

No. MPS-14/2025-MPS [E-363164]
Government of India
Ministry of Coal
[MPS Section]

Shastri Bhawan, New Delhi
Dated, 6th April, 2026

OFFICE MEMORANDUM

Subject: Guidelines for preparation and approval of Mining Plan for Coal and Lignite Blocks/Mines for Underground Gasification 2026.

The undersigned is directed to forward herewith a copy of the duly approved "*Guidelines for preparation and approval of Mining Plan for Coal and Lignite Blocks/Mines for Underground Gasification 2026*" for information and necessary compliance.

Encl: As above

भवदीय

Digitally signed by
BIRENDRA KUMAR THAKUR
Date: 06-04-2026 10:24:09

(Birendra Kumar Thakur)
Director Technical
Ministry of Coal, Government of India
Email:dirtech.moc@nic.in

1. Chairman, Coal India Ltd.
2. CMD, SCCL
3. CMD, NLCIL
4. Coal Controller, Coal Controller Organisation, New Delhi
5. O/o Nominated Authority- to circulate it to all Coal Companies except those stated above

Copy to:

1. Secretary, Ministry of Environment, Forest & Climate Change
2. Secretary (Mines)- All coal/Lignite bearing states
3. Chairman, CGWA
4. DG, DGMS
5. DG, DGH
6. All Joint Secretaries and above officers, Ministry of Coal
7. Sr. Technical Director, NIC – with request to place on the website of the Ministry of Coal.



Guidelines
for
Preparation and Approval of Mining Plan
for
Coal and Lignite Blocks/Mines for Underground
Gasification
April 2026

List of Abbreviations

CBDPA=Coal Block Development and Production Agreement

CGWA = Central Ground Water Authority

CPCB = Central Pollution Control Board

CCO = Coal Controller Organisation

CMDPA = Coal Mine Development and Production Agreement

CMPDIL = Central Mine Planning and Design Institute Limited

DGH = Directorate General of Hydrocarbon

DGPS = Differential Global Positioning System

DGMS = Directorate General of Mines Safety

EC = Environment Clearance

FC = Forest Clearance

GR = Geological Report

Ha = Hectare

Km = Kilometre

LBDPA = Lignite Block Development and Production Agreement

MT = Million Tonne

MTPA = Million Tonne Per Annum

MoEF & CC = Ministry of Environment, Forest, and Climate Change

MCR = Mineral (Other than Atomic and Hydrocarbons Energy Minerals)

Concession Rules, 1960

MPPA = Mining Plan Preparing Agency

NABET = National Accreditation Board for Education and Training

QCI = Quality Council of India

QP = Qualified Person

SWCS= Single Window Clearance System

Syngas = Synthetic gas produced from Coal or Lignite gasification

UG = Underground

UCG = Underground Coal Gasification

WPI = Wholesale Price Index

Chapter-I

Preliminary

- 1.1. **Short title and commencement.** - (a) These guidelines may be called the “**Guidelines for preparation and approval of Mining Plan for Coal and Lignite Blocks/Mines for Underground Gasification 2026**”.
- (b) These Guidelines shall come into force from the date of issue.
- (c) The Mine Closure Plan, inclusive of the Progressive Mine Closure Plan and Final Mine Closure Plan, shall constitute an integral component of the Mining Plan.
- (d) These Guidelines shall be applicable only for the purpose of UCG, and shall be an annexure to the “Guidelines for Preparation of Mining Plan and Mine Closure Plan for Coal and Lignite Blocks 2025”, as amended from time to time, for undertaking opencast mining / underground mining in the same block/mine.
- 1.2. **Objectives:** The objectives include optimising coal or lignite extraction by converting coal or lignite into syngas using sustainable in-situ gasification technology with minimal waste and surface impact, mitigating risks like subsidence, fire, and water contamination through continuous monitoring and control, minimising environmental impact, and ensuring compliance with regulations. Additionally, the guidelines integrate progressive mine closure with gasification operations, ensuring final closure tasks such as site restoration, well sealing, cavity stabilisation, and ongoing post-closure monitoring for sustainability and safety.
- 1.3. **Definitions: In these guidelines, unless the context otherwise requires**
- a) “Borehole” means a well drilled in the sub-surface with or without obtaining the cores of rock samples for the purpose of ascertaining any geo-mining information;
- b) “Escrow account” means an account opened by the project proponent in a scheduled commercial bank, facilitating the deposition and withdrawal of funds for mine closure purposes;
- c) “Leased Area” shall have the same meaning as defined in Section 3 (ac) of MMDR, Act, 1957;
- d) “Life of the Mine” means the period during which gasification is carried out including post mining closure period and post closure monitoring period. For new blocks, the life of the mine shall start from the date of receiving mine opening permission;
- e) “Mine” shall have the same meaning as defined in Section 2(1)(j) of the Mines Act, 1952;

- f) “Mine closure” means the comprehensive process of closing and securing a mine upon completion of gasification operations;
- g) “Minor Changes” shall have the same meaning as prescribed in sub-rule (2) of Rule 22-E of the Mineral Concession Rules, 1960 as amended from time to time;
- h) “Post closure monitoring period” means the period of 3 (three) years after completion of the post mining closure period;
- i) “Post mining closure period” means the period of 2 (two) years after cessation of the gasification operations;
- j) “Production Life of the Mine” means the period of development and production years as given in the calendar plan;
- k) “Project Area” means the total area specified in the Mining Plan within which gasification operations can be undertaken and includes the area of infrastructure for the purpose of gasification; and
- l) “Underground Coal Gasification” or “UCG” shall mean the underground Mining Operations that convert coal or lignite into syngas within the seam itself through partial combustion by injecting gasification agents (i.e. air or oxygen and steam).

1.4. **Applicability:** (a) All coal or lignite blocks/ mines proposed for underground coal gasification shall have a Mining Plan approved by the competent authority before the start of gasification activities.

(b) The approved Mining Plan shall be valid for the life of the mine, Provided that the competent authority may approve any revision(s) or modification(s) of the Mining Plan, and upon such approval, the revised or modified Mining Plan, as the case may be, shall remain valid for the balance life of the mine.

1.5. The Project Proponent shall submit the proposed Mining Plan at the Single Window Clearance System of the Ministry of Coal (<https://swcs.coal.gov.in>).

Provided that the project proponent shall obtain prior approval of the Board of the company before submission of the proposed Mining Plan.

1.6. The entire process from submission of the Mining Plan by the project proponent till communication of approval/ rejection from CCO shall be done through SWCS portal.

Chapter-II

Mining Plan (excluding mine closure plan)

2.1. The Mining Plan shall be prepared on the basis of Geological Report, Hydrogeological Study Report and Pilot Study in that block/mine.

Provided that in case of similar geological characteristics, there may not be further requirement of separate pilot study, and results from completed pilot studies conducted in the same or adjacent blocks or same coalfield may be considered for formulating the Mining Plan.

2.2. The Pilot Study shall be taken up based on the findings of the Pre-Feasibility Report.

2.3. **Geological Report:**

a) For preparation of geological report (GR), the coal or lignite block shall be explored as per the extant ISP norms, if detailed exploration has not been carried out earlier.

b) The project proponent may also carry out a geophysical survey (3D Seismic survey) and correlate the data obtained through drilled boreholes.

Provided that the project proponent shall indicate reasons for not carrying out such geophysical survey.

c) In case any mineral other than coal or lignite with commercial value is found in the leased area during exploration or mining, the same shall be reported to the State Government, Ministry of Coal and the concerned Ministry.

2.4. **Hydrogeological Report:**

a) A comprehensive Impact Assessment Report with a specific and detailed chapter on hydrogeology shall be prepared by an accredited agency/ consultant (list available on the website of CGWA/CGWB and MoEF&CC).

b) 3D Hydrogeological Model: A conceptual and numerical three-dimensional model of the subsurface environment for the entire block, delineating all geological formations, aquifers, aquitards, and structural features.

c) Numerical modelling predicting the potential migration pathways and concentrations of contaminants from the gasification cavity under various scenarios, including operational failures. The model should project impacts for a period of at least 10 years post-operation. This should evaluate the potential impact on groundwater using particle tracking techniques to define the contaminant capture zone.

2.5. **Pilot Study:**

a) A pilot study should be conducted by a reputed scientific or research institutions or companies with proven expertise in coal or lignite gasification.

b) Such a pilot study will evaluate the technical feasibility, environmental impact, safety considerations, and necessary mitigation measures.

2.6. Components of Mining Plan:

2.6.1. General:

- a) The Mining Plan will take into account the project's location, previous approval of the Mining Plan (if any), surface features of the block, brief socio-economic information and demographic profile.
- b) It shall contain year-wise calendar plan indicating production of syngas (along with the amount of coal or lignite to be used in-situ).
- c) It shall provide detailed phases of the mine life, such as the 1st year, rated capacity year, last year of the gasification life of the mine, and final year of the post mining closure period.
Provided that the Mining Plan shall include the action plan for the unexplored part of the block, if any, and liquidation of remaining resources to be projectized.
- d) The project area envisaged in the Mining Plan must be restricted to the allotted or vested geological block boundary or existing mining lease. A certificate to this effect shall be provided by the Qualified Person (QP) or accredited Mining Plan Preparing Agency (MPPA) that has prepared the Mining Plan.
Provided that with permission of Central Government or the State Government or the concerned land owner, the project proponent may carry out its activities beyond the allotted or vested geological block boundary or existing mining lease.
- e) The gasification process should be designed to achieve optimum production of syngas. The project proponent shall indicate reasons for choosing specific technology and process.
- f) In case of mixed mine, the horizontal barrier between the opencast or underground mine and the underground coal gasification project boundary should be 500 metres or more.
Provided that such a barrier may be revised by the Ministry of Coal based on the actual experience gained during the commercial operation of UCG and the results of scientific studies.

2.6.2. Safety:

- a) A Safety Management Plan taking into account safety aspects (including subsidence, fire, condensate, groundwater contamination) shall be prepared.
- b) Size of gasifiers/reactors and layout of the UCG panels shall be based on the site-specific study or pilot study conducted for predicting cavity growth, extent, and amount of probable subsidence.
Provided that, based on the actual experience during the commercial operation, the size of gasifiers/reactors and layout of the UCG panels may be modified.
- c) The targeted coal or lignite seam should be at a sufficient depth (preferably >250 meters) and safely distanced from groundwater tables, perennial river and sensitive aquifers to protect drinking, irrigation, and industrial water sources.

- d) The confining layers above the targeted seam should preferably have low hydraulic conductivity to prevent contaminant migration to the surface/shallow aquifer system.
- e) The project boundary must maintain safe distances from ecologically sensitive zones, habitations, wildlife sanctuaries, and forests, with plans to mitigate risks from major faults and fractures system included in the Mining Plan.
- f) The site must be geologically stable and outside active seismic zones.
- g) During the gasification operations, a network of surface monitoring points shall be established to provide regular information on any ground movement or land subsidence.
- h) Detailed fire control methods/measures, including risk assessment, to be indicated.
- i) The mitigative measures shall be adopted for safe disposal/utilisation of the condensate produced from the coal or lignite gasification process.

2.6.3. Infrastructure facilities:

- a) There shall be a dedicated, leak-proof syngas pipeline network with real-time pressure and temperature monitoring for safe transport from the gasification site to processing facilities.
- b) The UCG project may include surface infrastructure like syngas cleaning units, flare stacks, water treatment and condensate disposal/utilization systems, and integrated control centers, prioritizing mechanization and automation for continuous monitoring and operational control.
- c) A network of monitoring wells and piezometers at multiple depths (multi-level) in the core and buffer zones shall be established.
- d) Continuous monitoring of groundwater levels for at least one full year (pre-monsoon, monsoon, post-monsoon seasons) to establish baseline flow patterns.
- e) Ensure comprehensive analysis of groundwater quality, including major ions, heavy metals, and a specific suite of organic compounds likely to be generated during gasification.
- f) Any outward flow of contaminants in surrounding aquifers shall be avoided.

2.6.4. Annexures: Along with the Mining Plan, the project proponent shall submit the following documents (as annexures) at the time of submission of the application on the portal:

- a) Copy of allotment letter or ownership record.
- b) Copy of approval of Board of the company towards submission of Mining Plan.
- c) Copy of certificate as regards preparation of Mining Plan by QP/MPPA along with certificate issued for accreditation by QCI-NABET.
- d) Copy of approval of Geological Report.
- e) Certificate of QP/MPPA to the effect that the Mining Plan has been prepared within the allotted or vested geological block boundary or existing mining lease area.
- f) Brief report on Pre-Feasibility Study as per Appendix-I.
- g) Brief report on findings of Pilot Study as per Appendix-II.

Chapter-III

Mine Closure Plan

- 3.1. Mine Closure Plan aims to ensure scientific mine closure and rehabilitation of mining sites, minimising environmental degradation, safeguarding public health, and promoting sustainable development by restoring the land to a condition suitable for future use or returning it to its near-original state or better, while also holding project proponents accountable for their closure obligations.
- 3.2. Mine Closure Plan shall comprise of (a) Progressive Mine Closure Plan, updated every five years, and (b) Final Mine Closure Plan.
- 3.3. The Progressive Mine Closure Plan covers ongoing land restoration, cavity management, including cleanup, and monitoring.
- 3.4. The Final Mine Closure Plan covers restoring land to its near-original state, repurposing and community development. It includes closure of wells, dismantling and demolition of structures, cleaning of sites, removal of machinery, plantation, landscaping, specified post-environmental monitoring, protective and restoration measures, barbed wire fencing, and related activities.

Provided that five years before cessation of gasification operations, the project proponent shall submit a revised final mine closure plan that shall include operational history of the mine, scientific findings, maps/drawings, monitoring data and expenditure from the escrow account.

- 3.5. The Final Mine Closure shall mean the end of post closure monitoring period.
- 3.6. **Components of Mine Closure Plan:**
 - 3.6.1. **Restoration and Repurposing:** A zone of impact should be identified in the core and buffer zone of the project to address livelihood and income effects due to mine closure. Project proponent shall engage local communities through structured consultations and collaborative decision-making to incorporate their perspectives and develop sustainable solutions. The project proponent shall actively engage with the District Administration in this regard.
Based on such consultations, efforts should be made to enhance the skills and livelihoods of communities near mines for self-sustenance and employment.
 - 3.6.2. **Cavity Management and cleanup:** The Mine Closure Plan shall include a detailed plan for the post-burn management and remediation of the underground cavity, which may include inertisation/ flushing and subsequent treatment of the extracted fluid, if any, at the surface.
 - 3.6.3. **Long-Term Monitoring:** An assessment of recovery rates in hydraulic head and water table elevation, changing flow paths during the recovery period, and the ultimate geometry of the post-recovery flow system should be undertaken using a three-dimensional groundwater model after mine closure. Groundwater levels, quality, and ground stability shall be taken up during the post-closure monitoring period.

3.6.4. **Mine Closure Cost:** The total cost for carrying out Mine Closure activities shall be estimated based upon cost towards progressive mine closure as well as final mine closure.

3.6.5. The Mine Closure Plan shall include details about amount to be deposited in the escrow account.

3.7. **Escrow Amount:**

(a) The Project Proponent shall open an escrow account in a scheduled commercial bank followed by a tripartite agreement involving CCO before starting commercial gasification operations and shall deposit its contribution towards mine closure for that financial year.

(b) The annual rate for deposition towards the escrow account is ₹ 2,00,000 (Two Lakh) per hectare. This rate shall be the Base Rate as of December 2025 to be escalated on the latest Wholesale Price Index (WPI).

Provided that the annual rate for deposition may be revised by the Ministry of Coal.

(c) The annual amount to be deposited in the escrow account shall be computed by considering the total project area of the mine multiplied by the escalated rate as per the following illustration and dividing the same by the balance gasification life of the mine in years.

[Illustration: $\{(\text{₹ } 2,00,000 \times \text{Latest WPIs}) / (\text{WPI as of December 2025, i.e., base date})\} = \text{₹ in lakh}$].

(d) The amount as calculated at clause 3.7 (c) shall be compounded @5% annually.

(e) The project proponent shall deposit the annual amount for 2nd year onwards in the escrow account for each financial year by 30th September of that year.

Provided that an interest @ 1 percent/month shall be charged for the delay in deposition of the amount for every delayed month.

Provided further that if project proponent fails to deposit the amount within 30th September of subsequent year, the Coal Controller shall suspend Mining Plan and communicate the same to Ministry of Coal, DGMS, MoEF&CC and the respective State Government.

Provided also that once the dues are paid, the suspension order shall be revoked and gasification operations may restart.

Provided also that upon lapse of six months after the suspension order, if project proponent fails to clear the dues, the Central Government may, on recommendation of the Coal Controller, withdraw approval of the Mining Plan.

3.7.1. **Reimbursement from Escrow Account:**

(i) The reimbursement from the escrow account may be made to the project proponent every five years based upon expenditure towards progressive mine closure.

Provided that such reimbursement shall be claimed by the project proponent on the basis of a certificate issued by the Auditor, duly approved by the Board of the company.

(ii) The reimbursement shall be maximum of 75 percent of the deposited amount in the previous five years, including interest thereon.

- (iii) The balance amount in the escrow account after reimbursement during progressive mine closure as per clause 3.7.1. (i) & (ii), shall be released to the project proponent after final mine closure.

Explanation: In the first five years, if the accumulated amount (including interest) is ₹ 10 Lakhs, the project proponent will be eligible for the release of ₹ 7.5 Lakhs. Suppose in the next five years, the deposited amount (including interest) is another ₹ 10 Lakhs, taking the total amount to ₹ 12.5 Lakhs, the project proponent will be eligible for the release of another ₹ 7.5 Lakhs.

- (iv) If the Coal Controller has reasonable grounds for believing that the measures envisaged in the approved mine closure plan will not be carried out, the Coal controller shall give the Project Proponent a written notice of intention to forfeit the amount in the escrow account.

Provided that the decision on such forfeiture shall be made only with the approval of the Central Government.

- (v) The Project Proponent may re-appropriate funds amongst approved mine closure activities with prior intimation to the Coal Controller.

- 3.8. **Mine Closure Certificate:** CCO shall issue the mine closure certificate after the post-closure monitoring period based upon the undertaking by the project proponent and third-party audit report (appointed by the project proponent from a list of reputed agencies) within a period of 30 days of receipt of such report.

Provided that the third-party auditor shall verify that the mine has been closed in all respects as per the Final Mine Closure Plan.

Chapter-IV

Miscellaneous

- 4.1. While approving the Mining Plan, the terms, conditions, and efficiency parameters of the CMDPA/ CBDPA/ LBDPA/ Allotment Agreement shall not be altered without prior approval of the Nominated Authority or an officer designated by the Central Government, as the case may be.
- 4.2. The project proponent shall ensure that the Mining Plan is prepared and implemented as per the provisions of relevant Acts, Rules, Regulations, Orders, Guidelines or other statutory requirements. The project proponent shall also ensure that the Mining Plan complies CMDPA/ CBDPA/ LBDPA/ Allotment Agreement.
- 4.3. The Central Government may, at any time, before the cessation of gasification operations, require certain activities to be included in the Mining Plan, as considered necessary for the

safety, conservation of the environment, or in compliance with any modification/ amendment in the relevant legislation.

4.4. Implementation of the approved Mining Plan and its compliance shall be the sole responsibility of the Project Proponent.

4.5. During the pilot and commercial operations, the project proponent shall provide the details of the amount of coal or lignite converted into syngas during the gasification process.

Based on this information from various project proponents, the Central Government may devise a methodology by engaging a scientific agency/research institution for the consumption of Coal/Lignite and production of syngas therefrom.

4.6. **Modification or Revision of the Mining Plan:**

(a) Modifications (minor changes) can be done with the approval of the Board of the respective company.

Provided that any such modifications shall be communicated to the Coal Controller and the Central Government within 30 days of such approval.

Revisions (other than minor changes), based on the application in this regard by the project proponent, shall be done only after prior approval of the Coal Controller.

Provided that no revisions shall be done without prior approval of the Nominated Authority or Central Government if such revisions result in changes in the terms & conditions or efficiency parameters mentioned in CMDPA/CBDPA/LBDPA.

(b) An application for revision of the Mining Plan shall be accompanied by an undertaking to the effect that there have been no violations as regards safety, environment and lease-related matters.

Provided that in case of violations related to safety (as reported by DGMS), leased area (as reported by State Government authorities), Environment (as reported by Central/State environment authorities), the project proponent shall ensure that mitigative measures for the violations are addressed in the Mining Plan.

Provided that the Coal Controller or the Technical Committee may require the Project Proponent to make a presentation in this regard.

4.7. If the Coal Controller determines that additional funds are required for final mine closure, the project proponent is obligated to deposit the additional amount.

Provided that such amount shall not be more than ₹ 20,000 per hectare of the project area multiplied by the number of years gasification has been carried out.

4.8. A report shall be submitted by the project proponent with respect to compliance with the conditions of the Mining Plan, including any deviations annually to the Coal Controller.

Chapter-V

Formulation, submission, scrutiny, approval, revision, and timelines

- 5.1. Project Proponent shall ensure that the Mining Plan has been prepared by the Qualified Person/ Accredited Mining Plan Preparing Agency recognised under section 22B of the Mineral Concessions Rules, 1960, as amended from time to time.
- 5.2. Every Mining Plan submitted for approval or revision shall be accompanied by a non-refundable application fee of ₹ 1,00,000 (One Lakh Rupees), which may be revised by the Central Government from time to time.
- 5.3. Vide notification no. CG-DL-E-01062020-219668 dated 29th May 2020 of the Ministry of Coal, the Coal Controller has been authorised to approve the Mining Plan under sub-section (1) of section 26 read with clause (b) of sub-section (2) of section 5 of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957).
- 5.4. For carrying out its functions as required under clause 5.3, the Coal Controller shall be assisted by a Technical Committee that shall scrutinise and examine the Mining Plan submitted by the project proponent. After the scrutiny and examination, the committee shall recommend the Mining Plan to the Coal Controller for "Approval" or "Rejection".
- 5.5. The Technical committee shall consist of:
 - a) Deputy Coal Controller - Member Secretary (In case of vacancy, the Coal Controller may designate a suitable officer)
 - b) Director (Technical), MPS, Ministry of Coal- Member
 - c) Director, Nominated Authority, Ministry of Coal- Member
 - d) Regional Director, nominated by CGWB/CGWA-Member
 - e) One officer nominated by CIMFR- Member
 - f) One officer nominated by the DGH- Member
 - g) One officer nominated by DGMS- Member
- 5.6. (a) The members of the Technical Committee shall scrutinise the Mining Plan and submit comments on the SWCS portal within fifteen (15) days of submission of the Mining Plan on the portal. Non-submission of comments by a member within a period of 15 days shall imply that the member has no comments to offer.
(b) On receipt of the comments, the project proponent may consider incorporating the same in the Mining Plan and resubmit the modified Mining Plan, preferably within a period of 30 days of submission of the initial Mining Plan.
(c) In case the modified Mining Plan, considering the suggestions of members of the Technical Committee, is not resubmitted within 45 days of submission of the initial Mining Plan, the Technical Committee may recommend rejection of the application.

Provided that an opportunity of being heard shall be given to Project Proponent and the committee shall record the reason for the rejection.

(d) After the Mining Plan has been resubmitted, a physical meeting of the Technical Committee shall be convened within 15 days of such resubmission, wherein the project proponent shall make a presentation before the Technical Committee.

(f) Technical Committee shall circulate the minutes within 15 days and direct the project proponent to incorporate its decisions.

(g) The Project Proponent shall incorporate decisions made as per minutes of the meeting of Technical Committee and resubmit the Mining Plan within 15 days.

(h) After final submission of the Mining Plan, a virtual/physical meeting of the Technical Committee may be convened to recommend the approval or rejection of the Mining Plan, taking into consideration compliance with the recommendations of the last meeting.

(i) In case of recommendation for rejection, the Technical Committee shall accord the project proponent an opportunity of being heard before such recommendations. The Technical Committee shall record the reason for the rejection.

5.7. **Communication of Approval:** (a) After the Technical Committee recommends approval of the Mining Plan in respect of the allotted/ auctioned mine, the project proponent shall as soon as possible, deposit the applicable dues to the Nominated Authority.

The Nominated Authority shall convey no dues to CCO within 3 (three) working days of receipt of payments from the Project Proponent.

The CCO shall communicate the approval within a period of 5 (five) working days of receipt of No dues certificate from the Nominated Authority.

(b) For mines other than auctioned/allotted mines, the CCO shall communicate approval of the Mining Plan within a period of 5 (five) working days of receipt of the recommendation from the Technical Committee.

5.8. **Communication of Rejection:** The CCO shall communicate rejection of the Mining Plan within 5 (five) working days of receipt of the recommendations of the Technical Committee.

5.9. **Circulation of Approved Mining Plan:** CCO shall circulate a soft copy of the approved Mining Plan along with the approval letter to the Ministry of Environment, Forest and Climate Change, DGMS, CGWB, State Directorate of Geology and Mining department and District Administration.

5.10. **Removal of difficulties:** Interpretation of the Ministry of Coal as regards provisions of the Guidelines shall be final and binding.

5.11. In the interest of the development of the UCG blocks, the Ministry of Coal may relax or modify any of the provisions of these guidelines.

5.12. Any person aggrieved by any orders made or directions issued in respect of the Mining Plan by the Coal Controller may apply to the Secretary, Ministry of Coal, for revision of such order made or directions issued thereon.

Provided that such application shall be made within a period of 30 (thirty) days of such order made or such direction issued.

5.13. These Guidelines are without any prejudice to any other relevant rules and regulations issued by concerned authorities, such as State Governments, the Ministry of Environment, Forest and Climate Change, CGWA and the Ministry of Labour and Employment, etc.

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Underground Coal or Lignite Gasification-Indicative format for Pre-Feasibility Study

Sl No	Report / Study	Activities required to be completed (Indicative)	Pre-feasibility Report shall include Annexure-A & B
1	Geological Report	Geological Report of the Coal Block. GR shall include a separate chapter on the prospective zone/area to be considered for the Underground Coal Gasification operation	Annexure – A
2	Site Characterisation Study	Brief description of Regional Geology and Topography	Annexure-B (Brief report on Sl no. 2 to 6)
		Interpretation of Seismic surveys (3D) and Geophysical logging, including Representative Boreholes of the target coal seam for coal gasification	
		Interpretation of seam thickness, depth, quality, calorific value and associated strata, seam characteristics,	
		Structural Integrity, Reservoir/Gasifier properties, Geo-mechanical properties,	
		UCG process simulation model, including geotechnical and groundwater modelling, leading to forecasting of Syngas production and its interpretations	
3	Hydrogeological Study	Hydrogeological studies & characteristics:	
		The areal boundaries of coal seams and aquifers, characteristics of aquifers etc;	
		Hydro physical properties:	
		The maximum water yield and moisture content of coal seams and the layers overlying and underlying coal seams;	
		Chemical Composition of the Groundwater, Groundwater Chemistry, Details of observation wells	
4	Chemical Analysis	Proximate analysis ,Ultimate analysis, Ash analysis	
5	Subsidence Study	Potential Surface subsidence study. Evaluation of the stability of strata and to predict surface subsidence.	
6	Conclusion	Justification and Conclusion for consideration or rejection for taking up the Underground Coal Gasification Pilot operation	

Underground Coal or Lignite Gasification-Indicative format for Pilot Project

Pilot report study format

1. Executive Summary

- Brief description including objectives, expected outcomes, recommendations of the pilot study regarding taking up the project on a commercial scale and further development plan.

2. Project Description

- Location, Block boundaries, area, and subsurface data (geology, seam data).
- Ownership details.

3. Geological, Physico-mechanical, Petro-chemical Analysis and results of the tests

- Exploration detail and results
- Resource and strata characteristics, Coal or Lignite seam quality (Grade, Thickness)
- Hydrogeological and petrochemical studies and site assessment.
- Report on pre-pilot study and Suitability for pilot-scale and UCG process and Technology proposed.
- Baseline data generated for environment and subsidence management.

4. Drilling, Well details, Development and Production Facilities

- Pilot well design, drilling schedule, completion strategies.
- Scheme for modular or pilot gasifier construction.
- Temporary utility setups (water, air or oxygen, surface monitoring tools).
- Measurement protocols, gas sample handling, safety measures.

6. Proposed Gasification Process and Reservoir Testing

- Design for pilot gasification (injection and production wells, layout plan).
- Experimental parameters (oxidant injection, ignition strategies).
- Monitoring infrastructure (gas composition, flow rate, cavity changes through direct/indirect/analytical methods).
- Evaluation of pilot test performance, syngas, and byproduct quality.

7. Health, Safety & Environment (HSE)

- Risk assessments (environmental baseline, groundwater protection).
- Monitoring plan, emergency preparedness, regulatory compliance.

8. Product Gas Utilisation

- Handling of syngas, different test results, or laboratory analysis and targeted final products.

9. Any specific information by the agency conducting the pilot study, if any.

Underground Coal or Lignite Gasification- Commercial Project

The project proponent shall submit the Mining Plan as per the format given below:

S. No.	Section	Key Points / Description
1	Executive Summary	Brief note on commercial objectives, recommendations of pilot study, projected outputs, safety, and downstream products.
2.	General	Name of Coal or Lignite mine/block, area
		Name and address of the applicant, rated capacity as per CMDPA/CBDPA/LBDPA, and Vesting order copy
		Project's location, previous approval of the Mining Plan (if any), surface features of the block, brief socio-economic information and demographic profile.
		Geological information, including borehole details, coal of Lignite seam, geological disturbances, resource details, grade of coal or lignite seam, 2D and/or 3D seismic study (or reasons for not carrying out such geophysical survey) and hydrogeological details outlined in a comprehensive impact assessment report.
		Action plan for the unexplored part of the block, if any, and liquidation of remaining resources to be projectized.
		Details of minerals other than Coal or Lignite found, if any
		Details of the previous Mining plan, the conditions of approval
3.	Gasification Process & Reservoir Analysis	The methodology of work.
		Calendar plan indicating production of syngas (along with the amount of coal or lignite to be used in-situ).
		Wellfield layout, Operation sequences
		Drilling for injection/production wells, Gasifiers/ reactors description, Gas production, and monitoring mechanism
4	Safety	Major Risks and uncertainties (Fire, Subsidence, Groundwater, Contaminants)
		Detailed fire control methods/measures, including risk assessment

		<p>The mitigative measures to be adopted for safe disposal/utilisation of the condensate produced from the coal or lignite gasification process</p>
		<p>Details of the network of surface monitoring points</p>
5.	Infrastructure Facilities	<p>Details of the syngas pipeline network with real-time pressure and temperature monitoring.</p> <p>Details of surface infrastructure like syngas cleaning units, flare stacks, water treatment and condensate disposal/utilisation systems, and integrated control centres, prioritizing mechanization and automation for continuous monitoring and operational control.</p> <p>Details of the network of monitoring wells and piezometers at multiple depths (multi-level) in the core and buffer zones.</p>
6.	Land	<p>Details of the land</p>
7.	Mine Closure	<p>Progressive Closure: Detailed plan of land restoration, cavity management, including cleanup, and monitoring to be completed during gasification operations.</p> <p>Final mine closure: Detailed plan of closure of wells, dismantling and demolition of structures, cleaning of sites, removal of machinery, plantation, landscaping, specified post-environmental monitoring, protective and restoration measures, barbed wire fencing, and related activities.</p> <p>Details of engagement of local communities through the District Administration.</p> <p>Detailed plan for the post-burn management and remediation of the underground cavity.</p> <p>Detailed plan of Long-Term Monitoring</p> <p>Escrow Account calculation</p>
9.	Plates	<p>Geological Plan, Seam Folio plan of each seam, Plan showing mining layout, Panel projection (Proposed Gasifier), Surface layout, Land Use plan, Cross Section, Topographical plan. Conceptual plan including coordinates, lease boundary, vesting area, and working proposed thereon. Detailed phases of the mine life, such as the 1st year, rated capacity year, last year of the gasification life of the mine, and final year of the post mining closure period.</p>
10.	Annexures	<p>a) Copy of allotment letter or Ownership record.</p>

		<p>b) Copy of approval of the Board of the company towards submission of the Mining Plan.</p> <p>c) Copy of certificate as regards preparation of Mining Plan by QP/MPPA, along with certificate issued for accreditation by QCI-NABET.</p> <p>d) Copy of approval of Geological Report.</p> <p>e) Certificate of QP/MPPA to the effect that the Mining Plan has been prepared within the allotted or vested geological block boundary or existing mining lease area.</p> <p>f) Copy of approval of the Central Government or State Government or the concerned land owner carry out its activities beyond the allotted or vested geological block boundary or existing mining lease (if any)</p> <p>f) Brief report on findings of Pilot Study</p>
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