सीएमपीडीआई

cmpdi

A Mini Ratna Company

STRICTLY RESTRICTED
FOR COMPANY USE ONLY
RESTRICTED

The information given in this report is not to be communicated either directly or indirectly to the press or to any person not holding an official position in the CIL / Government.

SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT

(As per EIA Notification-2006)

FOR

PUBLIC HEARING OF

AMALGAMATED GAURI-PAUNI EXPANSION OPENCAST PROJECT

(Capacity Expansion: From 6.75 MTPA to 9.00 MTPA & Lease Area Expansion: From 2386.94 ha to 3158.79 ha)

Project Location: Gauri & Pauni Villages, Tehsil-Rajura, Distt.-Chandrapur (Maharashtra)

[TOR from MoEF&CC F.No. J-11015/242/2008-IA.II(M) dated 06.09.2025
Baseline Data Generation: March 2023 to June 2023]

Project Proponent:

WESTERN COALFIELDS LIMITED

(A Subsidiary of Coal India Limited)

November 2025

Consultant:

Central Mine Planning & Design Institute Limited (CMPDIL)

Kanke Road, Ranchi, Jharkhand-834031

(A Mini Ratna Company & A Subsidiary of Coal India Ltd)

NABET accreditation certificate no. NABET/EIA/25-28/RA 0412 valid till 08/04/2028

Laboratory Engaged for Baseline Data Generation

CMPDIL, Regional Institute-IV, Nagpur

(NABL Certificate No- TC-7102 issued date 29/06/2024 valid until 28/06/2026)

SUMMARY

ENVIRONMENTAL IMPACT ASSESSMENT

(As per EIA Notification-2006)

For

PUBLIC HEARING OF

AMALGAMATED GAURI-PAUNI EXPANSION OPENCAST PROJECT

(Capacity- From 6.75 MTPA to 9.00 MTPA and Lease Area from 2386.94 ha to 3158.79 ha)

Project Proponent:

WESTERN COALFIELDS LIMITED

October 2025

Central Mine Planning & Design Institute Limited (CMPDIL)

Kanke Road, Ranchi, Jharkhand-834031

(A Mini Ratna Company & A Subsidiary of Coal India Ltd)

NABET accreditation certificate no. NABET/EIA/25-28/RA 0412 valid till 08/04/2028

***Laboratory Engaged for Baseline Data Generation* CMPDIL, Regional Institute-IV, Nagpur**

(NABL Certificate No- TC-7102 issued date 29/06/2024 valid until 28/06/2026)

SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT
FOR PUBLIC HEARING OF Amalgamated Gauri-Pauni Expansion OCP
(Capacity- From 6.75 MTPA to 9.00 MTPA and Lease Area from 1339.000Ha to 1500.688 Ha)

Name of the project	Amalgamated Gauri-Pauni Expansion Opencast Project
Location :	
- Village	Gauri and Pauni
- Tehsil	Rajura
- Name of the Coalfield	Wardha Valley Coalfield
- District	Chandrapur
- State	Maharashtra
Name of the Company	Western Coalfields Limited (WCL)
Production Capacity (MTPA)	**Existing approved capacity:** 6.75 MTPA **Proposed increase in capacity:** 2.25 MTPA **Total capacity for EC:** 9.00 MTPA
Lease/Project Area (ha)	**Existing mine lease area:** 2386.94 ha **Increase in mine lease area:** 771.85 ha **Total Mine lease area for EC:** 3158.79 ha
Prepared by QCI Accredited Consultant:	Central Mine Planning & Design Institute Limited (CMPDIL) (Certificate No. NABET/EIA/25-28/RA 0412 valid till 08/04/2028)

WESTERN COALFIELDS LIMITED

October 2025

Consultant:

Central Mine Planning & Design Institute Limited (CMPDIL)

Kanke Road, Ranchi, Jharkhand-834031
(A Mini Ratna Company & A Subsidiary of Coal India Ltd)

Contents

1.0 PROJECT DESCRIPTION 1
2.0 DESCRIPTION OF THE ENVIRONMENT 5
3.0 ANTICIPATED IMPACTS & MITIGATION MEASURES 3
4.0 ENVIRONMENTAL MONITORING PROGRAM & EMP 6
5.0 ADDITIONAL STUDIES 6
6.0 PROJECT BENEFITS 7
7.0 OVERALL JUSTIFICATION AND CONCLUSION 8

1.0 PROJECT DESCRIPTION

1.1 Purpose and Identification

The Amalgamated Gauri-Pauni Expansion Opencast Project involves the merger and expansion of two existing mines: Pauni-II Expansion OC (3.25 MTPA) and Gauri-Pauni Expansion OC (3.5 MTPA). Both mines are under the administrative control of the Ballarpur Area of Western Coalfields Limited (WCL). The purpose of this project is to increase the combined production capacity from **6.75 MTPA to 9.00 MTPA** and expand the mine lease area from **2386.94 ha to 3158.79 ha**.

This expansion is crucial to help bridge the demand-supply gap for power-grade coal, particularly for consumers like MAHAGENCO, thereby supporting national energy security and the "Atmanirbhar Bharat" mission. The project is classified as Category 'A' under the EIA Notification, 2006, as it involves coal mining with an area greater than 500 hectares.

The Revised Project Report (RPR) for this project was approved by the WCL Board on 09.12.2023 and the CIL Board on 12.04.2024. The total capital investment is **₹1428.25 Crores**. This draft EIA/EMP report has been prepared to facilitate a public hearing as per regulatory requirements.

The details of the proposed expansion are as follows:

Table 1: Details of Proposed Expansion

	Existing	**Proposed**
Production Capacity (MTPA)	6.75 MTPA (Pauni-II Exp OC 3.25 MTPA & Gauri-Pauni Exp OC 3.5 MTPA)	9.0 MTPA (Amalgamation and expansion)
Mine Lease Area (ha)	2386.94 ha	3158.79 ha

1.2 Location and Communication

The project is located in Gauri and Pauni villages, Tehsil Rajura, District Chandrapur, Maharashtra. It falls within the Wardha Valley Coalfield, between latitudes 19°46'49.62"N to 19°50'2.67"N and longitudes 79°13'23.98"E to 79°18'13.73"E. The nearest railway station is Ballarshah (8 km), and the nearest airport is Nagpur (160 km). The site is well-connected by all-weather roads.

1.3 Geology and Reserves

Regional Geology: The area is part of the Wardha Valley Coalfield, characterized by a thick coal seam (15-20 m) within the Barakar formation. The geological sequence in the Wardha Valley is as follows:

Table 2: Geological Sequence of Wardha Valley Coalfield

Age	**Formation**	**Lithology**
Recent/ Sub-Recent	Detrital Mantle	Black cotton soil/sandy soil
Upper Cretaceous	Deccan trap	Basalts
Cretaceous	Lameta	Cherty limestone, chert, sandstones, claystone
Upper Permian to Lower Triassic	Kamthi	Red, brown, and variegated clays, ferruginous sandstone
Middle Permian	Motur	Variegated sandstones, clays, and shales
Lower Permian	**Barakar**	**Light grey to whitish sandstones with grey shale and coal seams**
Upper Carboniferous to Lower Permian	Talchir	Greenish to grey sandstones, siltstone, and shale
Pre- Cambrian	Vindhyan	Greenish to grey quartzitic sandstone, pinkish limestone
Archaeans	Metamorphic	Quartzites, granites, gneisses, and schist

Local Geology and Reserves: The project lies within the Pauni-Combined geological block, which has a synclinal structure traversed by 45 faults. The balance of mineable coal reserves for this expansion project, as of 01.04.2025, is **127.94 MT**. The total overburden to be removed is **1154.13 Mm³**.

Coal Quality: The coal is non-coking type with an average grade of **G-9** and an average Gross Calorific Value (GCV) of **4648 kCal/kg**.

Table 3: Details of Coal Quality Parameters

Parameter	Range	Average
Moisture %	6.1 - 9.3	7.8
Ash %	19.6 - 38.0	28.3
GCV (kCal/kg)	3860 - 5401	4648 / G9
UHV (kCal/kg)	2745 - 4953	3917 / E

1.4 Mining Method and Technology

The project will continue to use the **opencast mining** method.

- **Technology:** A combination of a **Shovel-Dumper system** for overburden (OB) removal and a **Surface Miner with Front-End Loader and Dumper system** for coal extraction will be used. This technology is flexible and well-suited for the area's faulted geological conditions. The use of a Surface Miner for coal extraction avoids drilling and blasting, thereby reducing noise, vibration, and dust.
- **Mining Parameters:** The mine has been planned with the following key parameters:

Table 4: Details of Mine Parameters

Particulars	Total Quarry
Area On surface (ha)	1428.00
Final Depth (m)	230
Gradient of Seam	1 in 4 to 1 in 10.50

Total Mineable Reserves (Mt) as on 01.04.2025	127.94
Total Volume of Overburden (Mm^3) as on 01.04.2025	1154.13
Average stripping ratio (m^3/t)	9.02
Life of Mine	18 years
Weighted average GCV of Coal	G-9, 4603 Kcal/kg

- **Excavation Program:** The mine has a remaining life of 18 years. A peak production of 9.00 MTPA will be achieved for 9 years, with a corresponding peak OB removal of 90 Mm^3 per year.

Table 5: Calendar Program of Coal and OB (Sample Years)

Year	Coal (Mt)	Total Programmed OB (Mm^3)
2 (2026-27)	7.65	90.00
3 (2027-28)	9.00	90.00
4 (2028-29)	9.00	90.00
11 (2035-36)	7.40	62.00
18 (2042-43)	2.39	4.13
Total	**127.94**	**1154.13**

1.5 Overburden and Waste Disposal

The mining sequence is designed to maximize internal backfilling of the de-coaled void to minimize land degradation. A total of **58.76 Mm^3 of topsoil** will be generated, which will be stored separately and used for spreading over OB dumps before biological reclamation. The external OB dumps will be within the mine lease, with a maximum height of 90m and a stable overall slope of 28°.

1.6 Infrastructure Facilities

- **Industrial:** A full-fledged workshop and a new 33 kV/6.6 kV substation are proposed to support the expanded operations.

- **Coal Transportation:** Currently, coal is transported by road up to 16 km. A **9.0 MTPA capacity Coal Handling Plant (CHP) with a Silo** is under construction and is expected to be commissioned by June 2027. This will reduce the road transport distance to just 5.0 km, significantly mitigating dust and traffic issues.
- **Manpower and Township:** The project will have a total manpower of 3,103 (2,153 permanent and 950 temporary). An additional 72 quarters are planned in the existing Sasti Colony.
- **Diversions:** The project requires several diversions to access the coal reserves:
    - **Nallah Diversion:** Three seasonal nallahs (Sakhri, Pauni, and Chincholi) will be diverted within two years of commencing operations. Not diverting them would block access to 61.95 MT of coal reserves.
    - **Road Diversion:** The village road connecting Gauri, Chincholi, and Pauni will be diverted along the mine boundary within four years.
    - **Electric Lines:** Two overhead electric lines (66 kV and 11 kV) will be diverted within two years.

2.0 DESCRIPTION OF THE ENVIRONMENT

2.1 Baseline Environmental Scenario

A baseline study was conducted from **March to June 2023** to assess the existing environmental quality.

- **Ambient Air Quality:** Monitoring was conducted at 14 locations (3 core, 11 buffer). The results were compared with National Ambient Air Quality Standards (NAAQS) and Coal Mine Standards.

Table 6: Summary of Baseline PM10 & PM2.5 Values (98th Percentile)

Particulate Matter (PM 10), µg/m^3						
Sl. No.	**Station Name**	**Minimum**	**Maximum**	**Average**	**98th percentile**	**NAAQS/CPCB Limit**
Core Zone Stations						
1.	Manager Office Gauri-I	132	144	138	144	300*

2.	Mine Office Pauni II OC	132	144	138	144	300
3.	Workshop Pauni II OC	124	144	135	143	300
Buffer Zone Stations						
4.	Manager Office-Dhuptala OC	104	177	128	162	300
5.	Virur Village	38	64	52	64	100
6.	Ballarpur Town	60	87	73	85	100
7.	Sasti Village	65	85	76	83	100
8.	Rajura Town	58	77	67	76	100
9.	Charli Village	56	72	63	71	100
10.	Mathara Village	61	80	70	79	100
11.	Hirapur Village	57	74	67	74	100
12.	Gauri Village	62	85	74	84	100
13.	Ruyad Village	51	75	63	74	100
14.	Goigaon Village	61	80	70	80	100

Particulate Matter (PM 2.5), µg/m^3						
Sl. No.	**Station Name**	**Minimum**	**Maximum**	**Average**	**98th percentile**	**NAAQS/CPCB Limit**
Core Zone Stations						
1.	Manager Office Gauri-I	32	44	38	44	-*
2.	Mine Office Pauni II OC	32	46	39	46	-
3.	Workshop Pauni II OC	26	42	36	42	-
Buffer Zone Stations						

4.	Manager Office-Dhuptala OC	28	45	37	45	-
5.	Virur Village	27	46	34	45	60
6.	Ballarpur Town	19	36	26	35	60
7.	Sasti Village	21	34	28	34	60
8.	Rajura Town	21	34	29	34	60
9.	Charli Village	20	35	27	34	60
10.	Mathara Village	20	36	27	34	60
11.	Hirapur Village	24	36	29	35	60
12.	Gauri Village	21	36	29	35	60
13.	Ruyad Village	21	33	27	32	60
14.	Goigaon Village	21	40	29	40	60

Type of Station	**Name of the stations**	**Baseline AQI based on maximum values**
Industrial	Manager Office Gauri-I	129
Industrial	Mine Office Pauni II OC	129
Industrial	Manager Office-Dhuptala OC	151
Industrial	Workshop Pauni II OC	129
Residential	Virur Village	64
Residential	Ballarpur Town	87
Residential	Sasti Village	85
Residential	Rajura Town	77
Residential	Charli Village	72
Residential	Mathara Village	80
Residential	Hirapur Village	74
Residential	Gauri Village	85
Residential	Ruyad Village	75
Residential	Goigaon Village	80

Good **(0–50)**	Minimal Impact	**Poor** **(201–300)**	Breathing discomfort to people on prolonged exposure
Satisfactory **(51–100)**	Minor breathing discomfort to sensitive people	**Very Poor** **(301–400)**	Respiratory illness to the people on prolonged exposure
Moderate **(101–200)**	Breathing discomfort to the people with lung,heart disease, children and older adults	**Severe** **(>401)**	Respiratory effects even on healthy people

Observations: All monitored parameters (PM10, PM2.5, SO_2, NOx, and heavy metals) were found to be **within the prescribed limits** at all locations. The Air Quality Index (AQI) based on maximum value for residential areas is 'Satisfactory'.

- **Water Quality:**
  - **Groundwater:** Samples from 6 locations showed that water in some villages is very hard, with Total Hardness and TDS exceeding desirable limits but remaining within permissible limits. Overall, the water is potable.
  - **Surface Water:** Samples from 6 locations, including the Wardha River, showed healthy Dissolved Oxygen (DO) levels and low Biochemical Oxygen Demand (BOD), indicating no significant organic pollution.
  - **Effluent:** Mine water discharge and ETP outlets from existing operations were fully compliant with all environmental standards.
- **Noise Levels:** Monitoring at 10 locations revealed that ambient noise levels during both day and night were well **within the permissible limits** for industrial and residential zones.
- **Soil Quality:** Soil samples from 3 locations were found to be Sandy Loam and Sandy Clay Loam, with a neutral to slightly basic pH. The soil generally has medium to high fertility, with good organic carbon and nutrient content.
- **Flora and Fauna:**
  - The study area falls within the Tropical Dry Deciduous Forest landscape. The survey documented **130 floral species** in the buffer zone and **207 faunal species** in the study area.
  - **Schedule-I species** observed include the Indian Peafowl, Bengal Monitor Lizard, Indian Rock Python, Sloth Bear, Leopard, and Tiger (in the buffer

zone). The project area is part of a dispersal zone for wildlife from the Tadoba–Andhari Tiger Reserve (approx. 17 km away).

- **Hydrogeology:** The area has a multi-layered aquifer system. Long-term data (2013-2024) shows a stable groundwater regime with no significant stress. The Stage of Groundwater Extraction for the study area is **52.92%**, which is categorized as **'Safe'**. The predicted mine water inflow at the final stage is about **18,793 m^3/day**.

3.0 ANTICIPATED IMPACTS & MITIGATION MEASURES

3.1 Impact on Land and Soil

- **Impact:** The project will alter the topography. A total of **2941.45 ha of tenancy (agricultural) land** will be acquired. To minimize the use of fresh land, OB will be dumped on 210.83 ha of a previously reclaimed and afforested dump, requiring tree felling.
- **Mitigation:** A progressive and final mine closure plan will be implemented. Post-mining, the **green cover will be increased to 1,893 ha** (60% of the total area). A large water body (694.59 ha area, 150 m depth) will be created, which can be used for recreation or water supply. All topsoil will be conserved and used for reclamation.

3.2 Impact on Water Environment

- **Impact:** The project involves the diversion of the Sakhri, Pauni, and Chincholi nallahs, which could temporarily disturb the local hydrology and aquatic life. There is a risk of water pollution from mine runoff. The radius of influence on the groundwater level is estimated to be up to **2 km** from the mine edge.
- **Mitigation:**
    - Nallahs will be diverted based on a scientific hydraulic study and with approval from the state irrigation department.
    - Mine water will be treated in sedimentation tanks before being reused for dust suppression, plantation, and other industrial purposes. Surplus water will be discharged into local streams.

- Workshop and domestic wastewater will be treated in an ETP and STP, respectively.
- Garland drains and check dams will be constructed around dumps and the mine boundary to prevent soil erosion and siltation.
- Artificial groundwater recharge measures, such as pond deepening and rooftop rainwater harvesting, have been implemented and will be continued.

3.3 Impact on Air Quality

- **Impact:** Mining activities will generate dust (PM10, PM2.5) and gaseous pollutants (SO_2, NOx).
- **Prediction:** Air quality modeling (AERMOD) was conducted for the worst-case scenario.
  - **Individual Impact:** With mitigation measures, the predicted pollutant concentrations will remain within NAAQS limits at all residential locations, except for Gauri Village (adjacent to the mine), where PM10 and NOx levels are predicted to exceed the 24-hour standard.
  - **Cumulative Impact:** When considering the expansion of all nearby mines, the AQI in four villages (Sasti, Mathara, Gauri, and Goigaon) is predicted to shift from 'Satisfactory' to 'Moderate'.
- **Mitigation:**
  - **Dust Suppression:** Wet drilling, extensive water sprinkling on haul roads (with mobile tankers and fixed sprinklers), and use of fog cannons.
  - **Transportation:** All coal trucks will be covered with tarpaulin. The commissioning of the CHP/Silo will significantly reduce road transport.
  - **Green Belt:** A dense, multi-tiered green belt (182 ha) will be developed around the mine periphery.
  - **Monitoring:** One additional Continuous Ambient Air Quality Monitoring Station (CAAQMS) will be installed.

3.4 Impact of Noise and Vibration

- **Impact:** HEMM operations and blasting will increase ambient noise levels. Ground vibrations from blasting could potentially damage nearby structures.

- **Mitigation:**
    - **Noise Control:** All equipment will be fitted with silencers and regularly maintained. Noise-proof cabins will be provided for HEMM operators. A thick green belt will act as a natural noise barrier.
    - **Vibration Control:** Blasting will be conducted using controlled techniques with millisecond delay detonators to minimize vibration. A safe blasting zone will be maintained, and blasting will be restricted to daytime hours with prior warnings. The Peak Particle Velocity (PPV) will be kept within DGMS-prescribed limits.

3.5 Impact on Flora and Fauna

- **Impact:** The project will lead to habitat loss, displacement of fauna, and an increased risk of human-wildlife conflict.
- **Mitigation:**
    - **Reclamation:** Progressive reclamation and post-mining afforestation of **1,893 ha** will create a new habitat.
    - **Wildlife Conservation Plan:** A comprehensive plan with a budget of **₹338 lakhs** has been prepared in consultation with the State Forest Department to protect Schedule-I species and improve habitats.
    - **Afforestation:** In compliance with ToR, the project will plant double the number of trees that are proposed to be felled for OB dumping.

3.6 Socio-Economic Impact

- **Impact:** The project requires the acquisition of **2941.45 ha of tenancy land** and the resettlement of **Pauni and Chincholi Khurd villages**, affecting 1223 families. This will cause displacement and loss of agricultural livelihoods.
- **Mitigation:**
    - **Rehabilitation & Resettlement (R&R):** A detailed R&R plan is in place with a budget of **₹7,750.98 lakhs**. PAFs will receive compensation, employment (1 job per 2 acres of land), or monetary compensation as per CIL's R&R Policy 2012.

- **Employment:** The project will create **2,153 direct** and approximately **950 indirect** employment opportunities.
- **CSR and CER:** The project will undertake extensive community development activities under its CSR and CER programs, focusing on health, education, skill development, sanitation, and infrastructure, with a provision of **₹1,178.70 lakhs for CER**.

4.0 ENVIRONMENTAL MONITORING PROGRAM & EMP

WCL has a well-established, three-tiered Environmental Management System with Environmental Management Cells (EMCs) at the Corporate, Area, and Project levels to oversee the implementation and monitoring of the EMP. A regular monitoring schedule is in place for all key environmental parameters.

Table 7: Monitoring Frequency

Item	Parameters	Frequency
Ambient Air Quality	PM2.5, PM10, SO_2, NOx	Every Fortnight
Water Quality (Effluent)	pH, TSS, COD, Oil & Grease	Every Fortnight
	25 Parameters	Once in a Year
Noise Quality	Leq (Day & Night)	Every Fortnight
Groundwater Level	Water Level	Quarterly

The total capital budget for environmental management is **₹303.37 lakhs**, with an annual recurring expenditure of **₹1,955.97 lakhs**.

5.0 ADDITIONAL STUDIES

5.1 Risk Assessment and Management

A detailed risk assessment has identified **Dump Failure, Mine Inundation, and Bench Failure** as high-risk hazards. A comprehensive Mines Emergency Response Plan (MERP) and Trigger Action Response Plans (TARPs) are in place to manage these risks. Slope stability is monitored regularly, and designs adhere to recommendations from scientific studies conducted by institutions like IIEST Shibpur.

5.2 Environmental Cost-Benefit Analysis

The analysis was conducted to weigh the project's socio-environmental costs against its benefits.

Table 8: Summary of Cost-Benefit Analysis

Category	**Amount (₹ in lakhs)**
Total Environmental Costs	**5,13,483.75**
Costs against resource utilization	*48,703.51*
Damage mitigation costs (EMP, R&R, etc.)	*20,332.04*
Inevitable damage costs (Health, Carbon, etc.)	*4,44,448.20*
Total Environmental & Social Benefits	**42,61,153.48**
Benefits from resource reclamation	*2,307.02*
Benefits from social opportunities (Employment, CSR)	*11,442.34*
Benefits to exchequer (Taxes, Royalties, etc.)	*42,47,404.12*
Cost : Benefit Ratio	**0.12**

The cost-benefit ratio of **0.12** demonstrates that the project's overall societal and economic benefits substantially outweigh its environmental costs.

6.0 PROJECT BENEFITS

The project will deliver significant tangible and intangible benefits:

- **Energy Security:** Helps bridge the demand-supply gap for power-grade coal in India.
- **Economic Growth:** Contributes approximately **₹4,930 Crores** to government revenues over the mine's life through royalties and taxes.
- **Employment:** Generates substantial direct and indirect employment, improving the standard of living in the region.

- **Infrastructure:** Leads to improvements in physical infrastructure (roads, power) and social infrastructure (health, education) through project investments and CSR activities.
- **Post-Mining Land Use:** The final post-mining landscape will feature a large water body and extensive green cover, creating a valuable asset for the community.

7.0 OVERALL JUSTIFICATION AND CONCLUSION

The Amalgamated Gauri-Pauni Expansion Project is a critical initiative for meeting India's energy needs. The EIA study has thoroughly assessed the potential environmental and social impacts, and a comprehensive Environmental Management Plan (EMP) has been developed to address them effectively. The proposed mitigation measures, including advanced technology for mining, robust pollution control systems, a detailed R&R plan, and a scientifically designed mine closure plan, will ensure that the project operates sustainably.

The favorable environmental cost-benefit ratio of 0.12 confirms that the project's vast socio-economic benefits—in terms of energy security, economic growth, employment, and infrastructure development—significantly outweigh the quantifiable environmental costs. With the diligent implementation of the EMP and continuous monitoring, the project is justified as an environmentally and socially responsible undertaking that will contribute positively to both the regional and national economy.