolving micro environmental management plan for the project in collaboration with other agencies and consultants.
- * Monitoring project implementation along with environmental control measures.
- * Co-ordinate with other project activities to ensure timely implementation of the project.
- * Co-ordination with Ministry of Environment & Forest, Central/State Pollution Control Board for prevention and control of water and air pollution.

V ADDITIONAL STUDIES

PUBLIC CONSULTATION

To ascertain the concern of local affected and others who have a plausible stake in environmental impacts of the project / activity public consultation will be done at project site or close proximity for local affected persons.

RISK ASSESSMENT

Assessment of risk and its management is essential to guard against and mitigate the consequences of major accidents. The term, "major accident" means an unexpected and sudden occurrence of event from abnormal developments in course of one's industrial activity leading to a serious danger to public or environment, whether immediate or delayed, inside or outside the installation involving one or more hazardous substances.

VI PROJECT BENEFITS

IMPROVEMENT IN THE SOCIAL INTRASTRUCTURES:

a) Literacy Drive :

An action plan for achieving 100% literacy among workers in the SECL, was launched in the year 1992. Under the same scheme, workers of Kalyani and Shivani UG project will be covered to achieve 100% literacy

level.

- b) Socio-Economic Development
 - 1) Infrastructure Development in nearby villages .
 - c) Community Development works in nearby villages .
- d) Vocational Training Programme for the village provided by Kalyani and Shivani UG project

EMPLOYMENT POTENTIAL:-

- a) In the project

There will be direct employment opportunities of 1306 manpower of different categories of persons .

- b) Secondary Employment opportunities

There will be spontaneous economic stimulus in the area with the commencement of the mine. Traders and private enterprises will grow in the area with this economic growth. Besides, the State exchequer will derive financial revenues through levy of royalty, sales tax etc. and Central Government will also be benefited by way of Central Sales Tax, Income Tax, Cess's etc.

VII ENVIRONMENTAL MANAGEMENT PLAN

COMPENSATION

Important surface features within core zone will not be affected since, no depillaring operation will be undertaken, and developed pillars will be left standing after isolating them. Crop compensation would be paid during the period when depillaring of panels damage tenancy land at surface due to subsidence.

RECLAMATION

Subsided land and cracks would be filled with soil to maintain the original topography of the area.

AIR QUALITY CONTRON MEASURES

Considering anticipated effect on air quality due to mining operations, following control measures have been Envisaged for the project.

- Mobile water sprinkler for water spraying on approach roads & coal transportation road and dust suppression system to coal bunkers.
- Black topping of all service roads.
- Green belt around colony, industrial complex and other service centre.

Dust suppression system at specified points in proposed coal handling arrangement.

WATER QUALITY CONTROL MEASURES

The analytical result shows that the physical and chemical parameters are within prescribed limits of IS:10500 for drinking water. The effluent quality of the UG mines is regularly monitored and their quality are well within the limit prescribed by MOEF/CPCB standard.

However, 3.0 lakh gallon capacity mine sump to arrest suspended solids from mine water has already been provided. For sewage treatment, provision has been also been made by provided settling tank of 6.5 lakh gallon capacity. It is expected that final discharge if any will comply the statutory limits.

CONTROL MEASURE FOR NOISE LEVEL

Green belt development and other control measures are recommended to keep the noise levels within permissible limits.

To minimise anticipated noise pollution, following control measures are envisaged.

- Provision of earplugs, earmuffs as and when required.
- Routine maintenance of equipment.
- Location of colony at sufficient distance from mine.
- Green belt around colony and industrial complex.

FLORA & FAUNA

There will not be any adverse effect on the existing habitat due to underground mining operations at greater depth. However, some indirect impact due to developmental activity and population growth is expected which will be controlled by adopting strict protective measures by area authorities

ENVIRONMENTAL ECONOMICS

TABLE 6.1(A)

**REVISED PROJECT FOR NAWAPARA UNDERGROUND
STATEMENT SHOWING ESTIMATED CAPITAL REQUIREMENT TOWARDS ENVIRONMENTAL**

MANAGEMENT & CONTROL MEASURES

	PARTICULARS	PR AMT.	EXISTING	Amount ADD.F
A.	RESETTLEMENT	NIL		N
B.	COMPENSATORY AFFORESTATION	NIL		N
C.	POST MINING RESTORATION OF LAND			
i)	HOUSING FOR PERSONNEL	2.37		
ii)	EQUIPMENT FOR ENVIRONMENTAL CONTROL (WATER SPRINKLER)	6.37		
	SUB-TOTAL(C)	8.74		
D.	ANTI-POLLUTION MEASURES IN MINE & INDUSTRIAL SITE			
i)	OIL & GREASE TRAP FOR WORKSHOP DISCHARGE	0.25		
ii)	SETTLING TANK FOR MINE WATER DISPOSAL	10.80		
iii)	SEWAGE DISPOSAL FOR WORKSHOP EFFLUENT)	0.73		
iv)	OTHER DEVELOPMENT MEASURES IN INDUSTRIAL SITE VIZ. DRAINS, TREE GUARDS ETC.	12..22		
v)	PLANTATION IN INDUSTRIAL SITE & TENANCY LAND WITHIN MINE TAKE INVOLVE SUBSIDENCE	2.00		
vi)	SUBSIDENCE MANAGEMENT	CONTRACTUAL		CONTR.
	SUB-TOTAL(D)	26.00		
E.	ANTI-POLLUTION MEASURES IN TOWNSHIP			
i)	SEWAGE DISPOSAL IN COLONY	19.42		
ii)	STORM WATER DRAINS	5.02		
iii)	OTHER DEVELOPMENT MEASURES IN TOWNSHIP			
	a) Tree guards	0.22		
	b) Parks & Play ground	2.00		
iv)	Plantation in Colony	2.00		
	SUB-TOTAL(E)	28.66		
F.	COMMUNITY DEVELOPMENT IN SURROUNDING VILLAGES (A.8.1)	10.00.		
	SUB-TOTAL(F)	10.00		
G.	ANTI-POLLUTION MEASURES IN CHP DUST SUPPRESSION & FIRE FIGHTING	1.05		
	SUB-TOTAL(G)	1.05		
H.	EMP PREPARATION COST	8.00		
	COST OF LAB EQUIPMENT			
	SUB-TOTAL(H)	8.00		
	GRAND TOTAL (A+B+C+D+E+F+G+H)	82.45		

VI -4

MINE CLOSURE PLANNING

Although, the mining activities may last a few decades, but they are liable to leave a long lasting impacts on the landscape, ecology and on local inhabitants. If not properly managed, effects can be detrimental for general welfare of most of the stake holders. Thus, any mining venture must have adequate closure plan, aimed at rehabilitation of disturbed area, which should be acceptable to local community as well as regulatory authority. Mine closure cost will be around Rs 44.047 Lakhs
