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No. J-11015/35/2018-IA.II (M)  
Government of India  
Ministry of Environment, Forest and Climate Change  
IA-II (Coal Mining) Division



To,

The Executive Director  
**M/s The Andhra Pradesh Mineral Development Corporation Limited**  
295/1D, 100 Feet Tadigadapa to Anikepadu Road,  
Kanur, Vijayawada- 521137 (Andhra Pradesh)  
Email: [info@apmdc.ap.gov.in](mailto:info@apmdc.ap.gov.in); [anantaneni.l@gmail.com](mailto:anantaneni.l@gmail.com)

**Sub: Suliyari Opencast Coal Mining project of 5 MTPA in an area of 1298 ha of M/s The Andhra Pradesh Mineral Development Corporation Limited located in District Singrauli (MP) - Terms of Reference - reg.**

Sir,

This has reference to your letter No.APMDC/Coal/Suliyari/2018-19/1788 dated 3<sup>rd</sup> April, 2018 along with online proposal No. IA/MP/CMIN/73904/2018 dated 4<sup>th</sup> April, 2018 and subsequent letters dated 7.5.2018, 10.5.2018, 17.5.2018 and 15.6.2018 on the above-mentioned subject.

2. The Ministry of Environment, Forest and Climate Change has considered the proposal for grant of Terms of Reference to the project for Suliyari Opencast Coal Mining project of 5 MTPA in an area of 1298 ha of M/s The Andhra Pradesh Mineral Development Corporation Limited located in District Singrauli (MP).

3. The proposal was considered by the Expert Appraisal Committee (EAC) in the Ministry for Thermal & Coal Mining Sector in its 30<sup>th</sup> meeting held on 17-18 May, 2018. The details of the project, as per the documents submitted by the project proponent, and also as informed during the meeting, are reported to be as under:-

- (i) It is a green field project of capacity 5 MTPA in an area of 1298 ha.
- (ii) Suliyari ML area is bounded between latitude(s) 23°55'28" to 23°58'15"N and longitude (s) 82°18'52" to 82°20'58"E respectively.
- (iii) Joint Venture: There is no JV
- (iv) Coal Linkage: Suliyari Coal Block has been allocated by Ministry of Coal (MoC) to Andhra Pradesh Mineral Development Corporation Limited (APMDC) for sale of coal, under the provisions of The Coal Mines (Special Provisions) Act, 2015.
- (v) Employment generated / to be generated: Total manpower requirement will be 1157. Out of which, manpower of APMDC is 168 whereas manpower proposed to be deployed by MDO is 989.
- (vi) Benefits of the project: (a) The project will increase the supply of coal to cater the need of India's increasing domestic demands (b) it will add to revenue generation of the District/State, (c) it will reduce paralyzing power shortage shindering growth, foreign investment and productivity; (d) it will generate additional employment, both direct and indirect, (e) APMDC shall provide, school buildings, bus shelters, medical facilities and other amenities to local villages.
- (vii) The total land area is 1298 ha. Mining lease area proposed in the Mining Plan is 1298

ha. The land usage of the project will be as follows:

**Pre-Mining**

S.No.	Land use	Within ML Area (ha)	Outside ML Area (ha)	Total
1.	Agricultural Land	251.860	Nil	251.860
2.	Forest Land	259.239	Nil	259.239
3.	Wasteland	396.720	Nil	396.720
4.	Grazing Land	Nil	Nil	Nil
5.	Surface Water Bodies	46.060	Nil	46.060
6.	Settlements	51.990	Nil	51.990
7.	Other (Specify*)	292.131	Nil	292.131
<b>Total</b>		<b>1298.000</b>	<b>Nil</b>	<b>1298.000</b>

\* Barren tenancy land

Post-Mining:

Sl. No	Land use during mining	Post mining land use				Total
		Plantation	Water Body	Public use	Undisturbed area	
1.	External OB dump *	-	-	-	-	<b>0.000</b>
2.	Top Soil dump *	-	-	-	-	<b>0.000</b>
3.	Excavation *	1286.390	-	-	-	<b>1286.39</b>
4.	Roads	-	-	-	-	<b>0.000</b>
5.	Built-up area	-	-	-	-	<b>0.000</b>
6.	Safety zone/ rationalisation area	11.610	-	-	-	<b>0.000</b>
7.	Undisturbed area	-	-	-	-	<b>0.000</b>
<b>Total</b>		<b>1298.000</b>	-	-	-	<b>1298.00</b>

\* shall come under excavation area

(viii) Total net geological reserve is 147.99 Mt up to seam I, whereas the mineable reserve up to seam VII bottom is 120.55 Mt and extractable reserve is 108.57 Mt. The percent of extraction would be 80.41% w.r.t. geological reserve of 135.03 Mt up to mineable seam VII Bottom.

(ix) The coal grade is G7. The stripping ratio is 7.42 cum/tonne. Seams lying in the Suliyari Coal Mine is almost flat with maximum seam gradient of 5°. Seams are dipping from south to north at gradient of 1° - 5°.

(x) There are 15 major coal seams with maximum thickness up to 5.82 m.

(xi) Total estimated water requirement is 4515 m<sup>3</sup>/day (peak). The level of ground water ranges from 1-11.35 m below ground level.

(xii) The method of mining will be mechanized opencast.

(xiii) There will be only one external OB dump with quantity of 17.5 Mm<sup>3</sup> in an area of 16.33 ha with height of 20 m above the surface level. External dumping (at WD1) is envisaged only for the first year. All generated waste from 2<sup>nd</sup> year shall be backfilled. Waste dumped at WD1 will be subsequently re-handled & backfilled in the mined-out voids from 11<sup>th</sup> year onwards.

(xiv) There will be no mine void at conceptual stage as entire quarry void will be backfilled. Total quarry area is 1286.390 ha. Backfilling will commence actively from 2<sup>nd</sup> year onwards. Entire quarry area of 1286.39 ha will be backfilled and reclaimed with plantation.

(xv) The life of mine is 23 years.

(xvi) Transportation: The ROM coal having (-) 100mm size will be transported by 35 tonne capacity dumpers. Loaded coal from mines head shall be transported by dumpers upto Coal

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Handling Plant and unloaded to 4 nos. of underground hopper each having 60 m<sup>3</sup> capacity. The rated capacity of belt conveyor for the CHP plant has been considered as 1200 tph.

(xvii) There is R&R involved. There are about 1280 Project Displaced Families (PDFs). Eight populated villages are located in the core zone of proposed Suliyari Coal Mine. APMDC has already carried out the comprehensive socio-economic survey during its earlier coal block allocation in 2007. R&R scheme has to be formulated by district authority and accordingly compensation is to be paid to PDFs.

(xviii) Total capital cost of the project is Rs. 854.27 Crores. CSR Cost: Minimum 2% of average project benefit of three consecutive years. R&R Cost shall be finalized on the basis of Socio-economic survey carried out by APMDC and R&R scheme (to be formulated by district authority). Environmental Management Cost shall be worked out during EIA- EMP study.

(xix) A perennial nala (HurdulNala) flowing through the mine is to be diverted along dip side of the block area in northern direction. Diversion plan of Nala was approved by Madhya Pradesh Ganga Kachar Rewa during its earlier coal block allocation in 2007. However, a fresh approval has to be obtained now for diversion of Hurdul nala.

(xx) Approvals: Ground Water Clearance is to be obtained.

(xxi) Wildlife issues: There are no national Parks, wildlife sanctuary, biosphere reserves in the 10 km buffer zone.

(xxii) Forestry issues: Application for diversion of total forest land involved in the project (259.239 ha) has already been made.

(xxiii) The OB will be dumped in proposed external dump site within mine area only during 1<sup>st</sup> year of operation and will be subsequently re-handled & backfilled in the mined-out voids from 11<sup>th</sup> year onwards. Total quarry void (1286.39 ha) will be backfilled and reclaimed with plantation. Density of tree plantation proposed to be 2500 trees/ ha of plants.

(xxiv) There are no court cases/violation pending with the project proponent.

(xxv) Baseline data collection for the Month of April, May & June 2018 has been started.

4. The Expert Appraisal Committee in its 30<sup>th</sup> meeting held on 17-18 May, 2018 has recommended the project for grant of terms of reference. Based on recommendations of the EAC, the Ministry of Environment, Forest and Climate Change hereby accords terms of reference to the project for **Suliyari Opencast Coal Mining project of 5 MTPA in an area of 1298 ha of M/s The Andhra Pradesh Mineral Development Corporation Limited located in District Singrauli (MP)**, and for preparation of EIA/EMP reports with public consultation, subject to compliance of all terms and conditions as specified/notified in the standard ToR applicable for opencast coal mines, along with the additional conditions as under:-

- Stage-I forest clearance for diversion of 259.239 ha of forest land shall be obtained from the concerned regulatory authority.
- For proper baseline air quality assessment, adequate monitoring stations (4-5 nos.) in the downwind areas need to be set up and included in the air quality modeling.
- Ecological restoration and mine reclamation plan to be prepared with afforestation of local/native species found in the area.

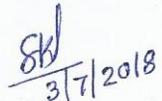
#### 4.1 General Conditions

- (i) All documents should be properly indexed, page numbered.
- (ii) Period/date of data collection should be clearly indicated.
- (iii) Authenticated English translation of all material provided in Regional languages.
- (iv) After the preparation of the draft EIA-EMP Report as per the aforesaid TOR, the proponent shall get the Public Hearing conducted as prescribed in the EIA Notification 2006 and take necessary action for obtaining environmental clearance under the provisions of the EIA Notification 2006.

- (v) The letter/application for EC should quote the Ministry's file No. and also attach a copy of the letter prescribing the ToR.
- (vi) The copy of the letter received from the Ministry on the ToR prescribed for the project should be attached as an annexure to the final EIA-EMP Report.
- (vii) General Instructions for the preparation and presentation before the EAC of ToR/EC projects of Coal Sector should be incorporated/followed.
- (viii) The aforesaid ToR has a validity of **three** years only.
- (ix) Grant of ToR does not necessarily mean grant of EC.
- (x) Grant of ToR to the present project does not necessarily mean grant of TOR/EC to the captive/linked project.
- (xi) Grant of ToR to the present project does not necessarily mean grant of approvals under the Forest (Conservation) Act, 1980 or the Wildlife (Protection) Act, 1972.
- (xii) Grant of EC is also subject to circulars issued under the EIA Notification 2006, which are available on the Ministry's website: [www.envfor.nic.in](http://www.envfor.nic.in)

5. You are required to submit the final EIA/EMP prepared as per TORs to the Ministry within 3 years as per this Ministry's O.M. No.J-11013/41/2006-IA. II (I) dated 8<sup>th</sup> October, 2014 for considering the proposal for environmental clearance.

6. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India/National Accreditation Board of Education and Training (QCI/NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other Organization(s)/Laboratories including their status of approvals etc. vide Notification of the MoEF dated 19<sup>th</sup> July, 2013.

  
3/7/2018  
(S K Srivastava)  
Scientist E

**Copy to:**

1. The APCCF, Regional office (EZ), MOEF&CC, E-5 Arera Colony, Bhopal - 462 016
2. The Member Secretary, Madhya Pradesh State Pollution Control Board, Paryavaran Parisar, E-5, Arera Colony, Bhopal - 462 016

**Standard ToR for conducting EIA study for opencast coal mining project and information to be included in EIA/EMP report:**

- (i) An EIA-EMP Report shall be prepared for..... MTPA rated capacity in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.
- (ii) An EIA-EMP Report would be prepared for..... MTPA rated capacity to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of coal production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
- (iii) A toposheet specifying locations of the State, District and Project site should be provided.
- (iv) A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries/mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given.
- (v) Land use map (1: 50,000 scale) based on a recent satellite imagery of the study area may also be provided with explanatory note on the land use.
- (vi) Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
- (vii) A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
- (viii) A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.
- (ix) In case of any proposed diversion of nallah/canal/river, the proposed route of diversion /modification of drainage and their realignment, construction of embankment etc. should also be shown on the map as per the approval of Irrigation and flood control Department of the concerned state.
- (x) Similarly if the project involves diversion of any road/railway line passing through the ML/project area, the proposed route of diversion and its realignment should be shown in the map along with the status of the approval of the competent authority.
- (xi) Break up of lease/project area as per different land uses and their stage of acquisition should be provided.

(xii) LANDUSE DETAILS FOR OPENCAST PROJECT should be given as per the following table:

Sl. No.	Landuse	Within ML area (ha)	Outside ML area (ha)	Total
1.	Agricultural land			
2.	Forest land			
3.	Wasteland			
4.	Grazing land			
5.	Surface water bodies			
6.	Settlements			
7.	Others (specify)			
	TOTAL			

(xiii) Break-up of lease/project area as per mining plan should be provided.

(xiv) Impact of changes in the land use due to the project if the land is predominantly agricultural land/forestland/grazing land, should be provided.

(xv) One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided.

(xvi) Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.

(xvii) Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.

(xviii) Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.

(xix) Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.

(xx) Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.

(xxi) Detailed water balance should be provided. The break-up of water requirement for the various mine operations should be given separately.

(xxii) Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users in the upstream and downstream of the project site. should be given.

(xxiii) Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.

(xxiv) Impact of blasting, noise and vibrations should be given.

(xxv) Impacts of mining on the AAQ and predictions based on modeling using the ISCST-3 (Revised) or latest model should be provided.

(xxvi) Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.

(xxvii) Effort be made to reduce/eliminate road transport of coal inside and outside mine and for mechanized loading of coal through CHP/ Silo into wagons and trucks/tippers.

(xxviii) Details of waste OB and topsoil generated as per the approved calendar programme, and their management shown in figures as well explanatory notes tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use should be given. OB dump heights and terracing based on slope stability studies with a max of 28° as the ultimate slope should be given. Sections of final dumps (both longitudinal and cross section) with relation to the adjacent area should be shown.

(xxix) Efforts be made for maximising progressive internal dumping of O.B., sequential mining, external dump on coal bearing area and later rehandling into the mine void.--to reduce land degradation.

(xxx) Impact of change in land use due to mining operations and plan for restoration of the mined area to its original land use should be provided.

(xxxii) Progressive Green belt and ecological restoration/afforestation plan (both in text, figures and in the tabular form as per the format of MOEFCC given below) and selection of species (native) based on original survey/land-use should be given.

Table 1: Stage-wise Landuse and Reclamation Area (ha)

S.N.	Land use Category	Present (1 <sup>st</sup> Year)	5 <sup>th</sup> Year	10 <sup>th</sup> Year	20 <sup>th</sup> Year	24 <sup>th</sup> Year (end of mine life)*
1.	Backfilled Area(Reclaimed with plantation)					
2.	Excavated Area (not					

	reclaimed)/void					
3.	External OB dump Reclaimed with plantation)					
4.	Reclaimed Top soil dump					
5.	Green Built Area					
6.	Undisturbed area (brought under plantation)					
7.	Roads (avenue plantation)					
8.	Area around buildings and Infrastructure					
	TOTAL					

\* As a representative example

Table 2 : Stage Wise Cumulative Plantation

S.N.	YEAR*	Green Belt	External Dump	Backfilled Area	Others(Undisturbed Area/etc)	TOTAL
1.	1 <sup>st</sup> year					
2.	3 <sup>rd</sup> year					
3.	5 <sup>th</sup> year					
4.	10 <sup>th</sup> year					
5.	15 <sup>th</sup> year					
6.	20 <sup>th</sup> year					
7.	25 <sup>th</sup> year					
8.	30 <sup>th</sup> year					
9.	34 <sup>th</sup> year(end of mine life)					
10.	34- 37 <sup>th</sup> Year (Post- mining)					

\* As a representative example

(xxxii) Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.

Table 3: Post-Mining Landuse Pattern of ML/Project Area (ha)

S.N.	Land use during Mining	Land Use (ha)				
		Plantation	Water	Public	Undisturbed	TOTAL

			Body	Use		
1.	External OB Dump					
2.	Top soil Dump					
3.	Excavation					
4.	Roads					
5.	Built up area					
6.	Green Belt					
7.	Undisturbed Area					
	TOTAL					110

(xxxiii) Flow chart of water balance should be provided. Treatment of effluents from workshop, township, domestic wastewater, mine water discharge, etc. should be provided. Details of STP in colony and ETP in mine should be given. Recycling of water to the max. possible extent should be done.

(xxxiv) Occupational health issues. Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower in the mine should be given.

(xxxv) Risk Assessment and Disaster Preparedness and Management Plan should be provided.

(xxxvi) Integration of the Env. Management Plan with measures for minimizing use of natural resources - water, land, energy, etc. should be carried out.

(xxxvii) Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.

(xxxviii) Details of R&R. Detailed project specific R&R Plan with data on the existing socio-economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.

(xxxix) CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.

(xl) Corporate Environment Responsibility:

- a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
- b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
- c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
- d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

(xli) Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.

(xlii) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.

(xliii) Status of any litigations/ court cases filed/pending on the project should be provided.

(xliv) Submission of sample test analysis of Characteristics of coal: This should include details on grade of coal and other characteristics such as ash content, S and heavy metals including levels of Hg, As, Pb, Cr etc.

(xlv) Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.

(xlv) FOREST CLEARANCE: Details on the Forest Clearance should be given as per the format given:

TOTAL ML/PROJECT AREA (ha)	TOTAL FORESTLAND (ha)	Date of FC	Extent of forestland	Balance area for which FC is yet to be obtained	Status of appl for. diversion of forestland
		If more than , provide details of each FC			

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