MINUTES OF THE 61st EXPERT APPRAISAL COMMITTEE (EAC) (THERMAL & COAL MINING) MEETING HELD ON 19th-20th NOVEMBER 2012 IN NEW DELHI.

COAL MINING PROJECTS

The 61st meeting of the reconstituted EAC (T&C) was held on 19th-20th November 2012 in Scope Convention Centre, Scope Complex, New Delhi to consider the projects of coal mining sector. The list of participants of EAC and the proponents are given at Annexure-1 and 2 respectively.

Confirmation of the minutes of the 59th Expert Appraisal Committee (EAC) (Thermal & Coal Mining) meeting held on 06th-07th November 2012 was confirmed.

MONDAY, 19th NOVEMBER2012

1. Gondulpura Coalmine opencast project (4 MTPA in an ML area of 520ha) of M/s Tenughat Emta Coal Mines Ltd. Hazaribagh, Jharkhand (EC based on TOR granted on18.02.2010)

1.1 The Gondulpara (Phase-1) open pit coal mining projectLocated in the north eastern part of North Karanpura Coalfield in Hazaribagh District of Jharkhand State.Nearest Railhead is Patratu, 35 Km south of the block on Daltonganj- Barkakana-Dehri-on-Sone loop line of the South Eastern Railway 35 Km from Hazaribagh. Approachable from Badam by a 3 Km long Kutcha road. The Gondulpara Block was allotted jointly to M/S Tenughat Vidyut Nigam Ltd. as leader and M/S Damodar Valley Corporation as an associate for working the block vide letter no. 13016/31/2005-CA-I dated 13th January,2006 of the Govt. of India, Ministry of Coal, to meet the coal requirements for their Power Plants on 50:50 basis. Both DVC and TVNL agreed that Tenughat EMTA Coal Mines Ltd, the Joint venture Company of TVNL and EMTA, will operate the above coal block. Gazette Notification in this respect was published vide S.O.1993 (E) dated 07.08.2008.Mining Plan was approved by MOC for Pit-I and Future Extended Pit respectively vide letter No. 13016/31/2006-CA-I dated 24.6.2009.

1.2 The proponent made the presentation and informed that:

1.2.1 Project details:

i. The EIA/EMP has been based on TOR approved by Ministry of Environment & Forests, Government of India vide Letter No. J-11015/280/2009-IA.II (M) dated 18th February 2010 for Phase –I only.

ii. In Phase-I, mining shall be carried out as Pit-I to mine the entire proved coal reserve lying within the non heat affected zone.

iii. Of the total block area of 306.50 ha, 124.52 ha is Forest land, 164.37 ha land is Agricultural land, 3.30 ha is Homestead land, 14.31ha is water bodies, Road & Other Govt. land .The land use of 306.50 Ha would be 224 Ha for quarry, 14.20 ha is for Infrastructure within Block boundary, 7 ha is for Land for Green belt & barrier. 31.30 ha is for external Dump within block outside quarry limit of Phase-I, 30 ha is for Land for Colony & Rehabilitation colony. The land of 118.38 Ha would be purchased against 116.90 Ha compensatory land forest land applied and 5.62 Ha left as Safety barrier.

iv. Proposal for Stage – I clearance submitted on 20.09.2010 to DFO, Hazaribagh and at present is under process at PCCF, Ranchi.

v. Net Proved Geological Reserves (Phase-I) is74.873 MT, Net Mineable Coal (Phase-I)is 62.20 MT.No. of workable are Seam 05, Max. Depth of the Quarry 246 m, Max Strike Length at Surface2.30 Km, Avg. Stripping Ratio (Phase-I) 1.69 Cum/t and maximum width of Quarry at Surface is1.65 Km. OB (Phase-I) would be 105.34 M cum. maximum thickness of seam is14.42m.

vi. Mining by Shovel Dumper combination and surface miner.

vii. Badmahi River flows southerly along the northern and western boundary and controls the main drainage of the area. Ground water depth is 5.9 m to 9.8m bgl (pre-monsoon) and 4.3m to 8.8m bgl (post-monsoon).

viii. There will be one temporary external dump in 104 ha area with 60 m height and 38.38 Mm3 OB but final dump height will be 30 m with average slope $26^0$and internal dump in 135ha area with172.92 Mm3 OB.Before completion of Phase –I, detailed exploration of Phase – II area will be completed and further mining will be continued in Phase – II according to the approved Mining Plan. Accordingly, Mine Closure Plan has been submitted for the complete life of the project (Phase – I + Phase – II) and is yet to be approved by the MoC.

ix. About 12,000 tonne coal will be transported daily to the railway siding at Charhi about 55 Kms away by 35 T truck, wetted with water and covered, by a dedicated road.

x. At final stage, 310 ha area covered with 775000 nos of Trees/plants.

xi. R& R involved with 495 PAF, 326 of Gondulpara. 110 nos of Balodar, 59 nos of Gali Villages.

xii. Capital Cost of Environment Control Measures is Rs.2903.72Lakhs. Total expenditure on CSR is Rs. 41.64 Crores and Recurring Expenditure either Minimum of Rs.2.0 Crores per year or 5% of the net profit. Capital Cost of the phase –I project is Rs. 323.8 Crores.

xiii. Life of mine will be17 years

1.2.2 **Public Hearing:** Public Hearing was held on 15.02.2012.The main issues raised were employment and compensation for land, provision for School / college,electricity, road and water facilities. Some expressed concerns on

protection from pollution and mentioned that colliery should not be open and agriculture be encouraged. The proponent assured to take necessary action on the concerns and suggestions made during the public hearing.

1.3 The Committee after deliberation, sought following information for further consideration in the next EAC meeting :

i. Representative of both the JVs i.e. TVNL and EMTA, Tenughat should be present and give presentation. Therefore, representative of Tenughat, either Chairman or Managing Director should be present in next EAC meeting.
ii. The details of coal reserve as per UNCFC, geological map, sections showing seam etc should be presented.
iii. The option of underground mining over open cast mining should be explored as the depth of Seam no.-I is 246 mt.
iv. A social cost-benefit analysis vis-à-vis choice of mining methods should be examined.
v. The proponent informed about the presence of Jhama in the coal block. National Remote Sensing Agency (NRSA) should be contacted for thermal imaging techniques which is being utilized for assessing the extent of fire-affected areas .
vi. The mining lease area includes Badmahi River and the mine is located 50 mt. from river located on southern side. The mining would be proceeded in downward direction leaving the river at the south. Mining would be100 mt away from river. In Phase – I river should not be disturbed but a barrier would be provided between river and Phase II mine pit.
vii. River should not be diverted and complete stretch of southern bank should be strengthening by providing embankments with thick green belt.
viii. Percolation study should be carried out and force of water should be calculated.
ix. Green belt should be provided between villages and mines as barrier in phase-I.
x. No external OB dump should be kept within 100 mt distance of Badmahi River.
xi. As most of the people in the area are depended on Minor Forests Produce (MFP's) including minor minerals. The people who depended on mining earlier, should be made partner in the company.
xii. As it was observed that a Coal Handling Plant (CHP) is very close to Badmahi river, the CHP should be shifted away from river as discharge from CHP could pollute the river water.
xiii. Details of Phase –I project along with land details, break up of land and other detail should be provided.
xiv. Details of mine void should be provided.
xv. No external OB dump would be left at the end of mining.
xvi. It was decided that the Phase –I project details should be presented only in next EAC meeting.
xvii. Details of ground water should be provided.
xviii. The R&R may be prepared in consultation with a reputed NGO working in the area.

xix. The Action Plan should be project specific and the time line for the implementation of Action Plan should be provided.
xx. Tentative time bound schedule should be provided for CSR.
xxi. As the block is surrounded by Protected Forest area, an Action Plan for conservation of flora and fauna should be provided. The conservation plan should be duly signed by DFO of the area.
xxii. The transportation issue should be relooked /checked and details be provided.
xxiii. The EIA /EMP details should be in tabular form and each TOR should be addressed properly with suitable justification/information.
xxiv. As the Gourangdih ABC Opencast Coalmine Project M/s Gaurandih Coal Ltd block is under GOM scanner which is a JV between two JV partners namely Himachal Emta Power Ltd. and JSW. A small presentation is required on Himachal /EMTA.

1.4 The Committee will reconsider the project on the receipt of the above information.

2. Jageshwar Open Cast Coal Project,(0.6 MTPA in ML area of 270 ha) of M/s Jharkhand State Mineral Development Corp. Ltd. Jharkhand, vill Jogeshwar , Tehsil Ramgarh, Dist. Ramgarh J harkhand(TOR)

General Manager (Mines) of M/s Jharkhand State Mineral Development Corp. Ltd. Proponent vide letter no 1992 dated 16.11.2012 informed that the land use pattern of the core zone based on revenue records submitted to State Revenue Department for authentication. The authentication by State Govt. is likely to be completed at the end of Nov. 2012. The proponent has requested to defer the consideration of the project and did not attend this EAC meeting.

3.Ganeshpur Opencast Coalmine Project (4 MTPA(normative) &5.5 MTPA(Peak) in 398 ha project area) of M/s Tata Steel Ltd. ,located in dist. Latehar, Jharkhand (EC based on TOR granted on3.12.2010)

3.1 Ganeshpur Opencast Coalmine Project (5.5 MTPA in 398 ha project area) of M/s Tata Steel Ltd. ,located in dist. Latehar, Ministry of Coal, Govt. of India vide letter No. 13016/27/2008-CA-I dated 28th May'2009 has allotted Ganeshpur Coal block jointly to M/s Tata Steel (As leader) and M/s Adhunik Power & Natural Resource Ltd (As associate) for end use of coal in their thermal power projects.

3.2 The proponent made the presentation it was informed that:

i. Of the total ML area of 398 ha, 168 ha is Forest land, 154 ha is Agricultural land, 54ha is waste land, 8 ha is water body, 14 ha Habitation including Roads. Land breakup of the total 398 ha,204 ha for quarry area,125 ha is for

External OB dump,7ha is for infrastructure,3 ha is for road,2 ha is for office,8 ha is for Railway siding & silo loading,11 ha is for Barrier along mine boundary including embankment covered with plantation,7 ha is for nallah,14 ha is for Residential colony,17 ha is for green belt.

ii. Net Geological Reserves (GR) is 137.88 MT, Extractable Reserves (Estimated)91.8 MT. Ultimate Working Depth is 220 m. Stripping ratio is 1:1.39 cum/ tone. Coal seams are Seam Local to Seam V with splits.

iii. The grade of Coal is 'F' (Average).

iv. The mining with shovel dumper combination is proposed due to multiplicity of coal seams, steep gradient of seams & inconsistent thickness parting. Sequence of drilling, blasting, loading by excavators transport by dumpers and grading of waste rocks by dozers & graders has been proposed.

v. Total OB Generated (Estimated) would be 127.83 Mm^3.OB dump in125 ha area with 65 mt height. The backfilling started from 3rd year onwards. Width of working bench is 30 to 40 m. Maximum depth of quarry is 220 m.

vi. Average water level in both core &buffer zone ranges between 5.5 to 11.90 m in pre-monsoon & between 3.0 to 6.0 m in post-monsoon period. Straightening of small meandering portion of Bhutha Nallah has been proposed. In post-mining stage, the water body in 71 ha area with 60mt depth. Barwapani Nallah remains undisturbed.

vii. Internal OB dump would be at ground level. External dump would be upto 25 years after that 90% OB would be rehandled.

viii. Transportation of coal from pit head to Tori Shivpuri railway siding which is located at the distance of 1.5-2 km by belt conveyor and Silo loading into wagon further by rail. There will be no road transportation.

ix. R&R of 220 PAF s of villages Jala(126 nos), Seregara (2nos) Nagra(81 nos), Pundarlawa (11 nos) involved. For CSR Rs 15.68 lakhs spent in FY-12 Rs 27.60 lakhs spent till Oct'12. A total of Rs 84.41 lakhs has been planned to be spent during this financial year. Life of the project is 25 years. CSR Capital Expenditures Rs. 279 Lakhs. Capital cost of the project is **Rs 550 Crores.**

2. The Committee after careful deliberation sought following information for further consideration in next EAC meeting:

i. Details of the changed location of power plant and mine should be provided.

ii. The industry should involve local people and their families as part of developmental process.

iii. Public hearing issues should be properly addressed in tabular form along with the proposed budgetary provision from CSR budget.

iv. Presentation should be TOR –wise addressing each ToR properly.

v. Stage –I forest clearance is required.

vi. The height of external OB dump should be less than 30m

vii. Grass turfing should be provided upto 25 years.

viii. The excavated area should be brought back to productive use eg. agriculture and others.
ix. The details of OB dumping should be submitted. As the mining is proposed to be up to the depth of 300 mt, the unconfined aquifer would be cut. Ground water will be depleted and forest destroyed. The continuous groundwater monitoring should be carried out in and around 5 km of mine area.
x. Four villages would be affected. All the villages located within 5 km area should be taken care of. This would be a condition while granting EC.
xi. If ground water is found to be decreasing, measures should be taken for recharging by providing ponds etc
xii. There should be no external OB dump at the end of mining.
xiii. Void depth should be reduced and it should be less than 40 mt
xiv. Handicapped persons should be provided more than Rs 1500/month as pension for life as against the proposal of the proponent.
xv. Provision of motor **tricycle** could be considered to all the handicapped persons in area.
xvi. Long term annuities should be provided to the entire life of PAF's.
xvii. Cow shed should be provided. Biomass can be used for cattles as fertiliser.
xviii. Controlled Blasting should be practiced to reduce dust generation.
xix. R&D should be carried out for better infrastructure for dust suppression in the coal extraction area..
xx. Species of Karanj,Su-Babul should not be planted. The native species should be planted. All the 11 plant speciesas suggested eg.*Buchnania lanzan, Butea monosperma, Desmodium gangeticum, Diospyros melanoxylon, Holarrhaena pubescenc, Semicarpus anacardium, Shorea robusta, Terminalia alata, Terminalia arjuna, Woodfordia fruiticosa, Acacia catechu.*
xxi. R& R should be revised.
xxii. The issues raised by the general public and commitments made along with some budgetary provision from CSR amount should be in a tabular form.
xxiii. Authenticated copy of presentation should be submitted to ministry.

4. Expansion of Gare Pelma IV/2 & IV/3 Coal Sub Block from 6.25MTPA to 12 MTPA (10.8 MTPA by opencast and 1.2 MTPA by undergroundin an area of 964.55 ha) along with an additional washery of 4.75 to 9.5 MTPA of M/s Jindal Power Ltd. Vill. Libra, Kosumpali, Kondkel, Dongamohua Tehsil Tamnar, dist. Raigarh, Chhattisgarh (TOR).

4.1 It is an expansion project in production capacity from 5.25 to 12MTPA in an area of 964.55 ha with an additional washery of 4.5 MTPA.

4.2 The proponent made the presentation and it informed that:

i. Gare Pelma IV/2 and IV/3 coal sub blocks was allotted to M/s Jindal Power Limited by Ministry of Coal on 01.07.1998.

ii. Environmental Clearance from MoEF for 5.25 MTPA opencast mine along with a coal handling plant was obtained vide letter No. J-11015/44/2002-IA.II (M) dated 22.09.2004.Earlier Environment Clearance obtained on Environmental Clearance for Gare IV/2 & IV/3 OC & UG coal mining project for a combined production of 6.25 MTPA and establishment of pit-head coal washery of 4.75 MTPA (800 TPH) issued vide letter No.J.11015/288/2007-IA.II (M) dated 12.06.2012**.**Mining operation commenced in May 2006 for 5.25 MTPA.

iii. The entire coal is supplied through pipe conveyor to the 1000MW (4 x 250 MW) Thermal Power Plant at Tamnar, located about 7 kms away from the mine.JPL then applied for enhancement of capacity of mine from 5.25 MTPA (opencast) to 6.25 MTPA (5.5 MTPA OC & 0.75 MTPA UG) along with setting up of 4.75MTPA (800 TPH) Coal Washery within this lease area.

iv. The Environmental Clearance has been accorded vide letter no. J-11015/288/2007-IA.II(M) dated 12.06.2012.Now, JPL is expanding the 1000 MW TPP at Tamnarto 3400 MW by addition of 4 units of 600 MW each, all of which have been accorded EC vide letter no. J-13012/117/ 2008-IA.II (T) dated 18.03.2011 and 04.11.2011 in order to meet the shortfall in coal as received from SECL & MCL for unit 1 & 2 (2X600 MW) and also for unit 3 & 4 (2X600 MW. Till such time coal linkage is available, JPL proposes to expand the capacity of the existing mine.

v. Of the total area 964.65 Ha., 48.208 ha is Forest land859.498 ha is private land,24.664 ha is grass land,15.501 ha is Sewa Bhumi,3.376 ha is water body3.131 ha is village utility land,9.082 ha is road,2.19 ha is rocky mountain land, Land us break –up is, 350.20 ha is for Excavated area ,28.40 ha is for external OB dump area,30 ha area for Embankment against Kelo river and Bendranala,18 ha is for CHP/ Washery and other infrastructure,2 ha is for surface structure for UG mine,(428.61 ha disturbed area)and 536.04 ha is undisturbed area.

vi. There are 20 Protected Forests and 9 Reserve Forests in within 15 ha area.

vii. There are large numbers of water bodies/nalas in the area. Forestland of 48.208 ha diverted vide MOEF's letter no. 8-95/2003-FC dated 06.09.2004.

viii. Seams proposed by Opencast are VII, VIII, IX, X & XA and Seams proposed by Underground IV, III B & II Strike & Dip of the Coal Seams is NW –SE, 20 to 60 SW to SSW. Min. Depth of Coal seam 5.2 m Max. Depth of Coal seam is 350.3 Mts. Total Geological Reserves is 285.548MT (217.748 MT by OC & 67.8 MTUG). Total Mineable Reserves is 223.09(195.97MT by OC &27.12 MT by UG).Further, extractable Reserves would be 202.17 MT(175.05MT by OC & 27.12MT by UG).Till date the Extracted Reserve (2006-Mar 12) 20.92 MT by OC mining. Underground mining is yet to be carried out.

ix. The grade of coal is E, F, G and ungraded.

x. Method of Mining Opencast (Shovel-Dumper) as well as Underground (Board & Pillar) method will be fully mechanised. The rated production capacity12 MTPA(10.8 MTPA Opencast and 1.2 MTPA by Underground. Stripping Ratio2.866:1 (cum:T).

xi. The transportation of coal is presently by dumpers. Coal & OB are transported from the mine to the CHP & dump/backfill.

xii. Kelo River flows along western edge of ML will not be disturbed. Bendra nala flows through north western part of ML area proposed to be diverted as part of implementation of EC for 6.25 MTPA. Diverted nala will be protected by leaving statutory barriers & constructing embankment. Total Water requirement 4600 cum/day, Existing 1790m^3/day & proposed water requirement 2810 5 m3/day. Industrial water and potable water is supplied from pumping installation at mine sump and settling pond.Top soil 1975 Mm^3 generated during life of mine will be used in greenbelt & reclamation simultaneously.61.60 M cum of OB will be backfilled within mine along with washery reject and fly ash generated from the power plant.

xiii. Total life of opencast mine was 37 years since inception i.e. 1998 and counted from 01.04.2012 will be 17 years proposed on increased production. Initial 2 years will be for developmental activities. Thereafter, life of underground mine will be 24 years from 2014-15 onwards.

xiv. CHP augmentation to **4.75 to 9.5 MTPA**. Process involves crushing and sizing. It is Two Products washery (i) to washery & (ii) direct use in TPP Cost of the project is Rs. 250 Crores. The capacity of washery is 4.75 MTPA Additional Capacity of washery is 4.75 MTPA ,clean coal ash content 40+/-1% ash Seam wise treatment are Washing – VII and VIII. Technology adopted is HM Cyclone with close circuit washing process .Raw coal 3.281 MTPA with ash content 51.8%, Clean Coal2.331 MTPA with 41.5 %ash content, Rejects .0.950 MTPA with 77%ash content.

xv. CSR activities proposed for year 2012-13 in surrounding villages of JPL Mines at the cost of Rs.3.21 Crore**.**

4.3 **The Committee after deliberation** noted that the increased production will reduce coal availability years for the original plant (4x250 MW) and desired that the proponent should come back with the permission from the Ministry of Power and Ministry of Coal for the proposed expansion production from the mine originally allocated to match the requirement of 4x250 MW for its full life. The Committee desired that the proposal may be considered after the receipt of the information.

5. Expansion of Coal Beneficiation Plant (2 MTPA to 4 MTPA) of M/s Global Coal & Mining Pvt. Ltd., in village Tentulei, South Balanad, Tehsil Talcher, dist. Angul, Orissa (EC based on TOR granted on 31.12.2008).Further consideration.

5.1 Director (T&C) informed the Committee that the proposal is for expansion of the coal washery from 2 MTPA to 4 MTPA as was earlier considered by the EAC (T&C) meeting held on 20th -21st June 2011 and again EAC (T&C) Meeting held on 21st-22ndFebruary 2012, wherein the Committee had desired that the quantum of raw coal, clean coal and coal rejects be

furnished in MTPA along with TPD for record of the Ministry. The Committee was of the view that the AAQ levels were low despite being located in a CPA and desired that the details should be got checked with Dr. Shiv Attri, Expert, EAC. Dr Shiv Attri member, EAC informed vide e-mail dated 08.05.2012 that the AAQ quality data provided by M/s Global Coal & Mining pertain to the period 1st September to 5th December 2011 instead of October 2011 to December 2011. The Committee desired that the PP should furnish AAQ for the one-season only for the period October-December 2011. It was informed that the other details sought by the EAC (T&C) are still awaited.

5.2 The Committee had desired that no pay loaders should be deployed for wagon loading.

5.3 Raw Coal linkage from the coal company for washing or beneficiation is from a basket of group of mines. It was agreed that as soon as MCL reverts to central dispatch point, Global Coal & Mining Pvt. Ltd. shall install it's conveyor system to lift coal from that location. As desired, it was further agreed that washed coal shall be conveyed to the proposed railway siding through a set of conveyors to avoid road transport. It was informed that coal is being received from 3 mines of MCL, Hingula at the distance of 22 km, Jgannath at the distance of 5 km and Samleshwari at the distance of 8 km. Washed coal 1.33MT send to APGENCO. The abandoned railway siding of FCI is being utilized for transportation. Presently, the loading is being done by pay loaders

5.4 The Committee after careful deliberation sought the following information for further consideration ofEC:

i. Committee informed that the project is in Angul which is in the CEPI area which is critically polluted area.
ii. The question raised during presentation pertain to Ambient Air Quality (AAQ) need to be appraised by Dr Shiv Attri, Member EAC. The committee advised proponent to send AAQ data to Dr Shiv Attri, Member EAC to seek his opinion and submit a copy to the Ministry. The proponent should explain the reasons for not submitting the AAQ data till December 2011.Copy of letter/report should be submitted.
iii. Methods be explored for recovery of Mercury in fly ash.
iv. As washery rejects goes to FBC Boiler of 35 MW Power Plant, till then M/s Navbharat has FBC who will take the rejects. A letter on this should be submitted to the Ministry.

6. Cluster V (7 mines of normative production capacity of 4.854 MTPA and 6.311 MTPA (peak) in combined ML area of 1957.08 ha) M/s BCCL Dist. Dhanbad, Jharkhand Jharkhand (EC based on TOR granted on 16.03.2011)

6.1 The proponent made a presentation. It was informed that the cluster V consists of 7 mines consisting of one OC Nichitpur mine, 5 OC and UG mines(mixed) Tetulmari Colliery, Mudidih Colliery, Sendra Bansjore, Kankanee Colliery, Bansdeo pur Colliery and one Loyabad UG closed mine of a combined ML area of 1957.08 ha and prod. capacity of 4.854

MTPA and 6.311 MTPA (peak) as given below. All mines are working except Loyabad UG mine which are closed for production.This proposal does not involve increase in leasehold area, change in technology or change in product mix in the mines. There are no ecologically sensitive areas within 10 km radius of buffer zone. There is no reported presence of endangered flora and fauna within study area. This cluster is bounded east by cluster VI group of mines and in the west by cluster IV mines and by cluster XI mines in the south and within Jharia Coalfields. Nagri Jore, renamed Sendra Jore in latter part, which is flowing north to south through middle of the cluster. Ekra Jore is flowing in the eastern part along the eastern boundary of the cluster. Damodar River which is on the south of the cluster is the main drainage of the area. NH-32 passes through the cluster. NH-2 is at a distance of 6.1 km. from the lease hold and connects the mines with Kolkata and New Delhi. No forest land involved in the cluster V.

S.N.	**MINES IN CLUSTER -V**				
	Name of Mine	**Production capacity(MTY)**		**Lease Hold Area(HA)**	**Life of Mine (years)**
		NORMATIVE	**PEAK**		
1	Nichitpur OC Mines	0.6	0.78	150	10
2	Tetulmari Colliery Opencast & Underground mines	0.795	1.033	317	>30
3	Mudidih Colliery Opencast & Underground mines	1.553	2.019	378.05	>30
4.	SendraBansjore Colliery Opencast & Underground mines	0.75	0.975	249.63	23
5	Kankanee Colliery Opencast &Underground mines	0.48	0.624	258.12	>30
6.	Bansdeopur Colliery (consisting of proposed open cast and existing under ground mine)	0.676	0.879	104.72	>30
7.	Loyabad UG Mines (closed for coal production)	0	0	499.56	-
	Total	**4.854**	**6.311**	**1957.08**	-

LAND USE OF CLUSTER V				
S.No	Type Land Use	Present Mining Land Use(In Ha)	Proposed Mining Land Use(In Ha)	Post- Mining Land Use(In Ha)
1.	Running quarry			
	Backfilled	112.13	36.35	0.00
	Not Backfilled	123.47	44.38	0.00
2.	Abandoned quarry			
	Backfilled	82.53	0.00	0.00
	Not Backfilled	48.98	0.00	0.00
3.	External OB dump	73.07	0.00	0.00
4.	Service building/mine infrastructure	13.87	11.86	0.00
5.	Coal dump	12.15	12.15	0.00
6.	Rail & Road	124.03	113.22	113.22
7.	Homestead land	272.93	248.00	248.00
8.	Agriculture land	14.00	14.00	14.00
9.	Plantation/reclamation	150.45	979.25	1089.62
10	Water body	29.19	51.57	95.95
11.	Barren land	900.28	446.28	396.28
Total		1957.08	1957.08	1957.08

A total area of 1089.62 ha would be reclaimed and afforested. Eco-restoration of BCCL mine areas is to be implemented in two phases over a period of 10 years, of which, Phase-I is from 2011-16 and Phase-II from 2016-2021. It was informed that The Loyabad UG Mine mine is closed because of water logging. The proponent is planning to enter from Putki side. There is no increase in ML area. The Loyabad has maximum ML area of i.e. 499.56 ha. Proponent proposed fresh opening for Loyabad.

CONCEPTUAL POST MINING LAND USE OF CLUSTER-V					
Land use Category	Present (1^{st} Year)	5^{th} Year	10^{th} Year	15th Year	More than 15 years and post mining

Backfilled Area (Reclaimed with plantation)	50	144.66	194.66	214.66	300.35
Excavated Area (not reclaimed)/ void	172.46	77.8	27.8	7.8	0
External OB dump Reclaimed with plantation)	5	13.07	18.07	28.07	73.07
Reclaimed Top soil dump	Included in Backfilled Area				
Green Belt Area	154.45	165.45	175.45	185.45	226.45
Undisturbed area (brought under plantation)	7	147	177	197	489.77
Roads (avenue plantation)	Included in Green Belt Area				
Area around buildings and Infrastructure (brought under plantation)					
Total	388.91	547.98	592.98	632.98	1089.64

The details of Rehabilitation Cluster -V		
S.N.	Parameter	Details
1.	Total Voids	25.87 Mm^3
2.	Total External OB	21.92 Mm^3
3.	Total Unstable Sites	77 no.
4.	Total Affected Areas	1383420 m^2
5.	No. of Houses to be rehabilitated	5835 no. as per JAP
6.	Land for Resettlement	39.76 ha (BCCL land) 72.53 ha (Non-BCCL land)
7.	Total cost of fire dealing	16465 lakhs
8.	Total resettlement Cost	Rs 104024.9 lakhs

ENVIRONMENTAL ISSUES-MITIGATION & BENEFITS CLUSTER-V	
Major Env. issues	Mitigation measures & Benefits
Voids (172.45 Ha.)	105.69 Ha. Backfilling and 66.76 Ha. Water body
Ex. OB Dumps(73.07 Ha.)	Use for backfilling. No external dumps will be there.
Fire/Unstable area (77 sites with 1.38 sqkm consisting of 5835 families)	Dig out fire at cost of Rs.164.65 Crores and rehabilitate affected families at cost of Rs. 104024.9 lakhs
Loss of coal (10% locked in barriers)	Recover 11.74 MTof coal from barriers
Reclamation/Mine closure	Additional Plantation in 939.17Ha. Rs.8745.12 lakhs (Fund allocation for mine closure as per MoC guideline and adopted by BCCL @ Rs.1 lakh/Ha. in case of U/G mines and Rs.6 laks/Ha. in case of OCP mines)
CSR	Rs.242.7 lakhs per year (Fund allocation for CSR as per CIL guideline and adopted by BCCL @ Rs. 5/tonne of Coal produced

THE MAJOR PROJECT PARAMETERS OF THE 7 MINES OF CLUSTER-V						
Name of Mines	Tetulmari OC	Tetulmari UG)	Mudidih OC	Mudidih UG	SendraBansjore OC	SendraBansjore UG
Lease Area (Ha)	317.00		378.05		249.63	
Life (in years)	12	>30	10	>30	23	2
Method of Mining	Shovel Dumper Combination	Bord & Pillar	Shovel Dumper Combination	Bord& Pillar	Shovel Dumper Combination	Bord& Pillar
Seams to be worked	VIIIA, VIII, VII, V/VI, IV	II & III	XII,XI,X,VIIIC,VIIIA,VIII,VII ,V/VI, IV	IV T&B	VIII/VIIIA to IV	III
Max depth of mine (m)	75-116 m	167-185 m	55-128 m	115-300 m	100-120 m	137-190 m
Grade of Coal	W-IV & D	D	W-II/ W-IV	W-IV	W-IV to D	W-III
Mineable Reserve MT	8	9.6	7.44	37.63	2.57	12

Manpower	495	1403	421	1060	421	1399
Production in 1993-94 (MT)	0.270	0.129	0	0.241	0.329	0.317
Production in 2009-10(MT)	0.680	0.108	0.177	0.095	0.110	0.134
Proposed peak Production (MTPA)	0.845	0.188	1.781	0.238	0.780	0.195
Cost of production (Rs/T)	775.67	4160.43	997.75	4575.43	3538.36	4745.95

TECHNICAL PARAMETERS OF CLUSTER –V						
Name of Mines	Bansdeopur OC	Bansdeopur UG	Loyabad UG (Closed)	Kankanee OC	Kankanee UG	Nichitpur OC
Lease Area (Ha)	104.72		499.56	258.12		150.00
Life (in years)	3	>30	-	11	>30	10
Method of Mining	Shovel Dumper Combination	Bord& Pillar	-	Shovel Dumper Combination	Bord& Pillar	Shovel Dumper Combination
Max depth(m)	125 m	112-186 m		75-155 m	160-280 m	58-150 m

Grade of Coal	ST-II, W-II, W-III	W-IV, W-III	St-II, W-II	W-IV	W-IV & D	W-IV & D
Mineable Reserve MT	1.67	5.16	-	4.15	21	6.40
Seams to be worked	XIV,XIII,XII,XI,X and IX	VIII and X	-	XI, XII, XIII, XIV	X, VIIIC, VIIIA, VIII	VIII/VIIIA to V/VI , IV , III, II
Manpower	473	713	-	212	610	728
Production in 1993-94 (MT)	0	0.136	-	0	0.212	0.273
Production in 2009-10(MTPA)	0	0.095	-	0.813	0	0.643
Proposed peak Production (MTPA)	0.723	0.156	-	0.468	0.156	0.78
Coos production (Rs/T)	453.60	2768.37	--	482.43	9824.71	1138.18

PROPOSED PRODUCTION IN OPEN CAST CLUSTER –V								
Sl No.	Year	Nicitpur OC	Tetulmari OC	Sendra Bansjore OC	Bansdeopur OC	Mudidih OC	Kankanee OC	Total
1	2012-13	1.75	1.20	1.30	2.50	7.00	2.50	16.25
2	2013-14	1.70	1.10	1.40	2.50	7.10	2.50	16.3

3	2014-15	1.70	1.00	1.20	2.35	6.80	2.30	15.35
4	2015-16	1.65	1.00	1.10	2.55	7.20	2.40	15.9
5	2016-17	1.60	1.00	1.10	2.50	6.90	2.50	15.6
6	2017-18	1.75	1.20	1.20	2.35	6.80	2.30	15.6
7	2018-19	1.75	1.20	1.20	2.40	7.00	2.40	15.95
8	2019-20	1.80	1.20	1.20	2.50	7.00	2.40	16.1
9	2020-21	1.85	1.10	1.40	2.50	7.15	2.40	16.4
10	2021-22	1.85	1.20	1.20	2.35	7.20	2.35	16.15
11	2022-23	1.80	1.10	1.50	2.55	7.00	2.55	16.5
12	2023-24	1.80	1.10	1.50	2.50	7.10	2.50	16.5
		21	13.4	15.3	29.55	84.25	29.1	192.6

Ground water level is in the range from 3-6.80 m bgl during pre-monsoon and 2.30-1.54 m bgl during post-monsoon in the core zone. Total peak water requirement is 9537 m3/day,of which 3,477m^3/day is for industrial purposes,2015m3/day is for domestic use and 4045 m^3/day for township. Total 21.92Mm3 of O.B. will be generated from six opencast mines during their whole life.A total of 21.92 Mm3 of OB exists as the external OB dump. OB is now being dumped internally over the de-coaled area. 73.07 Ha of external OB dump has been biologically reclaimed. 172.45 Ha of abandoned quarry will be backfilled, leveled and plantation developed over them. Internal back filling would be upto ground level and internal dump height would be zero.Top soil will be spread over the dumps in uniform thickness. The height of the OB dump will be maximum **58m**.The water body will increase from present 29.19 Ha to 95.95 Ha 15-20 mt depth will be used for community /Pisciculture.

Coal transportation would be mainly by rail cum conveyor mode and the remaining would be by road. Most of the coal of Tetulmari UG and Tetulmari OC is transported to Sendra Bansjora (SB) which is at the distance of 2.82km and Jogta Railway sliding 2.84 km by road. Coal of Sendra Bans jora is transported to Sendra Bansjora (SB). Coal from Nichitpur OC is transported to Sendra Bansjora (SB) which is 2.1km, Coal from Mudidih is transported to Jogta RS 0.3Km, Coal from Bansdeopur OC is transported to Jogta Kankanee whichis3.7km, Coal from Kankanee to Kankanee at the distance of 1 km. Some amount of coal is being transported by roads, some of which are fire affected and need to be removed/ shifted. Maximum subsidence, slope and tensile strain over the mining area due to coal extraction in Tetulmari UG is 4.590, 152.14, and tensile strain is 74.52mm/m, Kankanee UG after extraction, 2.100mm/m subsidence, slope 86.47and tensile strain 42.01mm/m. Bansdeopur UG, after extraction of all seams subsidence1.690,slope 46.85 and tensile strain 23.04, subsidence of Sendra Bansjora UG 1.532, 38.30

slope and tensile strain 19.15 mm/m respectively. Surface cracks likely to develop due to subsidence over the mining area is being filled up properly and regularly by clay and stone chips, and thereafter with about 0.3 m high clay heap over the cracks. It helps in retaining the original drainage pattern and run-off water over the mining area, improving the water retention capacity of the soil, minimizing top soil erosion and chances of underground inundation and spontaneous heating.This dump height is approximately presently it is backfilled against the mine edge in continuation with external dump.

LIST OF FIRE IN CLUSTER -V		
Sl. No.	Name of the fire	Fire Status
1	Kankanee XIII & XIV seam fire	Active
2	Jogta XV, XIV, XIII, XII, XI seam fire	Active
3	Loyabad XV, XIV, XIII seam fire	Active
4	SendraBansjora XIV, XIII, XII, XI seam fire	Active
5	Bansdeopur XIV, XII seam fire	Active
6	Tetulmari IV seam fire	Active
7	Tetulmari VI/VII seam fire	Active
8	Mudidih fire	Dormant
9	West Mudidih IX/X seam fire	Extinguished
10	SendraBansjora X seam	Active

GROUPING OF FIRES INTO PROJECTS		
SL. No.	CODE NAME OF FIRE PROJECTS	ORIGINAL FIRE NAME
1	JCF-F/SIJUA/SENDRA BANSJORA/I/21 (Part-I)	Sendra X seam
2	JCF-F/SIJUA/MUDIDIH/9	Mudidih Fire
3	JCF-F/SIJUA/TETULMARI(W)/II/15	Tetulmari V/VI seam
4	JCF-F/SIJUA/TETULMARI(E)/II/16	Tetulmari IV seam
5	JCF-F/SIJUA/SENDRA BANSJORA/I/21	Ekra XI,XII seam
6	JCF-F/SIJUA/JOGTA/II/27	Jogta XV, XIV, XIII, XII,XI seam
7	JCF-	Bansdeopur XIII,XIV seam

	F/SIJUA/BANSDEOPUR(E)/II/29	
8	JCF-F/SIJUA/BANSDEOPUR(W)/II/30	Bansedopur XIII,XIV seam

6.2 It was informed that the control of fires and rehabilitation of affected families from fire and subsidence affected areas within Cluster-V would be carried out in phased manner. It was informed that OB dump fires would be dealt with by cooling, quenching and removal, excavation of fire material and filling with cohesive soil and surface sealing. It was informed that reclamation work on two OB dumps of about 8 ha with the technical guidance of Dr. C.R. Babu, Professor Emeritus, University of Delhi.The mines in the cluster have been severely affected by fire and subsidence mainly due to unscientific mining prior to nationalization. No mining would be undertaken in fire affected areas. Isothermal mapping using thermal imaging has been got done by NRSA. Measures would be taken to prevent ingress of air (ventilation) in such areas, which may re-start fresh fires. Opencast mining is proposed before start of underground mining. There would be no external OB dumps. OB from the 6 OC patches would be backfilled. At the end of the mining there would be no void and the entire mined out area re-vegetated. A minimum safety distance of 60m would be maintained between opencast and underground operations. The mines in the cluster –V have been severely affected by fire and subsidence mainly due to unscientific mining prior to nationalization. Out of 595 unstable sites identified in the Jharia Master Plan, 77 sites with an area of 138.34 Ha consisting of 5835 no. of houses/families are affected. The affected families will be rehabilitated in adjacent non coal bearing area at a cost of Rs. 104024.9 lakhs. Mitigative Measures to Control Fire are total excavation of coal and filling up with combustible materials. Preventive measures to check OB dump fires Cooling, quenching and removal and excavation of fire material and filling with cohesive soil, Surface sealing and blanking etc. The cluster of mines will be dovetailed with the approved Jharia Action Plan for dealing with fire, subsidence and rehabilitation of people. Master Plan for dealing with fire, subsidence and rehabilitation within the leasehold area of BCCL has already been approved by Government of Jharkhand & Government of India. For Cluster-V, 39.76 Ha of land is required for rehabilitation of 2485 families. Encroachers will be provided with a house constructed on about 27 sq. m land in triple storied building in the resettlement site. However, provision of 11 sq m of land has been considered for construction of another room in future. Considering the amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for encroachers has been estimated at 310.01 Ha (@ 130 m^2/house). For Cluster-V, rehabilitation of 991 families is required. Total 72.53 ha of land has been earmarked for rehabilitation non-BCCL families**.** The BCCL houses will be resettled in satellite townships with equivalent type of houses in triple storey building. The weighted average plinth area of the houses proposed to be rehabilitated has been estimated at 48.09 sq m /house. Considering the

amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for BCCL houses has been estimated at 400.00 Ha. (@ 160 m2 /House).Public hearing was held on 04.05.2012.The issues raised were plantation, conservation, water spraying, drinking water, Excessive dust spreads through HEMM drill machine, polluted dust comes out from HEMM in Nichitpur OCP, mines run 100 mtrs distance from Chandour village, Tetulmari and no work is done for environment. Fire has been appeared around the colliery office. Steps may be taken for this and Chandour Sonar Basti should be displaced. Scarcity of water spraying in number, community building may be constructed in Mohalidih panchayat, for high school may be done for girls in Mohalidih panchayat, Electricity, water, and medical facilities may be arranged in Nagri kala north village, Covered transporting with tarpaulin may be arranged. Development of sports/game may be done through welfare fund. Plantation done in area V on 150 ha may be provided, there is a siding of (Area-IV) out of Cluster – V nearby, trees are being destroyed for extension of siding, steps for saving trees may be done, Excessive dust spreads from Naya more to due to coal transporting of other area, Covered transporting may be arranged for this, Transporting of covered Tarpaulin may done near girls high school, Closed UG mines may be opened., Leveling of OCP Pit and plantation may be done and a committee of villagers may be made for maintenance of plantation, Water may be filled in Chandour Pond, Transporting takes place nearby at Loyabad, This weigh bridge should be shifted. An order may be given to outsourcing company for excavation of coal within the jurisdiction area, so that environment may be saved. As per the latest CIL's Policy, the company will spend 5% of the retained Earning of the previous year subject to a minimum of Rs. 5/- per tonne of coal production amounting to Rs.242.7lakhs every year on CSR. For 2013 onward CSR would be Rs 243.0 Lakh/annum. It was informed that BCCL has formulated its Corporate Environment Policy.

6.3 Plantation at the end of the life of mine would be in 939.19 ha with 1,878,380plants.Capital cost of EMP Rs 600 Lakh and revenue is 1036 lakh. Cost of project is Rs. 204.84 crores.

6.4 The Committee after deliberation recommended the Cluster V for Environment Clearance with the following conditions:

i. 100% backfilling should be carried out.
ii. There should be no external OB dump at the end of mining.
iii. No water body should be left at the end of mining.
iv. Biological reclamation of entire cluster area should be carried out.
v. The local/indigenous institution should be identified /contracted for plantation etc.

vi. Permanent /regular ambient air monitoring is required for CO,CO_2, Methane and its homologues .monitoring station, mobile monitoring should be established at suitable location as the temp in the mine is high ,in the presence of CH_4,the coal may catch fire. Presence of Aromatic compounds should be investigated as most of the aromatic compounds are carcinogenic.

vii. Local institution/university should be contacted for such type of study. Exact measurement for the presence of above gases and their potential danger/harmful effect on human should be assessed. ISM Dhanbad and any local university could be contacted for monitoring.

viii. The road transportation should be by bigger/high capacity trucks. The road should be strengthened carry the load of high capacity trucks. Railway siding with silo loading be completed by December, 2015 as informed by the proponent.

ix. Master Plan for dealing fire for next 12 year which is under implementation, Details of same from August2011 till date year-wise should be provided. An Action Plan and its progress should be submitted to the ministry.

x. CSR should be Rs 4.6 Lakh for cluster –V for year 2012-13 and thereafter.

xi. Social Audit should be carried out for CSR for its actual implementation.

xii. Mine Closure Plan of Cluster –V is in draft stage ,the same should be submitted to ministry

7. Cluster IX group of six mines (combined preproduction capacity of 6 MTPA with a pick capacity of 7.5 MTPA in a total combine ML area of 1942.12 ha) of M/S Bharat Coking Coal Limited located in Jharia Coal Field (EC based on TOR granted on 23.12.2010- Further consideration)

7.1 The proposal was earlier considered in EA C meeting held on 17^{th}-18^{th} September 2012 and committee desired following information:

7.2 Submission of the mining plan and post-Mining closure plan for EC as in cluster IX maximum area under fire, so mining plan is very crucial in this area; Preventive measures should be taken for further spread of fire; (iii) Technical; presentation is required for extinguishing fire and other issues related to fire in the cluster IX area; During the forthcoming visit of Committee in Dhanbad, Jharkhand in October 2012, presentation should be arranged for methodology to be adopted to reduce/extinguish fire in cluster IX; the local expert in this field like DGMS, Academic Institute etc should be contacted; (v) BCCL may; request ISRO to assist them to put a thermal imaging camera in satellite for monitoring of underground fire;The mining methodology should be adopted to prevent fire lower seams; Indira Gandhi Centre of Atomic Research, Kalpakam can be contacted as it may have some expertise in dealing fire; (viii) Committee desired that during the visit of Committee to Dhanbad, Jharkhand in October 2012, Dr C.B.S. Dutt, Member of the EAC and Dr. Mahapatra, Mr. Raghu ,G.M, Aerial

photography may be invited by the BCCL for giving a detailed presentation; Safety aspect of the area and mines should be taken with utmost care; Transportation of coal in cluster should also be looked into and information be provided to the Committee.

Proponent made presentation. It was informed that all most all the collieries/ mines of BCCL are taken over from the erstwhile private owners. So the mines do not have structured mining plans. The mining operations are being continued as amalgamated collieries in Cluster-IX. NT/ST Expansion OCP, Project report has been prepared by CMPDI and has also been approved by BCCL Board. The draft mine closure plans for all the collieries of the Cluster-IX have also been prepared by CMPDI and shall be submitted to MOEF on finalization and approval by the MOC. It was informed that most of the fires in this Cluster are surface fires and in order to control the spread of fires, the NT-ST Expansion OCP has been formulated by amalgamating other collieries. Beside this, fire control measures are being done by BCCL in this Cluster eg. Excavation of fire material and filling with cohesive soil ,Filling of opencast high wall, shafts, inclines and other subsided areas, Isolation by trenching and backfilling with soil, Construction of grout barrier and isolation against rail, road and jores, Surface sealing and blanketing, Blind flushing with sand / fly ash / grout mixture, Cooling by water curtain / infiltration pond, Cooling, quenching and removal, Seam sealing, tunnel plug and underground stopping. Technical Presentation for extinguishing fire and other related issues of fire in the Cluster-IX has been done by CIMFR, Dhanbad and CMPDI, RI-II, Dhanbad on 30.10.2012 at BCCL, Dhanbad during their visit to Dhanbad from 27.10.2012 to 31.10.2012.The local experts in this field like experts from DGMS, ISM, CIMFR and DC, Dhanbad were invited as special invitees for deliberations on the matter. BCCL had already requested NRSA, Hyderabad for conducting Thermal Imaging Survey for monitoring of underground fires. Most of the fires in Jharia Coalfield are confined up to the combined seam ranging a depth of about 100 meters. A large project namely NT-ST Expansion OCP has been formulated mainly for digging out fire in Cluster-IX upto the lowest depth. This will ensure the total control of fire in Cluster-IX and spreading of fire to surrounding areas. The main mining methodology will be by excavation method as suggested in the approved Master Plan for fire, subsidence and rehabilitation. As suggested by EAC, BCCL is in contact with Indira Gandhi Centre of Atomic Research, Kalpakam for collaboration for gaining expertise in dealing with coal mine fire in Jharia Coalfield. As suggested by the Committee, Dr. C.B.S.Dutt, Dy. Director, NRSC, Hyderabad had visited BCCL along with the EAC team and has deliberated at length about the mine fires and also suggested various measures in this respect. Regarding the transportation of coal in Cluster-IX , the same plan shall be followed as suggested for other Clusters approved by committee.

7.3 The Committee after deliberation recommended the Cluster-IX for Environment Clearance with the following conditions.

i. Action to be taken to segregate and isolate the fire areas eg. trench cutting for isolation of fire.
ii. Area-wise Action taken report for extinguishing the fire should be provided.
iii. For extinguishing fire 'Mission Mode Programme' is required wherein scientists and other experts be involved. Committee desired that the principal advisor of Hon'ble Prime Minister should be contacted and all the documents related to fire should be handed over to him for his suggestion, if any. Any international agency may also be contacted for their expertise in extinguishing the fire in such big area.
iv. The recommendations of Indira Gandhi Centre of Atomic Research, Kalpakam should be strictly following dealing with fire in coal mine in Jharia coalfield.
v. Transportation Plan should be submitted to the MoEF.
vi. The proponent informed that the Mine Closure Plan of Cluster –IX is in draft stage. This be finalized and should be submitted to MoEF.
vii. There should be no external OB dump at the end of mining.
viii. The discharge of washery should be stopped in Damodar River. Detail of same is to be provided.
ix. There should be no external OB dump at the end of mining.
x. The void should be in 30 ha area with 30mt depth.

8. Expansion of Coal Washery (0.9 MTPA to 4.5 MTPA) of M/s Swastik Power & Mineral Resources Pvt. Ltd., located in Tehsil Katghora, Dist. Korba, Chhattisgarh (TOR) For extension of TOR validity by one year issued by MoEF on 20.07.2012 vide letter Further consideration

The proponent did not attend the EAC meeting. The project is deferred to the next meeting.

9. Shahpur East &Shahpur West underground mine (1.3 MTPA in1280 ha ML area) and (0.45 MTPA in 587.50ha ML area) Underground Coal Mining Projects of M/s National Mineral Development Corp. Ltd., Tehsil Sohagpur in dist. Shahdol and Tehsil Pali in dist. Umaria, M.P. For extension of TOR validity by one year issued by MoEF on 29.10.2010 vide letter NMDC/ ENV./ COAL/MP/2012 DATED3.11.2012 for integrated proposal.

9.1 The Proponent made the presentation. It was informed that Terms of Reference was granted by MoEF vide letter No: J-11015/280/2010-IA.II(M) dated 29/10/10 for preparation of Integrated EIA/EMP report for two UG Coal Mining Projects i.e. Shahpur East & West coal blocks of combined peak production capacity of 1.105 MTPA over a combined ML area of 1280.50Ha.The TOR is valid up to 2 years i.e 29/10/12. The proponent informed that after receipt of TOR, Baseline

Environmental data has been generated during winter season i.e. December'10 to February'11.Subsidence studies were conducted through BHU, Varanasi, The proponent mentioned the draft EIA/EMP report has been was prepared, but couldn't finalized due to enhancement of production capacity in Shahpur West Coal Block from 0.405 MTPA to 0.60 MTPA. It has requested for modification of TOR w.r.t Production Capacity from 1.105 MTPA to 1.30 MTPA. The Committee considered favorably in the EAC meeting held on 28th August 2012. However, EAC asked NMDC to submit separate application for extension of time for validity of TOR for further consideration.

9.2 The NMDC has submitted Application in Form-1 for obtaining extension of validity of TOR for integrated proposal for completing the following works on 3.11.2012.The draft EIA/EMP report shall be finalized on modification to TOR w.r.t production capacity. The draft EIA/EMP report shall be submitted to MPPCB, Bhopal for Public Consultation. Two Public consultations covering the two districts Shahdol and Umaria would be required to be conducted by RO, MPPCB, Shahdol in consultation with both District Collectors. Final EIA/EMP report shall be prepared incorporating the observations/comments of Public consultation process and submitted to MoEF.

9.3 The Committee has recommended for extension of the validity of TOR period upto 29/10/13

10. Merta Road Lignite Mine Project (1 MTPA in an ML area of 1645 ha) of M/s NSL Power, located in Tehsil Merta, dist. Nagaur, Rajasthan (TOR)-Further Consideration

10.1 The project proposal was earlier considered in EAC meeting held on 19th March 2012.Thecommittee sought the following Information:

i. A detailed study on impact of mining on the groundwater regime and re-handling the OB to reduce the external OB dump to minimize the land requirement for external storing of OB; and
ii. Mine void to 40 m depth should be examined and mining plan be appropriately revised.

10.2 The Proponent made presentation and informed that:

i. As per CGWB report on Ground Water Scenario in Nagaur Dist. Released in 2009, termed Nagaur block as safe.
ii. Annual Replenish able water resources are 548.369 mcm against the projected demand of 228.897 mcm .A detailed study will be conducted during the EIA studies and the same will be incorporated in the EIA report. All possible measures will be explored and impact mitigation measures will be chalked out for implementation.

iii. The thickness of Aquifer is 46 to 72 m. The depth of water table9.30 to 54 m bgl in Pre-Monsoon and 10.35 m to 6.484 m bgl in Post- monsoon season.

iv. The depth of Confined aquifer is more than 109 m Estimation of Pumping from Aquifer average permeability of 6.642 m/day .Drawdown 30 m and radius of cone of depression 3000 m surface area of seepage at 68,000sq.m Aquifer Boundary 10 Km away from active mining area. The aquifer A has sweet water but Aquifer B has slightly saline water.

v. The Average Striping ration is 1:36.42. Initial excavation volumes are large and needs external dump areas.88% of OB will be accommodated in the pit itself (Internal dump).

vi. Re-handling the initial OB volumes may not be feasible. Minimum area shall be acquired for OB dumping . The proponent has plan to acquire only 135 Ha against the requirement of 185ha

10.3 The Committee after deliberation recommended the project for TOR:

i. Wet land mapping should be carried out.(as TOR condition)

ii. The State Groundwater board should be contacted

iii. Hydrogeology of the area should be done in detail. Conflict of Agriculture in the area, total population (as TOOR Condition).

iv. The OB dump should be in mineralized area but not outside the ML area

v. Potential water stress, over exploitation of water taking place, water is being used for double crop, there are large number of ponds ,large number of wetlands in the area

vi. The proponent should create atmosphere of mining

vii. Presence of Sanctuary in the area should be checked.

viii. The 'Nadis' (wetlands/water bodies) are unique landforms that support life in arid/desert area of Nagaur. These low lying depressions receive surface drain from vast flat landscapes and hold water for short/long periods depending on the catchment size. The local communities, over a period of time, deepened the basin of these Nadis and erected crescent shaped embankments on side where there were no surface drainage channels. These 'Nadis' not only recharge ground water and provide adequate water for irrigation, drinking, bathing and washing but also serve as water source for livestock and wildlife. Above all, these Nadis and the surrounding grazing lands form habitat for birds and wildlife such as Chinkara. In short there will be no life in the absence of Nadis which are life supporting systems. Butati Nadi has a highly religious and cultural significance.

ix. More than 83% of ML area is flat agricultural land that supports three crops per year with the help of tube well irrigation. Further, these agricultural fields harbor 100's of trees of *Prosopis cineraria* the tree of life in desert and Acacia – that provide fodder and fire wood and substantial number of Neem trees which provide fire wood as well.

x. The Gram Panchayat members of the have refused outright to part their lands for the project and also emphasized that the Nadis and grazing lands are an integral part of their livelihoods and would not be allowed to be disturbed under any circumstances .

xi. The mine void at the end of mining may contain only saline water as the mining may disrupt saline confined aquifer and huge quantity of rain discharged into void will also ultimately become saline. This will have a negative impact on the recharging of ground water.

xii. The villagers of outrightly rejected handing over their lands, that provide 2 to 3 crops a year for them categorically mentioning that those land oustees whose lands were taken in the last by the Project Proponent and even by other cement companies in the vicinity, have already lost their moorings and become paupers.

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ANNEXURE-1

PARTICIPANTS IN 61st EXPERT APPRAISAL COMMITTEE (EAC) (THERMAL & COAL MINING) MEETING HELD ON 19th -20thNOVEMBER, 2012 ON COAL SECTORPROJECTS.

1.	Shri V.P. Raja	…… Chairman
2.	Prof. C.R.Babu	Member
3.	Shri T.K. Dhar	Member
4.	Shri J.L. Mehta	Member
5.	Prof. Roonwal	Member
6.	Dr. Shiv Attri	Member
8.	Dr.Manoranjan Hota	…….Director MOEF& Member Secretary
9.	Dr. Rubab Jaffer	…..Scientist B, MOEF

Special Invitee:

Dr R. K. Garg, Advisor, Coal India Limited

PARTICIPANTS IN 61st EXPERT APPRAISAL COMMITTEE (EAC) (THERMAL & COAL MINING) IN THE MEETING HELD ON 19th-20th NOVMBER, 2012 ON COAL SECTOR PROJECTS.

M/s Tenughat Emta Coal Mine

1. Shri Saukar Banerjee
2. Dr. B.K. Tiwari
3. Shri N. C. Mukherjee
4. Shri S.C. Chatterjee
5. ShriA.K. Tooley
6. Shri A.R. Sharma
7. Shri Nirmal Shah

M/s Tata Steel

1. Shri Chanakya Chaudhary
2. Shri Pankaj Satija
3. Dr. M.K. Gupta
4. Shri Subhash Jeth
5. Shri Ajay Sahay
6. Shri N.C. Varma
7. Shri V.K. Singh

M/s Jindal Power Ltd.

1. Shri T.K. Prasad
2. Dr. J.K. Soni
3. Shri I.N. Rao
4. Dr. Singh

5. Shri RajanAnand
6. Shri Shar
7. Shri S.K. Gupta
8. Shri A.K. Singh
9. Shri H.K. Singh
10. Shri S.C. Pal
11. Shri Sanjay Kumar Sharma
12. Dr. Marisha Sharma
13. Shri B.D. Sharma

M/s Global Coal & Mining Pvt. Ltd.

1. Shri V.K. Sehgal
2. Shri R. Bhambry
3. Dr. B.K. Pal

M/s BCCL

1. Shri D.C. Jha
2. Shri V.K. Pandey
3. Dr. E.V. R. Raju
4. Shri S. Parsja
5. Shri V.K. Sinha
6. Shri Sumit Datta

M/s NDMC

1. Shri J. A. Kamalakar
2. Shri John Thomas
3. Shri M. NasimAssari
4. Shri K.K. Basu

M/s NSL Power

1. Shri B.S. Rao
2. Shri V. Vinod Kumar
3. Shri E. Shyam Sunder

ANNEXURE-3

GENERIC TOR FOR COAL WASHERY

Based on the presentation made and discussions held, the Committee prescribed the following TOR:

(i) A brief description of the plant, the technology used, the source of coal, the mode of transport of incoming unwashed coal and the outgoing washed coal. Specific pollution control and mitigative measures for the entire process.

(ii) The EIA-EMP report should cover the impacts and management plan for the project of the capacity for EC is sought and the impacts of specific activities on the environment of the region, and the environmental quality ?air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts for the rated capacity. If the washery is captive to a coal mine/TPP/Plant the cumulative impacts on the environment and usage of water should be brought out along with the EMP.

(iii) A Study area map of the core zone and 10km area of the buffer showing major industries/mines and other polluting sources, which shall also indicate the migratory corridors of fauna, if any and the areas where endangered fauna and plants of medicinal and economic importance are found in the area. If there are any ecologically sensitive areas found within the 15km buffer zone, the shortest distance from the National Park/WL Sanctuary Tiger Reserve, etc should be shown and the comments of the Chief Wildlife Warden of the State Government should be furnished.

(iv) Collection of one-season (non-monsoon) primary base-line data on environmental quality ?air (PM_{10}, $PM_{2.5}$, SOx and NOx), noise, water (surface and groundwater), soil.

(iv) Detailed water balance should be provided. The break-up of water requirement as per different activities in the mining operations vis-à-vis washery should be given separately. Source of water for use in mine, sanction of the competent authority in the State Govt..and examine if the unit can be zero discharge including recycling and reuse of the wastewater for other uses such as green belt, etc.

(vi) Impact of choice of the selected use of technology and impact on air quality and waste generation (emissions and effluents).

(vii) Impacts of mineral transportation - the entire sequence of mineral production, transportation, handling, transfer and storage of mineral and waste, if any, and their impacts on air quality should be shown in a flow chart with the specific points where fugitive emissions can arise and the specific pollution control/mitigative measures proposed to be put in place.

(viii) Details of various facilities to be provided for the personnel involved in mineral transportation in terms of parking, rest areas, canteen, and effluents/pollution load from these activities. Examine whether existing roads are adequate to take care of the additional load of mineral [and rejects] transportation, their impacts. Details of workshop, if any, and treatment of workshop effluents.

(ix) Impacts of CHP, if any on air and water quality. A flow chart of water use and whether the unit can be made a zero-discharge unit.

(x) Details of green belt development.

(xi) Including cost of EMP (capital and recurring) in the project cost.

(xiv) Public Hearing details of the coal washery to include details of notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments made in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.

(xv) Status of any litigations/ court cases filed/pending on the project.

(xvi) Submission of sample test analysis of:

I Characteristics of coal to be washed- this includes grade of coal and other characteristics ?ash, S and and heavy metals including levels of Hg, As, Pb, Cr etc.

II Characteristics and quantum of washed coal.

III Characteristics and quantum of coal waste rejects.

(xvii) Management/disposal/Use of coal waste rejects

(xviii) Copies of MOU/Agreement with linkages (for stand-alone washery) for the capacity for which EC has been sought.

(xxxvi) Submission of sample test analysis of:
Characteristics of coal to be washed- this includes grade of coal and other characteristics ?ash, S

(xxxviii) 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.

ANNEXURE -4

GENERIC TOR FOR AN OPENCAST COALMINE PROJECT

(i) An EIA-EMP Report would 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 cover the impacts and management plan for the project specific activities on the environment of the region, and the environmental quality ?air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modelling for **???. MTPA** of coal production based on approval of project/Mining Plan for ???MTPA. Baseline data collection can be for any season except monsoon.

(iii) A map specifying locations of the State, District and Project location.

(iv) A Study area map of the core zone and 10km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage of rivers/streams/nalas/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 area of the buffer zone 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 of the land use. Satellite imagery per se is not required.

(vi) Map showing the core zone delineating the agricultural land (irrigated and unirrigated, 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 2-5 km of the buffer zone (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated as a separate map.

(viii) A detailed Site plan of the mine showing the various 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 and if any, in topography such as existing roads, drains/natural water bodies are to be left undisturbed along with any natural drainage adjoining the lease /project 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.

(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.

(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.

(xi) Break up of lease/project area as per different land uses and their stage of acquisition.

LANDUSE DETAILS FOR OPENCAST PROJECT

S.N.	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			

(xii) Break-up of lease/project area as per mining operations.

(xiii) Impact of changes in the land use due to the start of the projects if much of the land being acquired is agricultural land/forestland/grazing land.

(xiv) Collection of one-season (non-monsoon) primary baseline data on environmental quality - air (PM_{10}, $PM_{2.5}$, SO_x, $NO_x$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.

(xv) Map of the study area (1: 50, 000 scale) (core and buffer zone clearly delineating the location of various stations superimposed with location of habitats, other industries/mines, polluting sources. The number and location of the stations in both core zone and buffer zone 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. Values should be provided based on desirable limits.

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

(xvii) Details of mineral reserves, geological status of the study are and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until end of mine life should be reflected 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.

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

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

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

(xxi) Source of water for use in mine, sanction of the competent authority in the State Govt. and impacts vis-à-vis the competing users.

(xxii) Impact of mining and water abstraction use in mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long?termmodelling studies on. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there us a declining trend of groundwater availability and/or if the area falls within dark/grey zone.

(xxiii) Impact of blasting, noise and vibrations.

(xxiv) Impacts of mining on the AAQ, predictive modelling using the ISCST-3 (Revised) or latest model.

(xxv) Impacts of mineral transportation ?within and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop, management plan for maintenance of HEMM, machinery, equipment. Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from these activities.

(xxvi) Details of waste generation ?OB, topsoil ? as per the approved calendar programme, and their management shown in figures as well explanatory chapter with tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use. OBdump heights and terracing should based on slope stability studies with a max of 28^{o} angle as the ultimate slope. Sections of dumps (ultimate) (both longitudinal and cross section) with relation to the adjacent area should be shown.

(xxvii) Progressive Green belt and afforestation plan (both in text, figures as well as in tables prepared by MOEF) and selection of species (local) for the afforestation/plantation programme based on original survey/landuse.

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

S.N.	**Land use Category**	**Present (1st Year)**	**5th Year**	**10th Year**	**20th year**	**24th 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	110*	110*	110*	110*	110*

* As a representative example

Table 2: Stage-wise Cumulative Plantation

S.N.	YEAR*	Green Belt		External Dump		Backfilled Area		Others (Undisturbed Area/etc)		TOTAL	
		Area (ha)	No. of trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees
1.	1st year										
2.	3rd year										
3.	5th year										
4.	10thyesr										
5.	15th year										
6.	20thyear										
7.	25th year										
8.	30th year										
9.	34th year (end of mine life)										

10.	34-37th Year (Post-mining)									85	

* As a representative example

(xxviii) Conceptual Final Mine Closure Plan, post mining land use and restoration of land/habitat to pre- mining. A Plan for the ecological restoration of the area post mining and for land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of rehandling (wherever applicable) and backfilling and progressive mine closure and reclamation.

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

S.N.	**Land use during Mining**	**Land Use (ha)**				
1.	External OB Dump	Plantation	Water Body	Public Use	Undisturbed	TOTAL
2.	Top soil Dump					
3.	Excavation					
4.	Roads					
4.	Built up area					
5.	Green Belt					
6.	Undisturbed Area					
	TOTAL	85				**110**

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

(xxx) 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 for the mine.

(xxxi) Risk Assessment and Disaster Preparedness and Management Plan.

(xxxii) Integrating in the Env. Management Plan with measures for minimising use of natural resources - water, land, energy, etc.

(xxxiii) Including cost of EMP (capital and recurring) in the project cost and for progressive and final mine closure plan.

(xxxiv) 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.

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

(xxxvi) Public Hearing should cover the details of notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments made by the proponent 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.

(xxxvii) In built mechanism of self-monitoring of compliance of environmental regulations.

(xxxx) Status of any litigations/ court cases filed/pending on the project.

(xxxxi) Submission of sample test analysis of:

Characteristics of coal - this includes grade of coal and other characteristics ?ash, S and heavy metals including levels of Hg, As, Pb, Cr etc.

(xxxxii) Copy of clearances/approvals ? such as Forestry clearances, Mining Plan Approval,

NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.

(A) FORESTRY CLEARANCE

TOTAL ML/PROJECT	TOTAL FORESTLAND	Date of FC	Extent of forestland	Balance area for which FC is yet to be obtained	Status of appl. for diversion of

AREA (ha)	(ha)				forestland
		If more than one, provide details of each FC			

ANNEXURE -5

GENERIC TOR FOR AN UNDERGROUND COALMINE PROJECT

(i) An EIA-EMP Report should be prepared for a peak capacity of **????.. MTPA** over an area of ????.. ha addressing the impacts of the underground coalmine project including the aspects of mineral transportation and issues of impacts on hydrogeology, plan for conservation of flora/fauna and afforestation/plantation programme based on the generic structure specified in Appendix III of the EIA Notification 2006.. Baseline data collection can be for any season except monsoon.

(ii) The EIA-EMP report should also cover the impacts and management plan for the project specific activities on the environment of the region, and the environmental quality ?air, water, land, biotic community, etc. through collection of baseline data and information, generation of baseline data on impacts for ??. MTPA of coal production based on approval of project/Mining Plan.

(iii) A Study area map of the core zone and 10km area of the buffer zone (15 km of the buffer zone in case of ecologically sensitive areas) delineating the major topographical features such as the land use, drainage, locations of habitats, major construction including railways, roads, pipelines, major industries/mines and other polluting sources, which shall also indicate the migratory corridors of fauna, if any and the areas where endangered fauna and plants of medicinal and economic importance are found in the area.

(iv) Map showing the core zone along with 3-5 km of the buffer zone) delineating the agricultural land (irrigated and unirrigated, uncultivable land (as defined in the revenue records), forest areas (as per records) and grazing land and wasteland and water bodies.

(v) Contour map at 3m interval along with Site plan of the mine (lease/project area with about 3-5 km of the buffer zone) showing the various surface structures such as buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within/adjacent to the ML), green belt and undisturbed area and if any existing roads, drains/natural water bodies are to be left undisturbed along with details of natural drainage adjoining the lease/project and modification of thereof in terms of construction of embankments/bunds, proposed diversion/rechannelling of the water courses, etc., highways, passing through the lease/project area.

(vi) Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area. Impacts of project, if any on the landuse, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations. Extent of area under surface rights and under mining rights.

S.N.	ML/Project Land use	Area under Surface Rights (ha)	Area Under Mining Rights (ha)	Area under Both (ha)
1.	Agricultural land			

2.	ForestLand			
3.	Grazing Land			
4.	Settlements			
5.	Others (specify)			

Area Under Surface Rights

S.N.	**Details**	**Area (ha)**
1.	Buildings	
2.	Infrastructure	
3.	Roads	
4.	Others (specify)	
	TOTAL	

(vii) Study on the existing flora and fauna in the study area carried out by an institution of relevant discipline and the list of flora and fauna duly authenticated separately for the core and buffer zone and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna. The flora and fauna details should be furnished separately for the core zone and buffer zone. The report and the list should be authenticated by the concerned institution carrying out the study and the names of the species scientific and common names) along with the classification under the Wild Life Protection Act, 1972 should be furnished.

(viii) Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working plan/scheme until end of mine life should be reflected on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps should also be included.

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

(x) Collection of one-season (non-monsoon) primary baseline data on environmental quality ? air (PM_{10}, $PM_{2.5}$, SO_x, NO_x and heavy metals such as Hg, Pb, Cr, AS, etc), noise, water (surface and groundwater), soil along with one-season met data.

(xi) Map of the study area (core and buffer zone) clearly delineating the location of various monitoring stations (air/water/soil and noise ? each shown separately) superimposed with location of habitats, wind roses, other industries/mines, polluting sources. The number and location of the stations should be selected on the basis of the proposed impacts in the downwind/downstream/groundwater regime. One station should be in the upwind/upstream/non-impact non-polluting area as a control station. Wind roses to determine air pollutant dispersion and impacts thereof shall be determined. Monitoring should be as per CPCB guidelines and standards for air, water, noise notified under Environment Protection Rules. Parameters for water testing for both ground and surface water should be as per ISI standards and CPCB classification of surface water wherever applicable.

(xii) Impact of mining and water abstraction and mine water discharge in mine on the hydrogeology and groundwater regime within the core zone and 10km buffer zone including long?termmodelling studies on the impact of mining on the groundwater regime. Details of rainwater harvesting and measures for recharge of groundwater should be reflected wherever the areas are declared dark/grey from groundwater development.

(xiii) Study on subsidence, measures for mitigation/prevention of subsidence, modelling subsidence prediction and its use during mine operation, safety issues.

(xiv) Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the competent authority in the State Govt. and impacts vis-à-vis the competing users should be provided.

(xv) Impact of choice of mining method, technology, selected use of machinery - and impact on air quality, mineral transportation, coal handling & storage/stockyard, etc, Impact of blasting, noise and vibrations.

(xvi) Impacts of mineral transportation ?within and outside the lease/project. The entire sequence of mineral production, transportation, handling, transfer and storage of mineral and waste, and their impacts on air quality should be shown in a flow chart with the specific points where fugitive emissions can arise and the specific pollution control/mitigative measures proposed to be put in place. Examine the adequacy of roads existing in the area and if new roads are proposed, the impact of their construction and use particularly if forestland is used.

(xvii) Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from these activities. Examine whether existing roads are adequate to take care of the additional load of mineral and their impacts.

(xviii) Examine the number and efficiency of mobile/static water sprinkling system along the main mineral transportation road within the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality.

(xix) Impacts of CHP, if any on air and water quality. A flow chart of water use and whether the unit can be made a zero-discharge unit.

(xx) Conceptual Final Mine Closure Plan along with the fund requirement for the detailed activities proposed there under. Impacts of change in land use for mining operations and whether the land can be restored for agricultural use post mining.

Table 1 Stage-wise Cumulative Plantation

S.N.	YEAR*	Green Belt		External Dump		Backfilled Area		Others (Undisturbed Area/etc)		TOTAL	
		Area (ha)	No. of trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees
1.	1st year										
2.	3rd year										
3.	5th year										
4.	10thyesr										
5.	15thyear										
6.	20th year										
7.	25th year										
8.	30th year										
9.	34th year (end of mine life)										

10.	34-37th Year (Post-mining)									85*	2,12,500

*As a representative example

(xxi) 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 for the mine should be furnished.

(xxii) Details of cost of EMP (capital and recurring) in the project cost and for final mine closure plan. The specific costs (capital and recurring) of each pollution control/mitigative measures proposed in the project until end of mine life and a statement that this is included in the project cost.

(xxiii) Integrating in the Env. Management Plan with measures for minimising use of natural resources ?water, land, energy, raw materials/mineral, etc.

(xxiv) R&R: Detailed project specific R&R Plan with data on the existing socio-economic status (including tribals, SC/ST) of the population 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.

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

(xxvi) Public Hearing should cover the details as specified in the EIA Notification 2006, and include notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments by the proponent made 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.

(xxvii) Status of any litigations/ court cases filed/pending in any Court/Tribunal on the project should be furnished.

(xxxvii) Submission of sample test analysis of:

(xxxvii) Characteristics of coal - this includes grade of coal and other characteristics ? ash, S

and heavy metals including levels of Hg, As, Pb, Cr etc.

(xxxviii) Copy of clearances/approvals ?such as Forestry clearances, Mining Plan Approval, NOC from Flood and Irrigation Dept. (if req.), etc.

(A) FORESTRY CLEARANCE

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 one, provide details of each FC			

ANNEXURE-6

GENERIC TOR FOR AN OPENCAST-CUM-UNDERGROUND COALMINE PROJECT

(i) An EIA-EMP Report would be prepared for a combined rated capacity of**??..**MTPA for OC-cum-UG project which consists of ??. MTPA for OC and ???. MTPA for UG 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 cover the impacts and management plan for the project specific activities on the environment of the region, and the environmental quality ?air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modelling for ???. MTPA of coal production based on approval of project/Mining Plan for ??.. MTPA. Baseline data collection can be for any season except monsoon.

(iii) A map specifying locations of the State, District and Project location.

(iv) A Study area map of the core zone and 10km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage of rivers/streams/nalas/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 area of the buffer zone 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 of the land use. Satellite imagery per se is not required.

(vi) Map showing the core zone delineating the agricultural land (irrigated and unirrigated, 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 2-5 km of the buffer zone (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated as a separate map.

(viii) A detailed Site plan of the mine showing the various 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 and if any, in topography such as existing roads, drains/natural water bodies are to be left undisturbed along with any natural drainage adjoining the lease /project and modification of thereof in terms of construction of embankments/bunds, proposed diversion/rechannelling of the water courses, etc., approach roads, major haul roads, etc.

(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.

(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.

(xi) Break up of lease/project area as per different land uses and their stage of acquisition.

LANDUSE DETAILS FOR OPENCAST PROJECT

S.N.	**LANDUSE**	**Within ML Area (ha)**	**Outside ML Area (ha)**	**TOTAL (ha)**
1.	Agricultural land			
2.	Forest land			
3.	Wasteland			
4.	Grazing land			
5.	Surface water bodies			
6.	Settlements			
7.	Others (specify)			
	TOTAL			

LANDUSE DETAILS FOR UNDERGROUND PROJECT

S.N.	ML/Project Land use	Area under Surface Rights (ha)	Area Under Mining Rights (ha)	Area under Both (ha)
1.	Agricultural land			
2.	ForestLand			
3.	Grazing Land			

4.	Wasteland			
5.	Water Bodies			
6.	Settlements			
7.	Others (specify)			
	TOTAL			

Area Under Surface Rights

S.N.	**Details**	**Area (ha)**
1.	Buildings	
2.	Infrastructure	
3.	Roads	
4.	Others (specify)	
	TOTAL	

(xii) Break-up of lease/project area as per mining operations.

(xiii) Impact of changes in the land use due to the start of the projects if much of the land being acquired is agricultural land/forestland/grazing land.

(xiv) Collection of one-season (non-monsoon) primary baseline data on environmental quality - air (PM_{10}, $PM_{2.5}$, SO_x, NO_x and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil along with one-season met data.

(xv) Map of the study area (1: 50, 000 scale) (core and buffer zone clearly delineating the location of various stations superimposed with location of habitats, other industries/mines, polluting sources. The number and location of the stations in both core zone and buffer zone 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. Values should be presented in comparison to desirable limits.

(xvi) Study on the existing flora and fauna in the study area (10km) carried out by an institution of relevant discipline and the list of flora and fauna duly authenticated separately for the core and buffer zone and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna. If the study area has endangered flora and fauna, or if the project falls within 15 km of an ecologically sensitive area, then a comprehensive Conservation Plan should be prepared and furnished along with comments from the CWLW of the State Govt.

(xvii) Details of mineral reserves, geological status of the study are and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until end of mine life should be reflected 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 final mine closure plan should also be shown in figures.

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

(xix) Study on subsidence, measures for mitigation/prevention of subsidence, modelling subsidence prediction and its use during mine operation, safety issues.

(xx) Impact of mining on hydrology, modification of natural drainage, diversion and channelling of the existing rivers/water courses flowing though 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.

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

(xxiv) Impact of blasting, noise and vibrations.

(xxv) Impacts of mining on the AAQ, predictive modelling using the ISCST-3 (Revised) or latest model.

(xxvi) Impacts of mineral transportation ?within and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop, management plan for maintenance of HEMM, machinery, equipment. Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from these activities.

(xxvii) Details of waste generation ?OB, topsoil ? as per the approved calendar programme, and their management shown in figures as well explanatory chapter with tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use. OBdump heights and terracing should based on slope stability studies with a max of 28^{o} angle as the ultimate slope. Sections of dumps (ultimate) (both longitudinal and cross section) with relation to the adjacent area should be shown.

(xxviii) Impact and management of wastes and issues of rehandling and backfilling and progressive mine closure and reclamation.
(xxix) Flow chart of water balance. Treatment of effluents from workshop, township, domestic wastewater, mine water discharge, etc. Details of STP in colony and ETP in mine. Recycling of water to the max. possible extent.
(xxx) 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 for the mine.
(xxxi) Risk Assessment and Disaster Preparedness and Management Plan.
(xxxii) Integrating in the Env. Management Plan with measures for minimising use of natural resources - water, land, energy, etc.
(xxxiii) Progressive Green belt and afforestation plan (both in text, figures as well as in tables prepared by MOEF given below) and selection of species (local) for the afforestation/plantation programme based on original survey/landuse.

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

S.N.	**Land use Category**	**Present (1st Year)**	**5th Year**	**10th Year**	**20th year**	**24th 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	110	110	110	110	110

* Representative case as an example

Table 2: Stage-wise Cumulative Plantation

S.N.	**YEAR***	**Green Belt**		**External Dump**		**Backfilled Area**		**Others (Undisturbed Area/etc)**		**TOTAL**	
		Area (ha)	No. of trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees
1.	1st year										
2.	3rd year										
3.	5th year										

4.	10th year										
5.	15th year										
6.	20th year										
7.	25th year										
8.	30th year										
9.	34th year (end of mine life)										
10.	34-37th Year (Post-mining)									85	

* Representative case as an example

(xxxiv) Conservation Plan for the endangered/endemic flora and fauna found in the study area and for safety of animals visiting/residing in the study area and also those using the study area as a migratory corridor.

(xxxv) Conceptual Final Mine Closure Plan, post mining land use and restoration of land/habitat to pre- mining. A Plan for the ecological restoration of the area post mining and for land use should be prepared with detailed cost provisions.

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

S.N.	**Land use during Mining**	**Land Use (ha)**				
1.	External OB Dump	Plantation	Water Body	Public Use	Undisturbed	TOTAL

2.	Top soil Dump					
3.	Excavation					
4.	Roads					
4.	Built up area					
5.	Green Belt					
6.	Undisturbed Area					
	TOTAL	85				**110**

(xxxvi) Including cost of EMP (capital and recurring) in the project cost and for progressive and final mine closure plan.

(xxxvii) 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.

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

(xxxix) Public Hearing should cover the details of notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments made by the proponent 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.

(xxxx) In built mechanism of self-monitoring of compliance of environmental regulations.

(xxxxi) Status of any litigations/ court cases filed/pending on the project.

(xxxxii) Submission of sample test analysis of:

Characteristics of coal - this includes grade of coal and other characteristics ?ash, S and heavy metals including levels of Hg, As, Pb, Cr etc.

(xxxxiii) Copy of clearances/approvals ? such as Forestry clearances, Mining Plan Approval,

NOC from Flood and Irrigation Dept. (if req.), etc.

(A) FORESTRY CLEARANCE

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

Copies of forestry clearance letters (all, if there are more than one)

(B) MINING PLAN APPROVAL

(B) MINING PLAN/PROJECT APPROVAL

Date of Approval of Mining Plan/Project Approval:

Copy of Letter of Approval of Mining Plan/Project Approval

(xxxxiv) 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.

ANNEXURE-7

GENERAL CONDITIONS AND ADDITIONAL POINTS OF TOR

The following general points should be noted:

(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 MOEF 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) The final EIA-EMP report submitted to the Ministry must incorporate the issues in TOR and that raised in Public Hearing. The index of the final EIA-EMP report, must indicate the specific chapter and page no. of the EIA-EMP Report where the specific TOR prescribed by Ministry and the issue raised in the P.H. have been incorporated. Mining Questionnaire (posted on MOEF website) with all sections duly filled in shall also be submitted at the time of applying for EC.

(viii) 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 two years only.

The following additional points are also to be noted:

(i) Grant of TOR does not necessarily mean grant of EC.
(ii) Grant of TOR/EC to the present project does not necessarily mean grant of TOR/EC to the captive/linked project.
(iii) Grant of TOR/EC to the present project does not necessarily mean grant of approvals in other regulations such as the Forest (Conservation) Act 1980 or the Wildlife (Protection) Act, 1972.
(iv) Grant of EC is also subject to Circulars issued under the EIA Notification 2006, which are available on the MOEF website: www.envfor.nic.in