Nov, 2025

# EXECUTIVE SUMMARY

## GONDULPARA COAL MINE PROJECT OF 4.0 MTPA CAPACITY OVER AN AREA OF 513.18 Ha.

**VILLAGE: GALI, GONDULPARA, HAHE, PHULANG & BALODAR, BLOCK- BARKAGAON, DISTRICT-HAZARIBAGH, JHARKHAND**

**STUDY PERIOD: MARCH TO MAY, 2025 COLLECTED BY: SKS Labs Private Limited.**

**[The proposed project is listed under Schedule 1(a) Mining of Minerals under the Schedule of EIA Notification, 2006 and categorized as Category-A]**


**PROJECT PROPONENT**

**M/S ADANI ENTERPRISES LIMITED**

Adani Corporate House, Shantig ram, Nr. Vaishno Devi Circle,
S G Highway Khodiyar, Ahmedabad-382421

**ENVIRONMENT CONSULTANT**

**VARDAN ENVIRONET LLP**

(QCI/NABET ACCREDITED NO. NABET/EIA/2326/RA 0284_Rev.01)
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# EXECUTIVE SUMMARY

## 1.1 INTRODUCTION

Adani Enterprises Ltd (AEL), forayed into new business segments with a strategy to create a positive impact and create unmatched value. The growth narrative of the Adani Group has been in sync with the needs of the nation. From pioneering the Mine Developer and Operator (MDO) model to providing end-to-end mining solutions our vision is to make India self-reliant and reduce the dependency on imports. Adani became one of the largest developers and operators of coal mines in the country. Globally, Adani established footprints in Indonesia and Australia.

Adani mining has also set up its own Mineral Resource Exploration Division, which provides complete mining solutions for surveying, coal block exploration and grading assessment. The mining division manages exploration activity for the group in addition to providing services to other companies.

The Gondulpara Coal Mine in North Karanpura coal fields in Hazaribagh district of Jharkhand State has been allocated to M/s Adani Enterprises Limited vide vesting order no: NA-104/10/2020-NA dated 8th March, 2021 by MoC, GoI.

The target production capacity is estimated as 4.0 MTPA from Gondulpara Coal mine. Accordingly the Mining Plan has been prepared and duly approved.

The project envisages;

I. Targeted Production of coal 4 MTPA.
II. Installation of coal handling plant, CHP is planned with the system capacity as 700 TPH rated and 770 TPH design, keeping the peak production capacity in mind. Dump trucks will discharge ROM coal to Coal receiving station which has adequate receiving and conveying equipment to handle and deliver the coal into Truck loading for further transport.

The proposed project is listed under activities 1(a) under the Schedule of EIA Notification, 2006 and categorized as Category-A.

## 1.2 PROJECT DESCRIPTION

Total geological mineral reserve of the project is 184.65 MT and Extractable Reserve is 116.68 MT. The total life of the mine 32 years, including two construction years without coal or OB removal. The mine is proposed to be worked by shovel-dumper combination for OB excavation and Surface Miner for coal winning and loading by FE Loader. The mining operation will be carried out as per the approved Mining Plan. Detail of the project is summarized in below attached table:

**Table 1.1: Detail of the Project**

| S. No. | Description | Particulars |
|---|---|---|
| 1. | **Name of the Project** | Gondulpara Coal Mine (North Karanpura Coal Field) with targeted capacity of 4.0 MTPA in mine lease area of 513.18 ha of M/s Adani Enterprises Ltd located at Village Gali, Gondulpara, Hahe, Phulang & Balodar, Block Barkagaon, District Hazaribagh, Jharkhand. |
| 2. | **Type of the Project** | Opencast Mechanized Coal Mining |
| 3. | **Mining lease area** | 513.18 Ha |
| 4. | **Land use Area** | **Forest land (Protected & Rev Forest)**: 219.8 Ha<br>**Non-Forest land:**<br>**Tenancy Land (Agricultural, Road)** – 223.22 Ha<br>**Govt Land- (Township and others)** 70.16 Ha.<br>Application for Forest Clearance has been submitted vide Proposal No. FP/JH/MIN/139492/2021 dated. 26/03/2021. |
| 5. | **New / Expansion** | New |
| 6. | **Category as per EIA Notification** | "A" |
| 7. | **Villages** | Balodar, Gali, Gondulpara, Hahe, Phulang |
| 8. | **Block** | Barkagaon |
| 9. | **District** | Hazaribagh |
| 10. | **State** | Jharkhand |
| 11. | **Latitude** | $23^0$50'20" - $23^0$51'49.92"N |
| 12. | **Longitude** | $85^0$18'20" - $85^0$20'56"E |
| 13. | **Toposheet No.** | No. 73 E/5 |
| 14. | **Name of the Organization** | Adani Enterprises Limited (AEL) |
| 15. | **Coal Field** | North Karanpura coal fields |
| 16. | **Coal Block** | Gondulpara Coal Mine |
| 17. | **No. of coal seams** | Seam V, Seam IVD, Seam IVC, Seam IVB, Seam IVA, Seam IV, Seam IIITOP, Seam IIIBOT, Seam III COM, Seam II, Seam I, Seam K5, Seam K4, Seam K3, Seam K2, Seam K1. |
| 18. | **Seams not considered for** | 8 Seams not considered for mining due to |

| S. No. | Description | Particulars |
|---|---|---|
| | **mining** | inconsistent and less than a meter thickness |
| 19. | **Range of Thickness of seams** | Seam III Top – 2.0 m (Min)<br>Seam I -20 m (Max) |
| 20. | **Total Geological reserve** | 184.65 Mte |
| 21. | **Net Geological Reserves** | 166.186 Mte |
| 22. | **Mineable Reserves** | 120.11 Mte |
| 23. | **Extractable Reserves** | 116.68 Mte |
| 24. | **Percent of extraction** | 70.21 % |
| 25. | **Average GCV & Grade of Coal** | 4540/ G10 Grade |
| 26. | **Total OB** | 279.47 Mcum |
| 27. | **Average Stripping Ratio (Cum/t)** | 2.3952 |
| 28. | **Slope of angle of the working benches** | Bench Slope<br>a) OB Bench 70 degree<br>b) Coal Bench 70 degree<br>c) Dump bench 37 degree<br>Overall (Ultimate) pit slope 39 degree |
| 29. | **Peak Production Capacity** | 4 MTPA |
| 30. | **End Use of Coal** | The Block is auctioned under commercial coal mining. There shall be no restriction to carry on mining operations for own consumption, sale or for any other purpose. |
| 31. | **Life of the Mine** | 32 Years |
| 32. | **Forestland requirement** | **Protected Forest land**: 210.68 Ha<br>**Reserve Forest (CJBJ)**: 9.12Ha |
| | **Non-forestland within ML Area** | **Tenancy Land (Agricultura and Road)** – 223.22 Ha<br>**Govt Land- (Township and others)** 70.16 Ha. |
| | **Total Land requirement** | 513.18 Ha |
| 33. | **Details of Wildlife Sanctuaries, National Park, eco-sensitive Zones, within 10 km radius** | None |

<table>
<tr><th>S. No.</th><th>Description</th><th>Particulars</th></tr>
<tr><td>34.</td><td>R & R Involved</td><td>The number of Project Affected Families (PAF) has been estimated to be 1827.<br>The number of Project Displaced Families (PDF) has been estimated to be 1116.<br>The displaced families are proposed to be rehabilitated and resettled as per the R&R Plan.</td></tr>
<tr><td>35.</td><td>No. of affected families</td><td>The number of Project Affected Families (PAF) has been estimated to be 1827.<br>The number of Project Displaced Families (PDF) has been estimated to be 1116.</td></tr>
<tr><td>36.</td><td>Technology</td><td>Opencast Mechanized mining is proposed.<br>Coal-Surface Miner & drilling blasting.<br>OB- shovel-dumper combination.</td></tr>
<tr><td>37.</td><td>Area of Excavation</td><td>326.01 Ha</td></tr>
<tr><td>38.</td><td>Depth of the quarry</td><td>Up to 300 m</td></tr>
<tr><td>39.</td><td>Details of Temporary External OB Dumps</td><td><table><tr><td>Location</td><td>Area in ha</td><td>Max. Height</td><td>OB Quantity In Mm3</td></tr><tr><td>External Dump</td><td>103.26</td><td>120m</td><td>50.20</td></tr></table>Another small patch of approx. ~26 ha within block is proposed as external dump which shall be merged with in-pit dump later</td></tr>
<tr><td>40.</td><td>Details of Internal OB Dumps</td><td>The total volume of Internal dump has been estimated as 229.27 Mm3<table><tr><td>Location</td><td>Area in ha</td><td>Max. Height</td><td>OB Quantity In M.Cum</td></tr><tr><td>Internal Dump (Back filling)</td><td>166.89</td><td>120 m</td><td>229.27</td></tr></table></td></tr>
<tr><td rowspan="3">41.</td><td>Details of Final Mine Void (at the end of mine)</td><td>At final stage</td><td rowspan="3">Out of total lease area (513.18 ha) 166.89 ha of excavated area will be backfilled up to a level of 580 mRL</td></tr>
<tr><td>Area</td><td>159.12 ha</td></tr>
<tr><td>Depth</td><td>30 m</td></tr>
</table>

| S. No. | Description | Particulars |
|---|---|---|
| 42. | **Details of afforestation (Total: 326.23 ha.)** | |
| | **Plantation on Backfilled area** | 166.89 ha |
| | **Green Belt Plantation Area** | 10.69 ha |
| | **Safety Zone** | 6.5 ha |
| | **Plantation on Other area** | 142.15 ha |
| 43. | **Density of Plantation** | 2500 No./ha |
| 44. | **Coal Evacuation** | |
| | **In-Pit** | Dumpers |
| | **In-Pit conveyor to CHP** | Conveyors |
| | **Surface to Consumer** | It is proposed by Railway /truck conveyor based on consumer location |
| 45. | **Working Regime** | 330 days/ year, 3 shifts/day, 8 hours/shift |
| 46. | **Mineral Processing** | A Coal Handling Plant is proposed. |
| 47. | **Employment potentiality** | Project will generate employment for about 521 persons directly & indirectly |
| 48. | **Power requirement** | Overall power demand will be approximately 2 MVA for initial year of operation and the same shall ramp up to 6.5 MVA for life of mine. Power will be received at Substation-1 at 33kV from nearby substation. Further reticulation shall be done at 415V for CHP load, pit water pumping load (for initial year) and for other mine infra.<br>SS-1 will have transformer of 33kV/0.415 kV, 1 number of 2 MVA and feed it to 415V switchboard. Transformer rating sizing are done considering overall load requirement for mine infrastructure.<br>One number 33/6.6kV, 6.5 MVA transformer will be installed in 5th year for pit water pumping. 6.6kV power will be distributed to mine area to cater load of HT motor of Pit pumping.<br>Diesel generator sets are considered at substation. DG sets will be fed power to 20% of total illumination and other critical loads |
| 49. | **Water requirement** | **Total Water Requirement (Peak)**: 1386 KLD |

| S. No. | Description | Particulars |
|---|---|---|
| | | Source: Bore Well and Mine Water<br>During initial period source of water are bore wells. Later on, industrial water demand will be met from mine sump water. However, the potable water demand at mine, mine facilities will be continue to be met through ground water by bore wells. |
| **50.** | **Fuel consumption** | Diesel Consumption would be around 26000 KL/Annum of vol. handled.<br>Specific Diesel consumption may be reduced by proper maintaining gradient of haul road and reducing waiting time of dumper as well as proper training to the HEMM operators. |
| 51. | **Transportation** | Dumper and conveyor in pit. It is proposed by Railway /truck conveyor based on consumer location. |
| 52. | **Surface features over the block area** | • There are 5 villages (Balodar, Gali, Gondulpara, Hahe and Phulang) located within/periphery of the Block boundary. Few small ponds and dug wells in the area which are utilize for irrigation or drinking water purpose<br>• The Badmahi River flow from east to west along the northern boundary of the block. One nalla flowing from south to north (tributary of badmahi river) which will be diverted along the eastern boundary of the block. |
| 53. | **Infrastructure** | Requisite infrastructure will be developed for mining operation & allied activities such as Rest shelters, blasting shelters, First-aid center, drinking water supply, Site-offices, Stores, Workshop for HEMM, Explosive magazine and toilets within the mining lease as per requirement. |
| 54. | **Total cost of the project** | Rs 1617.27 Crores |
| 55. | **Fund Provision for EMP** | Capital - 2267.1 Lakhs<br>Recurring - 351.71Lakhs |
| 56. | **Name of the EIA Consultant Organization** | M/s Vardan EnviroNet LLP |

| S. No. | Description | Particulars |
|---|---|---|
| 57. | **QCI / NABET Accreditation** | Certificate No. NABET/EIA/2326/RA 0284_Rev.01; Validity: May 04, 2026. |

### 1.3 DESCRIPTION OF THE ENVIRONMENT

Environmental data have been collected in relation to proposed mining for Air, Noise, Water, Soil, Ecology and Biodiversity. The generation of primary data, as well as collection of secondary data and information from the site and surroundings was carried out during summer Season, i.e. March to May 2025 by SKS Labs Private Limited, NABL Accredited Lab, in accordance with the guidelines of EIA issued by the Ministry of Environment Forests and Climate Change, Govt. of India and CPCB, New Delhi. Secondary data was collected from different Government sources. The scope of the study has been done as per ToR. The EIA study is being done for the Mine Lease (core zone) and area within 10 Km distance from the mine lease boundary (buffer zone), both of which together comprise the study area.

**Table 1.2: Baseline Environment Status**

| Parameters | Baseline Status |
|---|---|
| **Ambient Air Quality** | $PM_{10}$ – 77.1 to 30.5 µg/m³<br>$PM_{2.5}$ – 51.6 to 19.7 µg/m³<br>$SO_2$ – 17.7 to 6.0 µg/m³<br>NOx – 30.9 to 14.3 µg/m³<br>CO – 0.86 to 0.15 mg/m³<br>O3 – 25.92 to 8.07 µg/m³<br>NH3 – 29.44 to BLQ µg/m³<br>Benzene, B-α-P, Pb, Nickel, Arsenic, Cr and Hg are found below Limit of Quanitification at all locations.<br>% free silica varies from 1.04 % to 2.4 %. |
| **Noise Level** | The Leq values for day time was observed to be 44.2 to 66.3 dB (A) in residential area, while during night time 35.84 to 55.75 dB (A). |
| **Water Quality** | **Ground Water:** All the Parameters Like pH varies from 7.10 to 7.96, Total Hardness varies from 95.04 to 142.56 mg/l,Total Dissolved Solids varies from 234 to 347 mg/l, Chlorides – 29.52 to 44.28 mg/l etc. are found within the permissible limits. Bacteriological studies revealed the absence of Total coliform. |
| | **Surface Water:** All the Parameters Like pH varies from 6.84 to 8.09, Total Hardness varies from 114.54 to 266.67 mg/L, Total Dissolved Solids varies from 240 to 538 mg/L, Dissolved Oxygen – 5.6 mg/l to 6.7 mg/l etc. are found within the permissible limits. Total Coliform count is measured 240 to 1600 MPN/100ml. |
| **Soil Quality** | pH- 7.05 to 8.05<br>Organic matter- 0.35 % to 0.65 %<br>Electrical Conudctance - 0.14 mS/cm to 0.324 mS/cm |

| Parameters | Baseline Status |
|---|---|
| | Available Nitrogen - 238.38 Kg/ha to 341.41 Kg/ha<br>Available Phosphorous - 11.49 kg/ha to 21.42 kg/ha<br>Available Pottasium - 95.17 mg/kg to 176.5 mg/kg |
| **Ecology And Biodiversity** | No National Park, Wild Life Sanctuary, Bio-sphere Reserve, Elephant Reserve, Tiger Reserve. is present within 10 km of mining lease area. There are Schedule-I species present in the study area. However, a site specific WLCP will be prepared by DFO for conservation of Wildlife. |
| **Socio Economic** | The proposed project will provide positive impact to the nearby area. The project will provide direct and indirect employment to nearby villagers. |

## 1.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The proposed mining operations are not anticipated to raise the concentration of the pollutants beyond prescribed limits. However, the measures are suggested to mitigate any harmful impacts of pollutants, like the plantation of trees along haul roads especially near settlements, to help to reduce the impact of dust on the nearby villages; planning, transportation routes of mined material so as to reach the nearest paved roads by shortest route; regular water sprinkling on unpaved roads to avoid dust generation during transportation etc. The mining activities is likely to increase the per capita income of local people by which the socioeconomic status of the people will be improved. The local people will be provided with either direct employments or indirect employment such as transport & other business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. Except dust generation, there is no source which can show a probability for health related diseases. Regular water sprinkling will be done with water sprinklers and dust masks will be provided to the workers. All workers will be subjected to a medical examination as per Mines Rule 1955 both at the time of appointment and at least once in a year. Medical camps will be organized for this activity. Insurance for all employees as per the rules will also be carried out.

**Table 1.3: Anticipated Environmental impacts and mitigation**

| Environmental Component | Project Activities | Impacts | Adverse / Beneficial | Mitigative Measures |
|---|---|---|---|---|
| Air Quality | Drilling and Blasting | $PM_{10}$, $PM_{2.5}$, $SO_2$ and $NO_2$ | Adverse | Use of dust aprons by drillers and adopting wet drilling methods.<br>A. The production of blast fumes containing noxious gases will be reduced by the following methods:<br>• Use of adequate booster/primer; and<br>• Proper stemming of the blast hole.<br>• Scientific design of blast.<br>B Drills fitted with dust collection system will be deployed or using wet drilling method.<br>C. Development of greenbelt. |
| | Overburden removal | Increase in SPM levels in ambient air due to dust generation and $NO_2$, HC, $SO_2$ and CO concentration levels in ambient air due to vehicular emissions. | Adverse | • Sprinkling of water on haul roads at regular intervals.<br>• Installing permanent water sprinklers at strategic areas/locations/stretches.<br>• Regular maintenance of vehicles and machinery will be carried out.<br>• Cabins for shovel and dumpers and dust respirators to workmen will be provided. All HEMM cabins will be air-conditioned.<br>• Dust suppression will be done on exposed area using water sprinkler.<br>• Greenbelt development will be taken up all along the haul roads.<br>• Separate storage of top soil for progressive reclamation of dumps and mined out area backfilled with overburden material.<br>• Re-vegetation of mined out area and inactive dumps and<br>• A good housekeeping and proper maintenance will be practiced which will help in controlling pollution. |
| | Transportation of overburden | -do- | Adverse | • Use of tarpaulin covered trucks for transportation of coal outside the ML area.<br>• Regular water sprinkling on haul, access roads and all transfer points. |

| Environmental Component | Project Activities | Impacts | Adverse / Beneficial | Mitigative Measures |
|---|---|---|---|---|
| | | | | • Haul roads to be maintained by surface grading to minimize excessive road surface wearing.<br>• Roads no longer required will be re-vegetated as soon as possible. |
| | General equipment operations | Increase in SPM, $NO_2$ and CO concentrations in ambient air. | Adverse | • Regular maintenance of all equipment to minimize particulate matter and gaseous emissions from diesel driven vehicles & equipment.<br>• Use of non-electric initiation and computerized blast design to maximize the explosive energy for fragmentation and minimum fume generation in blast. |
| | All activities | Excessive exposures to airborne particulate matter. | Adverse | Personal protective equipment (PPE) will be provided to all workers working in dusty environment. |
| Noise Levels and Ground Vibrations | Drilling and Blasting | High impulsive noise levels, overpressure and ground vibrations impacts and noise related community annoyance | Adverse | ➢ **Noise Control Measures**<br>• Controlled blasting with proper spacing, burden and stemming will be maintained;<br>• NONEL will be used for initiation of explosives in blasting<br>• The blasting will be carried out during favorable atmospheric condition and less human activity timings;<br>• Provision of sound insulated chambers for the workers deployed on machines (HEMM)<br>• Green belt has been developed all along the lease boundaries to attenuate noise.<br>• A thick green belt will be provided in phased manner around the periphery of the mine to attenuate noise;<br>• Trees will be planted on both sides of haul roads.<br>• Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM; |
| | Machine and transportation of overburden within the ML area. | Increase in noise levels occupational hazard due to noise exposures and increase in ambient noise | Adverse | |

| Environmental Component | Project Activities | Impacts | Adverse / Beneficial | Mitigative Measures |
|---|---|---|---|---|
| | | levels. | | and<br>• Reducing the exposure time of workers to the higher noise levels.<br>• Regular monitoring of Noise level will be carried out.<br>➢ **Measures to Control Ground Vibration**<br>• Proper quantity of explosive, suitable stemming materials and appropriate delay system are to be adopted for safe blasting. Computerized blast design to be used.<br>• A safe blasting zone is kept around the periphery of the quarry.<br>• Overcharging will be avoided;<br>• The charge per delay will be minimized and preferably more number of delays will be used per blasts; |
| Water Resources and Quality | Mining will intersect the ground water table. | Depletion of ground water | Adverse | Main source of water will be through borewell and mine water.<br>➢ **Mine Drainage:**<br>• The garland drains will be developed in advance for each mine stage such that water is collected in these garland drains and discharged properly into settling tanks to settle out suspended solids in the storm water. The clarified water is reused for green belt development.<br>• The overall drainage planning will be done in such a manner that the existing drainage conditions should be maintained to the extent possible, so that run off distribution is not affected.<br>• Working faces will be laid such that the water from the working areas will flow into a sump by gravity from where it will be pumped out to settling ponds.<br>• The pumped out water from mines shall be channelized through storm water drains<br>• Pumps of adequate capacity will be provided at sump to keep these areas |
| | Water required for mine, (dust suppression systems, workshop, domestic facilities and greenbelt development) | Except water demand for drinking & domestic purpose or quarry discharge. | Adverse | |
| | Waste water generated from mine | Depletion of ground water level and soil | Adverse | |

| Environmental Component | Project Activities | Impacts | Adverse / Beneficial | Mitigative Measures |
|---|---|---|---|---|
| | &domestic usage at mine. | quality when used untreated water for greenbelt development. | | dry.<br>• Stone pitching shall be made at suitable places to regulate water flow.<br>• The settling tank and drains are cleaned periodically, especially during monsoons.<br>➢ **Surface Water Pollution Control Measures**<br>• Retaining walls of adequate dimensions will be provided at the toe of dumps and the unstable OB benches within the mine to prevent wash off from dumps and sliding of material from benches. This will help in preventing silting of water drains/channels;<br>• The water channels/drains carrying the rain water from the mine will be provided with baffles and settling pits to arrest the suspended solids, if any, present in this water;<br>• The worked out slopes will be stabilized by planting appropriate shrub/grass species on the slopes. This will help in preventing wash-off from these slopes;<br>• The mine water will be regularly tested for presence of any undesirable elements and appropriate measures will be taken in case any element is found exceeding the limits prescribed by CPCB;<br>➢ **Ground Water Pollution Control Measures**<br>• The domestic sewage will be routed through STP.<br>• Regular monitoring of water levels and quality in the existing open wells and bore well in the vicinity will be carried out. |
| Drainage pattern and Hydrogeology | Quarries, stack yards and waste dump | Catchment area inside the mine will be affected. | Adverse | A garland drain of suitable dimension will be made all around the dump to catch all the run off water of the dump and will be taken to a sedimentation pond for settling of silt. The water collected will be completely reused for dust suppression (except in monsoon). Gabion walls and Retaining wall will be |

| Environmental Component | Project Activities | Impacts | Adverse / Beneficial | Mitigative Measures |
|---|---|---|---|---|
| | | | | made at the toe of dumps to arrest any silt due to runoff. Regular monitoring of water quality of the nearby water bodies will be done as per norms and MoEFCC conditions |
| Landuse and Soil Characteristics | Mining & allied activities | Existing landuse of the core zone will alter.<br><br>Land degradation due to disposal of waste materials. | Adverse | Following measures will be taken:<br>• Construction/ Installation of diversion drains and settling ponds<br>• Dust suppression on exposed areas using water tankers and automatic sprinkling systems.<br>• Properly terracing of overburden dump to minimize erosion.<br>• Plantation around service building, along road in and around the safety zone using native plant sapling.<br>• Backfilling & re-handling of external OB dump as per approved Progressive Mine Closure Plan.<br>• Compliance with mine decommissioning plan. |
| Flora and Fauna | Mine development and operations<br><br>Mineral Transportation | Displacement of existing fauna.<br><br>Loss of vegetation | Adverse | • Management of flora and fauna both at core and buffer zone shall be done as per the approved site specific wildlife conservation plan. Suitable reclamation, rehabilitation and restoration of the land shall be made to protect the biodiversity.<br>• However, progressive afforestation and green belt development in the ML area has been carried out and shall continue till the life of the mine. |
| Occupational Health & Safety | Overall Mining& allied activities | Occupational health problems due to dust & noise.<br><br>Accident | Adverse | • Adoption of dust suppression measures like spraying water, use of drill with dust collection system or wet drilling etc.<br>• Plantation<br>• Avoid blasting during unfavorable wind & atmospheric conditions<br>• Use of personal protective equipment.<br>• Periodical training of workers |

| Environmental Component | Project Activities | Impacts | Adverse / Beneficial | Mitigative Measures |
|---|---|---|---|---|
| | | probability due to slope failure, movement of HEMM, handling of explosives. | | • Compliance with DGMS circulars<br>Emergency response plan that includes installation of emergency response equipment to combat events such as fire. All personnel required to handle hazardous materials will be provided with personal protective equipment.<br>On-site first aid facilities have been provided to employees and are being extended to the local community in emergencies. |
| Socio-economic Aspects | Land acquisition for mine site | displacement of people & loss of properties. | - | Suitable R&R plan shall be implemented for the PDFs and PAFs as per the guidelines. |
| | Mining operations | Increase in economic status of local people & in the region due to Increase in employment opportunities both direct and indirect. | Beneficial | The project will provide opportunity to the local people for direct and in-direct employment. The proposed project will create opportunities for indirect employment in the field of transportation business, vehicle hiring, labours, trading of construction materials, carpenters etc. |

## 1.5 ANALYSIS OF ALTERNATIVES

All the option for technology alternatives of the proposed project have been analysed. since it is a mineral specific project therefor analysis of alternative site is not applicable.

## 1.6 ENVIRONMENTAL MONITORING PROGRAM

In order to maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary which will comply as per conditions. For this the lessee has taken the decision to formulate an Environment Policy of the mine and constitute an Environmental Management Cell and committed to operate the mine with the objectives mentioned in Environment Policy. EMP may also require measurement of ambient environmental quality in the vicinity of a site using ecological/biological, physical and chemical indicators. Monitoring may include socioeconomic interaction, through local liaison activities or even assessment of complaints. Regular Monitoring of all the environmental parameters *viz.*, air, water, noise, SE, EB and soil, as per the formulated program based on CPCB and MoEF&CC guidelines will be carried out every year. The location of the monitoring stations will be selected on the basis of prevailing micro meteorological conditions of the area like; wind direction and wind speed, relative humidity, temperature.

## 1.7 ADDITIONAL STUDIES

Shall be incorporated after Public Hearing is conducted.

## 1.8 PROJECT BENEFIT

Project will generate employment for about 521 persons directly and indirectly. Management will engaged the Skilled, semi-skilled and unskilled workers from the nearby villages. The company management will contribute to the Educational Development, Infrastructure Development etc. for the welfare of the villagers. It has proposed to plant 8,15,575 no of trees till the mine closure. The respective regulatory authority will strictly monitor the compliance of the mine lease in this regard. Other than this social development of the village will be considered as per social requirement of locality.

## 1.9 ENVIRONMENTAL MANAGEMENT PLAN

As per above discussion there is no major impact on the environment due to mining except fugitive emission in the form of dust generated during mining and its allied activity. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation program will be carried out which will be an effective pollution mitigate technique, and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals. A budget of Rs. 2267.1 Lakhs as a capital cost and Rs 351.71 Lakhs for recurring cost for plan period has been kept for EMP.

## 1.10 CONCLUSION

The Central government's think tank, said in a report that coal demand will be in the range of 1192-1325 Mt by 2030, led by usage from the electricity sector. It has been forecasted that coal consumption will increase at an average annual rate of 3.9 per cent, to reach 1185 Mt in 2024. Therefore industrial and economic growth of India depends to a large extent on coal, which is the prime source of energy. Our requirement of coal is increasing every year and the demand of coal by the major volume will come from the power sector. The balance coal is required for other industries like Cement, Sponge iron etc.

As a strategy of Gondulpara Coal Mine of **M/s ADANI ENTERPRISES Limited (AEL)** for maintaining / increasing the coal production, the present proposal is made for the production from Gondulpara Coal Mine. It is estimated to have an output of 4.0 MTPA for the next 32 years.

The industrial development and consequent economic development should lead to improvement of environment through better living and greater social awareness. With the progress in technology and processes, mining activities has gained a better traction and a higher productivity stance, our best solution lies in progressive & innovative planning along with a better environmental management and protection as a part and parcel of the mining system.

The proposed project will have impacts on surrounding environment as detailed in the report however the impacts can be minimized by effective implementation of Environment Management Plan and continula monitoring of EMP to overcome any other remedial measures required as suggested in the EIA study. On the other hand, this project is likely to have several benefits like improvement in direct and indirect employment generation and economic growth of the area, by way of improved infrastructure facilities and better socio-economic conditions. Ultimately it gives financial and social benefits for the local people there by improving their standard of living in addition to that the project will contribute to ongoing efforts of the government to meet the national demand of coal resources, therefore the proposal for the mining activity at Gondulpara Coal Mine for Coal as a source of energy is crucial and has a socio-economics impact.