



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE
CHANGE

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F. No. FC-III/CH-08/2016-NGP

Dated: 12th August, 2016

To

Sh. Sandeep Sharma,
Assistant Inspector General of Forests (FC),
Forest Conservation Division,
Ministry of Environment Forests and Climate Change,
4th Floor, Agni Wing, Indira Paryavaran Bhawan,
Jorbagh, Aligned, New Delhi.

Sub: Site Inspection Report by the Regional Office (WCZ) Nagpur of the proposal involving diversion of 665.230 ha in favour of M/S National Mineral Development Corporation Limited for mining of Iron Ore in Deposit-4 In Bacheli area of Dantewada District in the State of Chhattisgarh – regarding.


Sir,

I am directed to refer to the State Government of Chhattisgarh's letter no.F-5-14/2016/10-2 dated 8.06.2016 on the above subject seeking prior approval of the Central Government under the Forest (Conservation) Act, 1980 and the Forest Conservation Division of the MoEF&CC, New Delhi's letter no. 8-15/2016-FC dated 29.06.2016 requesting the Regional Officer (WCZ) of the MoEF&CC at Nagpur to carry out the site inspection of the area proposed for diversion and to say that site inspection of the area proposed for diversion has been carried out by the undersigned on 2.08.2016.

An inspection report containing the observation of the undersigned and comments and recommendation of the Addl. PCCF (Central) is enclosed herewith for further necessary action in the matter.


Encl: As above.

Yours faithfully,


(Charan Jeet Singh)
Scientist 'C'

Copy to:

1. Guard File.


(Charan Jeet Singh)
Scientist 'C'

COMMENTS AND RECOMMENDATIONS OF THE ADDITIONAL PRINCIPAL CHIEF CONSERVATOR OF FORESTS (CENTRAL), REGIONAL OFFICE NAGPUR ON THE MINING LEASE OF NMDC LTD PROPOSED AT DEPOSIT-4 IN DANTEWADA DISTRICT OF CHHATTISGARH

The Ministry of Environment, Forests and Climate Change, Government of India in the past has accorded approval for 7 mining leases of NMDC for Kirandool and Bachel Mining projects. Currently, another proposals pertaining to Deposit-4 involving an area of 665.23 ha has been submitted by the User Agency for taking up mining in the new area. The detailed observations on the proposal have already been made in the inspection report. Given the availability of existing iron ore reserve base in the various mining leases of the NMDC and results of DSS examination, threat to the tree fern species from mining and loss of / damage to aquifer of the area, opening of the new mining area in Deposit-4 containing pristine forests does not deserve consideration for diversion under the Forest (Conservation) Act, 1980 and is not recommended for approval. However, in case the Ministry considers the diversion of the Deposit – 4 following issues needs to addressed appropriately to take further view on the proposal:

- i. A judicious view in terms of actual demand and supply of iron ore of the User Agency as well as the CMDC of the State Government may be taken to assess whether opening of new areas is necessary or reserve base already available in mining leases which have been already approved by the Central Government will meet the demand of iron ore.
- ii. An area of 95.13 ha of virgin forest proposed outside the mining lease area with a view to develop the Deposit -4 as a standalone mine should not be considered for diversion as the NMDC has already such facilities existing in Deposit-10 and the same can be upgraded for its utilization for excavated material of Deposit-4. Similarly, an area of 162.36 ha of the mining lease under float ore has mineral reserve only 8.63 MT which constitutes merely 9% of the total reserve i.e. almost 99 MT of the reserves are confined to the 85 ha of forest area of the mining lease. Therefore, given the fragile ecosystem of the area, excavation of 162.36 ha of forest land that too for 9% of float iron ore reserve is not prudent and justifiable. Therefore, area of 162.36 ha noted with float ore should be kept intact and the User Agency should be refrained from mining in this area.
- iii. Given the fact that area proposed for mining showcases unique 'Tree Fern' species with shrunken habitat, which may be lost from the region, if the mining operation allowed in the area without any scientific remedial measure for the conservation of the unique species. The Botanical Survey of India in consultation with the Forest Survey of India, should map the species diversity of the area with special emphasis on the 'Tree Ferns' and impact of mining operations on the flora of the area. After receipt of the report on the same and recommendations made therein further view on proposal for opening up new area for mining may be taken by the Ministry.
- iv. The user agency shall prepare a land surrender schedule for surrender of the mined out and biologically reclaimed forest land in accordance with the existing mine plan irrespective of progressive mine closure plan and submit an surrender schedule undertaking that mined out and biologically reclaimed forest land will be surrendered to the State Forest Department as per this schedule. No further change in the schedule for surrendering of forest land shall be allowed by the Central Government. Non surrender of the area as per the schedule shall amount to revocation of the stage II approval.
- v. The NMDC has 9 mining leases spread over an area of approximately 8.5 Sq km in the Bailadila Mountain Range. Given the state of limited natural resources in the area viz. water bodies, unique tree species, wildlife, etc and also the local infrastructure viz. roads, railway track, there is need to

assess the ecologically sustainable production level in the area. So far, there is no such baseline study available for the region to suggest the cap of maximum production which can be harnessed from the area. Therefore, before opening up new area a study to assess the maximum permissible production level which can be sustained ecologically without hampering the existing natural resources should be conducted in the Bailadila Mountain Range.

Kanwarjit Singh
(Kanwarjit Singh)
Addl. PCCF (Central)
12/8/16.

SITE INSPECTION REPORT BY THE REGIONAL OFFICE (WCZ) NAGPUR OF THE PROPOSAL INVOLVING DIVERSION OF 665.230 HA IN FAVOUR OF M/S NATIONAL MINERAL DEVELOPMENT CORPORATION LIMITED FOR MINING OF IRON ORE IN DEPOSIT-4 IN BACHELI AREA OF DANTEWADA DISTRICT IN THE STATE OF CHHATTISGARH

Name of the Inspecting Officer – Charan Jeet Singh, Scientist 'C', Regional Officer (WCZ), Nagpur

Site inspection of the above mentioned proposal was carried out on 1.08.2016 with the officials of State Forest Department and representatives of the User Agency. The following Officers were present during the inspection:

Officials from the State Forest Department

1. Sh. Vinay Chakravorty, Range Officer, Bachel Forest Division

Officials from the User Agency

1. Shri Rajeev Sharma, JGM (Mining), RO, Raipur.
2. Sh. R. N. Singh, Dy. General Manager (Environment), NMDC
3. Shri Narayan Murthy, DGM (Mining), Bachel Complex
4. Shri K. C. Gupta, DGM (Mining) Bachel Complex
5. Shri G. Venkateswarlu, Sr. Manager (Survey) Bachel Complex
6. Shri N. S. S. Sekhar, Sr. Manager (Environment) Bachel Complex
7. Shri Anshuman Tripathi, Manager (Environment) Bachel Complex
8. Dr. J. A. Kamalakar, AGM (Environment) H.O

1. Legal status of the forest land proposed for diversion.

Legal status of the land proposed for diversion is Reserved Forest.

2. Item-wise break-up details of the forest land proposed for diversion.

Details of forest area required for the above facilities viz. technical, administrative, road network, and high tension electric lines is given below:

S. No.	Particulars of project components	Area required (Ha)
A. Within the Mining lease		
1.	Area for mining	85
2.	Area under float ore mining and further and exploitation of iron ore	162.36
3.	Area under infrastructure facilities	19.0
4.	<u>Waste dump</u>	20.26
5.	Area under construction of check dams, garland drains, girdle walls and protective measures to protect downstream areas and future exploration of iron ore	192.55
6.	Magazine @ safety zone	42.0
7.	Blasting zone	48.33
	Sub - total	570.10
B. Area required outside mining lease area		
1.	Conveyor belt	18.41

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2.	Screening plant and internal road	46.40
3.	Loading plant	5.04
4.	Approach road Bahnsi to screening plant and mining lease boundary	25.28
	Sub-Total	95.13
	Grand Total	665.230

3. Whether proposal involves any construction of buildings (including residential) or not. If yes, details thereof.

Yes. The user agency has proposed construction, as indicated above over an area of 19.0 ha for creation of infrastructural facilities as per details given below:

S. No	Component	Area (Ha)
1.	Crushing Plant	1.551
2.	Junction House 1(JH1)	0.010
3.	Junction House 2(JH2)	0.010
4.	Junction House 3(JH3)	0.079
5.	Motor House (MH)	0.182
6.	Mining Office (MO)	0.158
7.	Primary Surge Pile (PSP)	0.281
8.	Secondary crusher House (SCH)	0.039
9.	Service Centre (SS)	0.197
10.	Water Reservoir	0.305
11.	Intermittent Blank areas	14.893
12.	Conveyor 29	0.604
13.	Power lines	0.655
	Total	18.964 or say 19.0

In addition to above an area of 69.85 ha has also been proposed for construction of buildings in the area outside the mining lease area such as downhill conveyor, screening plant, loading plant, etc.

4. Total cost of the project at present rates.

Total cost of project is Rs. 1,899.74 crores.

5. Wildlife

Whether forest area proposed for diversion is important from wildlife point of view or not.

No detail of wildlife species found in the area has been provided in the proposal. However, during the inspection, interaction with the representative of the User Agency revealed that wild species like sloth bear, common Indian hare, jackal, mongoose, etc. are found in the area. In Part-II DFO has mentioned that no schedule-I species are found in the area while as per the discussion held with the officials during the inspection, it is observed that Schedule-I wildlife species (sloth bear) is found in the area. Further, the DFO, Forest Division, Dantewada has certified that area proposed for diversion does not form part of National Park, Wildlife Sanctuary, Elephant Corridors and no PAs are located within a distance of 10 km from the boundary of area proposed for diversion.

With regards to the importance of the area from the Wildlife viewpoint, the PCCF (Wildlife), Government of Chhattisgarh has adverted to condition no. 16 of the letter no. J-11015/161/2014-IA.II (M) dated 12.08.2014 stating that *a detailed biological study of the area (core zone and buffer zone- 10 km radius of the periphery of the mining lease) shall be carried out and details of the flora*

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and fauna, duly authenticated, separately for core area and buffer area shall be furnished based on the primary field survey, clearly indicating the schedule of the fauna present. In case of any Schedule-I fauna found in the study area, the necessary plan for their conservation shall be prepared in consultation with the State Forest and Wildlife and the same should be made as a part of the project cost. The Conservation Plan for Schedule-I species shall be approved by the CWLW of the State Government. Accordingly, the PCCF (Wildlife) mentioned that in pursuance to the aforementioned condition, the user agency has submitted a Plan for the Conservation of the Wildlife for 20 years involving financial provision of Rs. 1,560.00 lakh and the same has been approved by the CWLW for its implementation.

6. Vegetation:-

- i. Details of total number of trees to be felled is given as under:

Above 60 cm girth – 51,870 trees

Below 60 cm girth – 1,43,654 trees

Total - 1,95,524 trees

As per the documents submitted along with the proposal number of trees per ha existing in the area proposed for diversion is 293.92. From the examination of the google imagery and also observations made during the field inspection, it has been observed that maximum number of project affected trees are located in the area outside the mining lease i.e. area proposed for screening plant, crushing plant, downhill conveyor belt, loading plant, etc.

The Dy CF, Dantewada had also carried out inspection of the area on 21.09.2015 and submitted a report on compartment wise area proposed for diversion and details of girth of existing trees. In his inspection report the DFO has mentioned that entire area proposed for diversion has trees below 90 cm of girth which is contrary to the enumeration details, certified by him, wherein it is clearly mentioned that number of trees falling in the girth class 91-120 and 121 and above are 12,226 and 4009, respectively. Moreover, Dy CF in Part-II has reported that no rare/endangered/unique species of flora and fauna found in the area, which is contrary to the fact that area is characterised by a unique "Tree Fern" species whose habitat has shrunk to the Bachel Reserve Forest owing to rampant mining operations in the area.

- ii. **Effect of removal of trees on the general ecosystem in the area.**

The area proposed for diversion has dry deciduous and moist deciduous forests showcasing biodiversity of various forms. Area proposed for mining i.e. 85 ha has sparse bushy vegetation with scanty tree growth due to hard exposed iron ore surface. Number of trees proposed to be felled are located in the area proposed for infrastructural facilities outside the lease area. Removal of such a large number of trees will definitely have adverse impact on the ecosystem. NMDC Ltd has proposed to develop the Deposit-4 as a standalone project involving facilities like screening plant, downhill conveyor, loading plant, etc. and all these structures are surely going to have adverse impact on the flora and fauna.

Important species:- Important species found in the area, as observed during the inspection include *Anogeissus latifolia*, *Grewia hirsute*, *Adina cardifolia*, *Syzygium cumini*, *Phyllanthus emblica*, *Schlechera oleosa*, *Terminalia chebula*, *T. tomentosa*, *T. Arjuna*, *Pterocarpus marsupium*, *Lagerstromia parviflora*, *Ficus religiosa*, *Dispyros melanoxylon*, *Buchanania lanzan*, *Cleistanthus collinus*, *Tectonia grandis*, *Aegle marmelos*, *Acacia* spp. etc.

It is also observed that "Tree Fern", a unique/rare plant species is found in Bailadila hills of Chhattisgarh and is facing the threat of extinction owing to mining activities in the area. *Cyatheaceae* and *Gnetum* Species are found in the area proposed for diversion as well as

in the surrounding area on the sides of the local perennial nallah. As per the report published in the Times of India (PTI, July 31, 2016; accessed at <http://timesofindia.indiatimes.com/home/environment/flora-fauna/Tree-Fern-faces-extinction-threat-due-to-mining-in-Cgarh/articleshowprint/48294158.cms?null> on 11.08.2016) presently, tree fern is found in reserve forests lying between iron ore deposits number 5 and 11 in Bailadila Range. Earlier, the plant was found in most part of the Bailadila hills, but now it has been confined only to reserve forests (under Bacheli Range) on the hills along Gali Nullah (rivulet). Presently, there are about 327 'Tree Ferns' in Bacheli forest range, as per the forest department's latest count. A copy of the report published in TOI is enclosed as **Annexure-I**. Originally, the NMDC Limited had planned to apply for mining on 741 hectare of area of Deposit- 4, without taking cognizance of the rare tree fern species, which has been thriving in the area since last 500 years. However, on the intervention of the State Forest Department, the company has excluded an area of 76 ha from their proposal. As per the report, the tree ferns species owing to rampant mining operation its habitat has shrunk to area lying between deposit- 5 and Deposit 11 that too is under severe degradation for lack of appropriate protection and conservation measures. Area presently inhabited by the tree ferns constitutes the part of mining lease of the proposed by the NMDC in Deposit -4.

Removal of trees from the area and opening of the area to mining will also have adverse impact on perennial water sources of the area namely Gali nala originating from the forests of Deposit-4 and Malangir Nala originating from the Deposit – 13 (Stage-I approval already accorded). These two water sources meet the drinking water needs of Bacheli and Kirandool, besides meeting the demand of water for industrial purposes. The rare tree fern species reported to be on verge of extinction is thriving best on the sides of the areas drained by these nala. As the existing topographic features of the area are supporting a microclimate with good edaphic factors, viz. soil moisture, organic content, etc. to support the Tree Ferns habitat. Once these areas will be opened for mining, the perennial water regimes of these local nallah are likely to be affected adversely and so will be the microclimate supporting Tree Ferns (**Annexure-II**).

Therefore, conservation of these water sources and tree ferns species needs special protection measures by undertaking a situational review and remedial measures thereof of the area vis-a-vis mining in the area by an institute of repute.

7. Background note on the proposal.

NMDC limited a Government of India enterprises under the Ministry of Steel is in the business of the exploration and exploitation of minerals such as Iron ore and Diamond. Presently, NMDC Limited has 9 mining leases granted by the State Government over an area of 8,439.063 Ha (**Annexure-III**). Out of the total mining leases 2 mining leases have been proposed to be operated in joint venture with the CMDC (Deposit -13 and Deposit -4). Further, out of total 9 mining leases, 6 are currently operational with sufficient reserves. On the requirement of opening up of a new area for the mining lease, it is informed by the User Agency they have already commitments for supply of iron ore from the existing leases to various clients and ore from these operational leases cannot be used to meet the demand of Integrated Steel Plant of NMDC coming up in Jagdalpur. Therefore, they have applied for mining lease over Deposit-4.

The Bailadila Iron Ore Project, Deposit-4 is one of the deposit located in the Western ridge (North of Deposit-5) of Bailadila Range in the southern part of Bastar District Dantewad. As per the details furnished during the interaction with the User Agency, the mining lease has been proposed for captive use of Iron ore for Integrated Steel Plant of NMDC in Jagdalpur and other sponge iron ore plants in the State of Chhattisgarh.

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The present mining lease has been proposed to be operated by the NCL (NMDC-CMDL Limited) a joint venture company of the NMDC and CMDC with equity ratio of 51:49. It has been conceptualized that Deposit-4 shall be developed as standalone mining project which will have all mineral processing facilities i.e. crushing plant, downhill conveyor, screening plant and loading plant exclusively for Deposit-4. The mineral processing facilities have been proposed in the virgin forest area of 95.13 ha outside the mining lease.

At present NMDC has total mineral reserve base is 7797.59 MT (excluding the reserves of Deposit-13 and Deposit-4) which almost 3 times of the Reserves estimated initially (2675.65 MT). A detail of mineral reserve base in the various mining leases of the NMDC is provided in the **Annexure-IV**. Therefore, it can be ascertained that subsequent exploratory drillings by the user agency in the already approved area have indicated the trend of estimated reserve as increasing with advancement of mining operation. As evident from the subsequent exploratory drillings, the mineral reserve base to be excavated by the User Agency has increased substantially from the initial levels at the time of grant of approval under the Forest (Conservation) Act, 1980. It is also evident that mineral reserve base (proven + probable) can sustain the iron ore requirement in near future, therefore, a judicious view may be taken on grant of further approval under the Forest (Conservation) Act, 1980 for allowing excavation in new areas when the existing mineral base has not been exhausted completely by the User Agency.

8. Compensatory afforestation:-

i. Whether land for compensatory afforestation is suitable from plantation and management point of view or not.

As per the certificate of the DFO, Dantewada, the land identified for raising CA is suitable for plantation. No details certifying the land free from encroachment and other encumbrances has been certified by the DFO, Dantewada. Detail could not be verified as the land for CA has been identified in 9 sites located in the core naxal affected area. Detail of degraded forest land identified for raising CA in Dantewada Forest Division is given as under:

S. No.	Name of the Range	Compartment No.	Total Area (Ha)	Area proposed for CA (Ha)
1.	Barsur	P1218	233.668	165.00
		P1219	211.549	100.00
		P1220	280.463	90.00
		P1221	280.00	200.00
		P1222	145.00	130.00
	Sub – Total		1150.68	685.00
2.	Geedam	1259 (p)	361.899	260.00
		1260 (p)	144.293	100.00
		1263 (p)	217.844	185.00
		1265 (p)	141.796	100.00
	Sub- Total		865.832	645.00
	Grand Total		2919.425	1330.00

ii. Whether land for compensatory afforestation is free from encroachments/ other encumbrances.

As per the certificate of the DFO, Dantewada Forest Division, the land identified for raising CA is suitable for plantation. No details certifying the land free from encroachment and other encumbrances has been certified by the DFO, Dantewada Forest. Detail could not be verified as the land for CA has been identified in 9 sites located in the core naxal affected area.

iii. **Whether land for compensatory afforestation is important from Religious/ Archaeological point of view.**

No information has been provided in the proposal. However, representative from the Forest Department has informed that CA land is not important from the religious/archaeological view point.

iv. **Land identified for raising compensatory afforestation is in how many patches, whether patches are compact or not.**

Land for compensatory afforestation has been identified over an area of 1,330.0 ha in 9 patches in Barsur and Geedam Ranges of Dantewada Forest Division.

v. **Map with details**

Differential GPS map of the area identified for CA for all 9 patches along with its kml/shapes files has been.

vi. **Total financial outlay**

Rs. 25,76,92,190.57/-

9. **Whether proposal involves violation of Forest (Conservation) Act, 1980 or not. If yes, a detailed report on violation including action taken against the concerned officials.**

No violations of the Forest (Conservation) Act, 1980 have been reported by the various authorities in the State Forest Department and State Government.

10. **Whether proposal involves rehabilitation of displaced persons. If yes, whether rehabilitation plan has been prepared by the State Government or not. Details be furnished specifically if rehabilitation plan would affect any other forest area by trans-locating outstees in and around the said forest.**

No rehabilitation is involved in the proposal.

11. **Reclamation Plan:** Not applicable

i. **Details and financial allocation.** NA

12. **Details on catchment and command area under the project.**

i. **Catchment area treatment plan to prevent siltation of reservoir.**

It is observed that area proposed for diversion forms the immediate catchment of Gali nala harbouring the population Tree Fern species and also meeting the drinking water needs of the local people. Therefore, keeping in view the perennial water bodies whose water inflow are linked to the area proposed for diversion, a Catchment Area Treatment Plan should be prepared and implemented in the area at the project cost to prevent siltation of reservoirs and also ensure water availability round the year. However, given the situation mining is proposed in the catchment area itself, it is desirable that measures of the CAT plan are implemented in the blank areas of the mining leases.

13. **Cost benefit ratio. 1:15**

Total Cost – Rs. 2,286.31 lakhs

Total Benefits – Rs. 34,378.0 lakhs

14. **Recommendations of the Principal Conservator of Forests/State Government.**

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The Principal Chief Conservator of Forest, Government of Chhattisgarh has recommended the proposal with following conditions:

- i. The User Agency shall provide a vehicle (Four wheelers SUV) to facilitate the officials of Forest Headquarter and Regional Officer to carry out monitoring and inspection in the Naxal Affected in area.
- ii. A plan has been submitted for Rs. 1.64 crores for the protection of forest in area adjacent to the Deposit-4 from biotic pressure and by the labourer. Approval financial cost for the implementation of the said plan shall be borne by the User Agency;
- iii. User Agency has submitted a scheme of Rs. 1.58 crores, after eliminating the area under "Tree Ferns", for the protection and conservation. Cost of the same shall be borne by the User Agency.
Amount in respect of the above mentioned two conditions shall be deposited into the PD account of DFO, Dantewada.
- iv. Trees having below 60 cm girth standing in the area proposed for diversion shall be transplanted in blank areas using Tree Planter by the user agency at the project cost.

15. Recommendations of Regional Chief Conservator of Forests along with detail reasons.

Recommendations of the Addl. PCCF (Central) have been appended separately.

16. Addl. Principal Chief Conservator of Forests (Central) shall give detailed comments on whether there are any alternatives routes/alignments for locating the project on the non-forest land.

Comments of the Addl. PCCF (Central) have been amended separately.

17. Utility of the project. Numbers of Scheduled Castes/Scheduled Tribes to be benefited by the project.

The iron ore to be produced from this mine has been proposed to be utilized for captive use in the Integrated Steel Plant of the NMDC coming in Naganar in Jagdalpur and also for various sponge iron ore plant in the State of Chhattisgarh.

18. Whether land being diverted has any socio-cultural /religious value. Whether any sacred grove or very old grown trees/forests exists in the areas proposed for diversion.

As per information submitted in Part-II, the area is not important from the socio cultural/religious view point.

19. Situation w.r.t. any P.A.

It is indicated in the proposal, that land proposed for diversion is located beyond a distance of 10 km from the boundary of any PAs. The nearest PAs are Indravati Tiger Reserve and Bairamgarh WLS and are located at a distance of more than 50 kms from Bacheli mining area.

20. Any other information relating to the project.

- i. Compliance of Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 has been submitted as per the MoEF&CC's advisory dated 5.07.2013. The District Collector, Dantewada has certified all clauses as stipulated in the Form-I annexed to the advisory dated 5.07.2013. However, documentary evidences pertaining to the record of consultations, meetings of the Sub-Divisional Committee as required under clause (a) of the Form-I annexed to the advisory dated 5.07.2013 have not been submitted along with the compliance.

- ii. NMDC Limited has 9 mining leases granted by the State Government over an area of 8,439.063 ha. Out of the total mining leases, 2 mining leases have been proposed to be operated in joint venture with the CMDC (Deposit -13 and Deposit -4). Further, out of total 9 mining leases, 6 are currently operational and subsequent drilling in these mining leases, (e.g. in Kirandul mining leases) have discovered more iron ore reserves nearly 3 times of the reserve which were actually planned to be mined initially. Further, the NMDC has already 7 mining leases for which approval under the Forest (Conservation) Act, 1980 has already been accorded by the Central Government (Final approval for 6 mining leases and Stage-I approval for 1 mining lease) and the mineral reserve base (proven +probable) has not been exhausted completely rather, as evident from the subsequent exploratory drillings, the mineral reserve base to be excavated by the User Agency has been increased substantially from the initial levels at the time of grant of approval under the Forest (Conservation) Act, 1980. It is evident that mineral reserve base (proven + probable) can sustain the iron ore requirement in near future, therefore, a judicious view may be taken on grant of further approval under the Forest (Conservation) Act, 1980 for allowing excavation in new areas when the existing mineral base has not been exhausted completely by the User Agency.
- iii. The forest area proposed for downhill conveyor, loading plant, approach roads and internal roads outside the mining lease area is a virgin forest area with rich vegetation. Given the fact that NMDC has existing facility of crushing plant, screening plant, conveyor belt and loading plant for Deposit-10 which is contiguous to the Deposit -4, instead of developing the Deposit-4 mine as standalone mine, user agency should made effort to utilize the existing facility for the sake of protection of virgin forests area of 95.13 ha. Therefore, the area of 95.13 ha proposed outside the mining lease area with a view to develop the Deposit -4 as a standalone mine should not be considered for diversion as the NMDC has already such facilities existing in Deposit-10 and the same can be upgraded for its utilization for excavated material of Deposit-4.
- iv. A judicious view in terms of actual demand and supply of iron ore of the User Agency as well as the CMDC of the State Government may also be taken to assess whether opening of new areas is necessary or reserve base already available in mining leases which have been already approved by the Central Government will meet the demand of iron ore.
- v. Similarly, an area of 162.36 ha of the mining lease under float ore has mineral reserve only 8.63 MT which constitutes merely 9% of the total reserve i.e. almost 99 MT of the reserves are confined to the 85 ha of forest area of the mining lease. Therefore, given the fragile ecosystem of the area, excavation of 162.36 ha of forest land that too for 9% of float iron ore reserve is not prudent and justifiable. Therefore, area of 162.36 ha noted with float ore should be kept intact.
- vi. Area proposed for diversion forms the immediate catchment of Gali nala harbouring the population Tree Fern species and also meeting the drinking water needs of the local people. Therefore, keeping in view the perennial water bodies whose water inflow are linked to the area proposed for diversion, a Catchment Area Treatment Plan should be prepared and implemented in the blank areas of the mining leases as well as in the surrounding forest area.
- vii. The Bio-diversity report prepared by the Indian Institute of Bio-Social Research and Development pertains does not address the measures towards the conservation and protection of the tree ferns species found in the area. Further, as per the recommendation of the PCCF, the biodiversity report to proposed to be implemented in the area, after excluding the area of 76 ha inhabited by the 'Tree Ferns' species. Moreover, given the plan of the User Agency for excavating the area, with the advancement of mining operation over an area of 247.36 ha and including 85 ha of main mining area towards western part and mining in Deposit-10 towards the eastern side, the microclimate supporting the Tree Fern will likely to be destroyed which may cause the loss of Tree Ferns Species. Therefore, in order to maintain the microclimate of the

area enough to support the Tree Fern habitat, catchment area falling in the mining lease should be enriched to ensure development of water resources. However, mining and development of water resources are inversely related and cannot go hand in hand. Therefore, giving due consideration to the unique 'Tree ferns species found in the area, special conservation, protection and development measures for "tree ferns' species should be implemented in the area after conducting a scientific study in the area and if needed, the area of mining lease may be further reduced to sustain the functions of microclimate.

- viii. The NMDC has 9 mining leases spread over an area of approximately 8.5 Sq km in the Bailadila Mountain Range. Given the state of limited natural resources in the area viz. water bodies, unique tree species, wildlife, etc and also the local infrastructure viz. roads, railway track, there is need to assess the ecologically sustainable production level in the area. So far, there is no such baseline study available for the region to suggest the cap of maximum production which can be harnessed from the area. Therefore, before opening up new area a study to assess the maximum permissible production level which can be sustained ecologically without hampering the existing natural resources should be conducted in the Bailadila Mountain Range.
- ix. Examination of the area proposed for diversion using DSS tools revealed that all 6 grids (1 km x 1 Km) have aggregate score more than 70 and thereby area falls in the category of pristine forest which cannot be considered for mining (**Annexure-V**).

(Charan Jeet Singh)
Scientist 'C'

PICTURE SHOWING MINING AREA FOR DEPOSIT - 4



Guy

GALI NALA-A PERENNIAL WATER SOURCE SHOWCASING THE TREE FERN SPECIES



Curvy

AREA PROPOSED FOR DOWNHILL CONVEYOR BELT, LOADING PLANT,
SCREENING PLANT AND CRUSHING PLANT AND INTERNAL ROADS



Am

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THE TIMES OF INDIA

'Tree Fern' faces extinction threat due to mining in C'garh

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'Tree Fern', a rare plant species found in Bailadila hills of Chhattisgarh's Dantewada district, is facing the... Read More

D ANTEWADA: 'Tree Fern', a rare plant species found in Bailadila hills of Chhattisgarh's Dantewada district, is facing the threat of extinction owing to mining activities in the area, environment experts have warned.

Bailadila hills, the famous mountain range in the southern tip of Chhattisgarh, is known for its rich high grade iron ore reserves at a height of 1,260 m above sea level. It is also home to number of medicinal and endangered plant species.

However, experts feel that the mining activities by a public enterprise in the hills have become a curse for the rare and endangered plant species in the periphery, including the tree fern.

"I have witnessed the disappearance of Lycopodium and Selaginella plant species from Bailadila mountain range due to excavation. Now tree fern also faces the threat of extinction," Dr HKS Gajendra, zoologist at Kirandul Government College, said.

Presently, tree fern is found in reserve forests lying between iron ore deposits number 5 and 11 in Bailadila range.

Tree fern looks just like a palm tree as it has a trunk and leaf fronds on shoot tip. It has spores on the underside of leaves that are used for reproduction. It is mostly found in the downhill area as cool climate and moisture are ideal for its growth, Gajendra said.

"Not much study has been done here on tree fern, therefore people hardly know about its importance. It is a very important plant in life sciences as it helps to study how plants evolved and developed on the earth," he said.

"The development of tree fern is very slow. It attains a height of 8-10 feet in 200-300 years. The grown ferns found in Bailadila hills are nearly 500 years old," he claimed.

As per studies, fern species plants belong to the 'Jurassic period' when dinosaurs existed on earth. Hence, the plant is very important from research point of view as well, he said.

Earlier, the plant was found in most part of the Bailadila hills, but now it has been confined only to reserve forests (under Bacheli Range) on the hills along Gali Nullah (rivulet), he said.

"The excavation has not only destroyed the endangered plants in the area, but has also disturbed the atmosphere ideal for its survival," the zoologist said.

However, a senior forest official said efforts are on to preserve tree fern in Bailadila.

Presently, there are about 327 tree ferns in Bacheli forest range, as per the forest department's latest count.

"We have asked the mining company to rope in researchers and scientists to undertake study of tree fern as it is found only in Bailadila hills across Chhattisgarh. We have asked them to go for its tissue culture," Forest Range Officer, Bacheli Range, Vinay Chakraworty said.

As per experts, the threat is looming large with the PSU planning to float requisition for mining lease in deposit number 4, the same area where tree ferns are presently found. The deposit number 4 has nearly 108 tonne million reserves of iron.

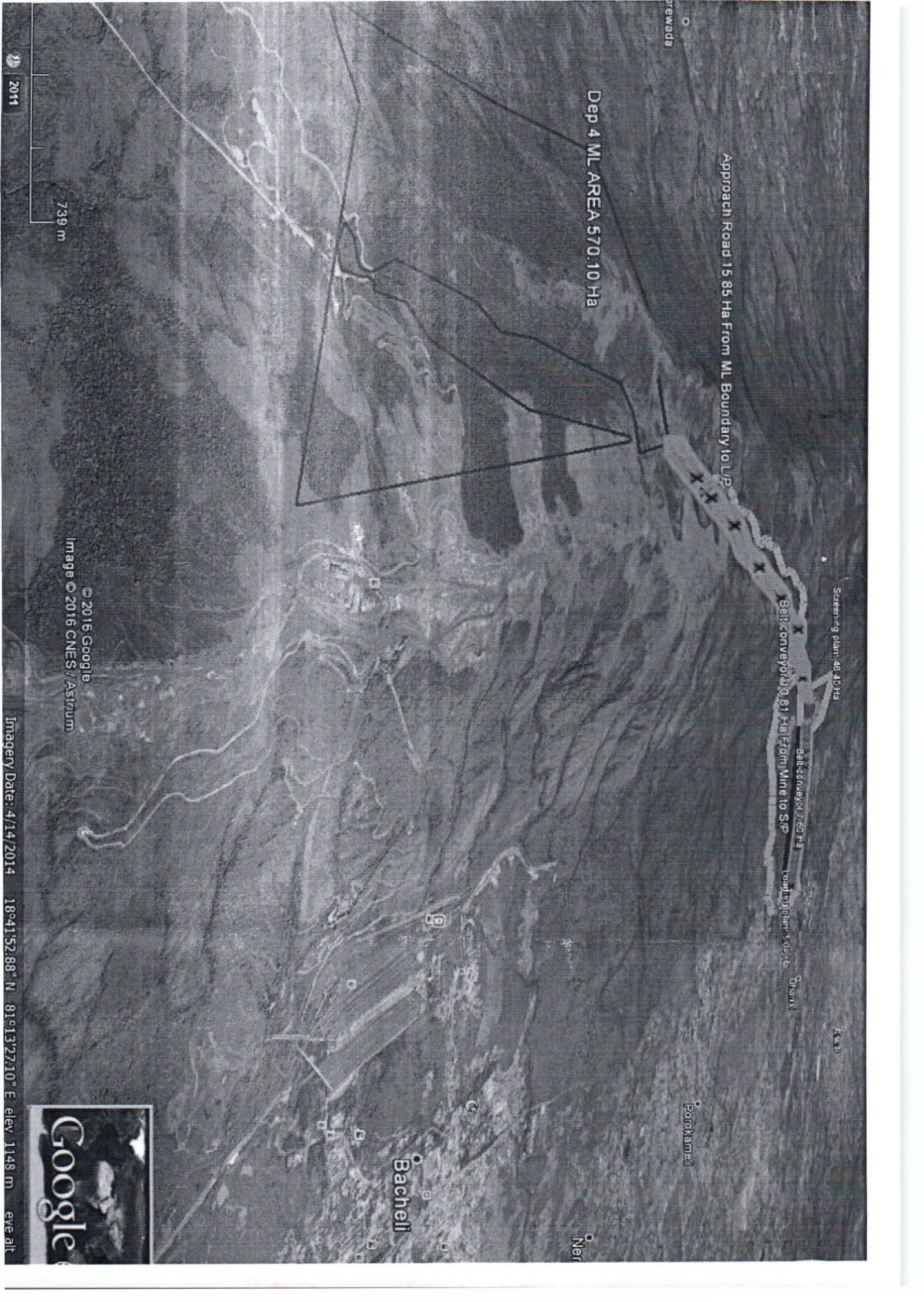
As of now no mining operations are underway in the reserve forests area that falls between deposit number 5 and 11 where the plant species are found.

"Earlier, the company had planned to apply for mining on 741 hectare of area of deposit number 4, but now it has reduced it by 76 hectare as tree fern reserve area was falling under the pre-decided plan. It will take time to start as they need to get forest clearance and fulfil other requirements before getting lease for mining in the area," Chakraworty said.

Concerned over the danger of survival of the plant, an activist has sought a study on the impact of mining on tree fern plant species.

"The situation is alarming as the surrounding of tree fern has already squeezed to a small area and if rampant mining continues, the plant species will only be a matter of study in books," Chhattisgarh Bachao Andolan convenor Alok Shukla said.

The forest department should conduct a detailed study on the impact of mining on tree fern and based on that further mining lease should be sanctioned, he suggested.



Approach Road 15.85 Ha From ML Boundary to L/P

Dep 4 ML AREA 570.10 Ha

Screening plant: 40.40 Ha

Bell conveyor: 0.81 Ha From Mine to S/P

Bell conveyor: 2.60 Ha

Road to plant: 1.06 Ha

Dams

Porkamel

Bachel

Ner

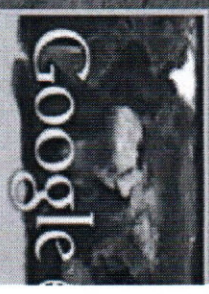
739 m

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Image © 2016 CNES / Astrium

2011

Imagery Date: 4/14/2014 18°41'52.88" N 81°13'27.10" E elev. 1148 m eye alt



Annexure-III

Details of Existing NMDC Mining Leases, in Chhattisgarh State (Dantewada District) (All Areas in Hectares)

M.L.Area	Original M.L. Area	Date of Grant of M.L.	Govt. Revenue Land	Area of Forest Land Involved	Area of Forest Land Surrendered	Forest Area Diverted for Non-Forest Purposes	Date of Issue of Final Forest Clearance from MOEF, New Delhi	Date of Issue of Forest Clearance from State Govt.	Date of Issue of lease Renewal Order from MRD. Bhopal
Bailadila Deposit-14 Kirandul	407.55	12/09/65	-	407.550	85.182	322.368	18/06/99	18/06/99	May, 2001
Bailadila Deposit-14 Kirandul	546.882	7/12/65	-	546.882	40.140	506.742	18/06/99	18/06/99	Pending with MRD office Chhattisgarh
Bailadila Deeposit-5 Bacehli	672.250	12/09/65	-	672.250	132.200	540.050	18/06/99	18/06/99	19/10/2005
Bailadila Deposit-10 Bacheli	326.340	11/09/65	-	326.340	17.00	309.34	29/07/98	24/08/98	02/01/2007
Bailadila Deposit-10 Float Ore Bacheli	308.130	12/09/67	-	308.130	165.330	142.800	29/07/98	24/08/98	Pending with MRD office Chhattisgarh
Bailadila Deposit-11 Bacheli	1809.230	13/09/67	42.09	1767.140	892.216	874.924	22/12/99	30/12/99	19/10/2005
Deposit -3 Bacheli	3308.34	03/08/77	-	3308.34	0	3308.34	-	-	Detailed prospecting proposed during 2001. After obtaining permission from Chhattisgarh Forest Deptt.
Deposit -13 Kirandul	413.745	8/10/2008	-	315.433	0	315.433	-	-	-
Deposit -4 Bacheli	646.596	13/01/2012 (In Principle)	-	665.230	0	-	-	-	-
Total	8439.063			8317.295	1332.068				

Annexure-IV

MINING LEASE WISE DETAILS OF ESTIMATED (PROVEN + PROBABLE) RESERVES

S. No.	Name of the mining lease	Name of Mining Project	Details of Proven reserves (Figure in LT)								
			1977 (Originally at the time of grant of mining lease FC)	1999 (Originally at the time of obtaining FC)	2002	2005 (During subsequent exploratory drilling)	2007 (During subsequent exploratory drilling)	2009 (During subsequent exploratory drilling)	2012 (During subsequent exploratory drilling)	2016 (During subsequent exploratory drilling)	
1.	Deposit 11 C Part	Kirandool	-	134.42		122.08		128.43		285.1	233.3
2.	Deposit 11 B Part	Kirandool	-	1031		1149.65		1149.65		1986.8	1986.8
3.	Deposit 14NMZ	Kirandool	-	797.38		591.37		517.98		1740.4	1369.9
4.	Deposit 14 ML	Kirandool	-	273.85		1708.28		1048.3		3728.43	3697.5
5.	Deposit -5	Bacheli	206	-		-		-	225.63	-	265.86
6.	Deposit-10	Bacheli	-	-	215	-	-	-	198.83	-	219.62
7.	Deposit – 11A	Bacheli	-	-	18	-	-	-	-	27.04	24.61
8.	Deposit-13	Bacheli									324.69
9.	Deposit-4	Bacheli									107.59
10.	Deposit – 10 Float ore	Exhausted and is presently used for infrastructure									
	Total Reserve Base at the time of start of mining						2675.65				
	Total Reserve Base Existing as on date						8229.87				
	Total Reserve as on date (Excluding Deposit-4 and 13)						7797.59				

(Detail of estimated reserves, as indicated above has been obtained from the User Agency)

File No.:

Proposal:

Location

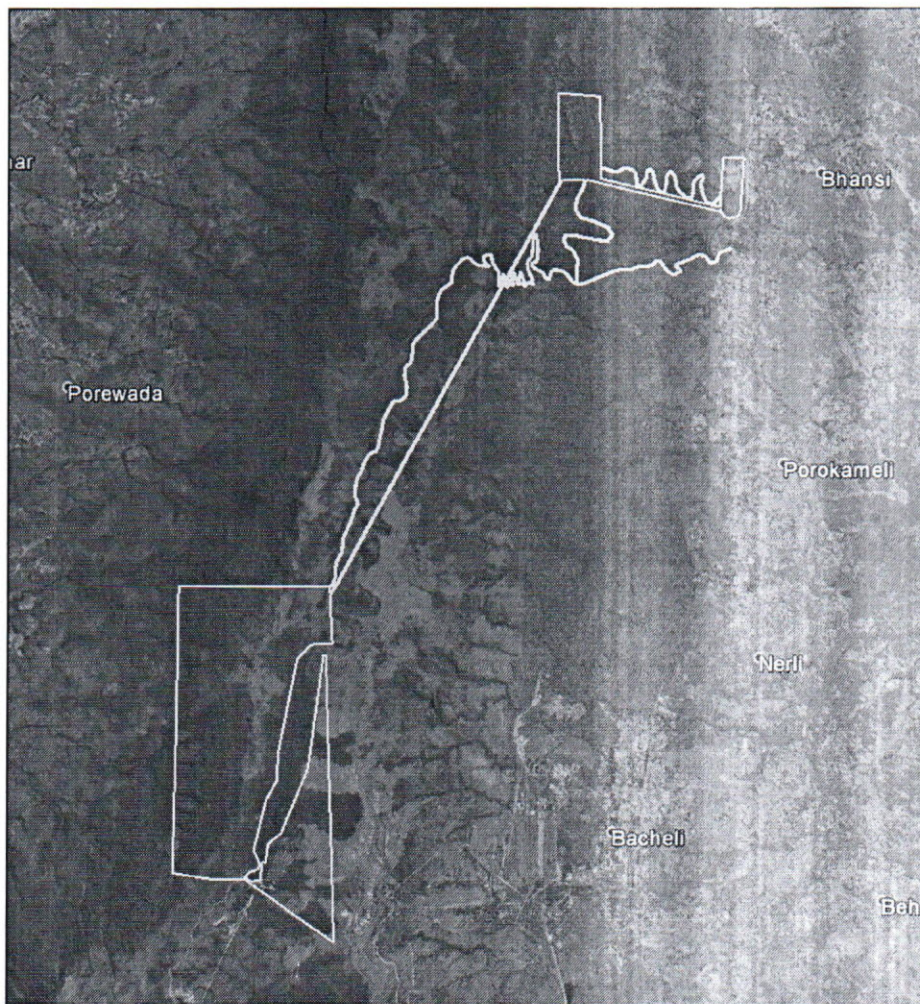
- State: Chhattisgarh
- District: Dantewada

Data provided by User/State:

- Shape file/KML file for Land under Diversion (Point): Available
- Shape file/KML file for Compensatory Land (Point) : Available

Analysis on Land under Diversion

Google Earth Imagery (Dated. 4/01/2016):



Decision Support System (DSS):

Decision Support System Result: Not-Inviolate (based on Decision Rule 1)

Area of the Land (Software calculated): 676.79 hectare.

10 Km radius: No PA/WLS/Tiger Reserve/Tiger Corridor

Net Present Value of the land:

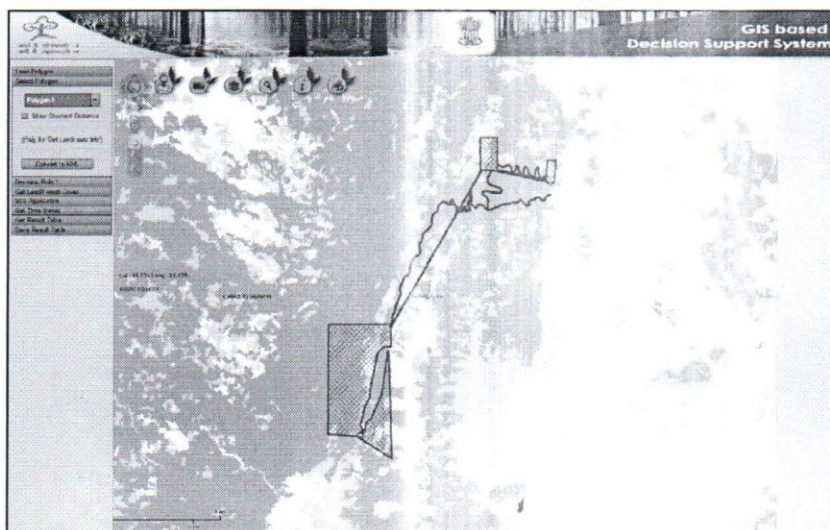
TOTAL AREA (HECTARE)	TOTAL NPV (LAKH RUPEES)
620.64	5473.89

ECOCCLASS ID	NPV AREA (HECTARE)	NPV VALUE (LAKH RUPEES)
Eco Class 1-MDF	448.31	4209.59
Eco Class 3-MDF	64.08	514.55
Eco Class 1-OPEN FOREST	59.86	436.99
Eco Class 3-OPEN FOREST	33.11	207.3
Eco Class 1-NON FOREST	9.41	68.7
Eco Class 3-NON FOREST	5.87	36.76

Decision Rule no. 1:

Whether forms part of:

- I. Hydrological Layer:
 - a. Major River: N/A
 - b. Wetland (Area more than 10 ha.): N/A
 - c. Water bodies (irrigation/Hydropower/water storage): N/A

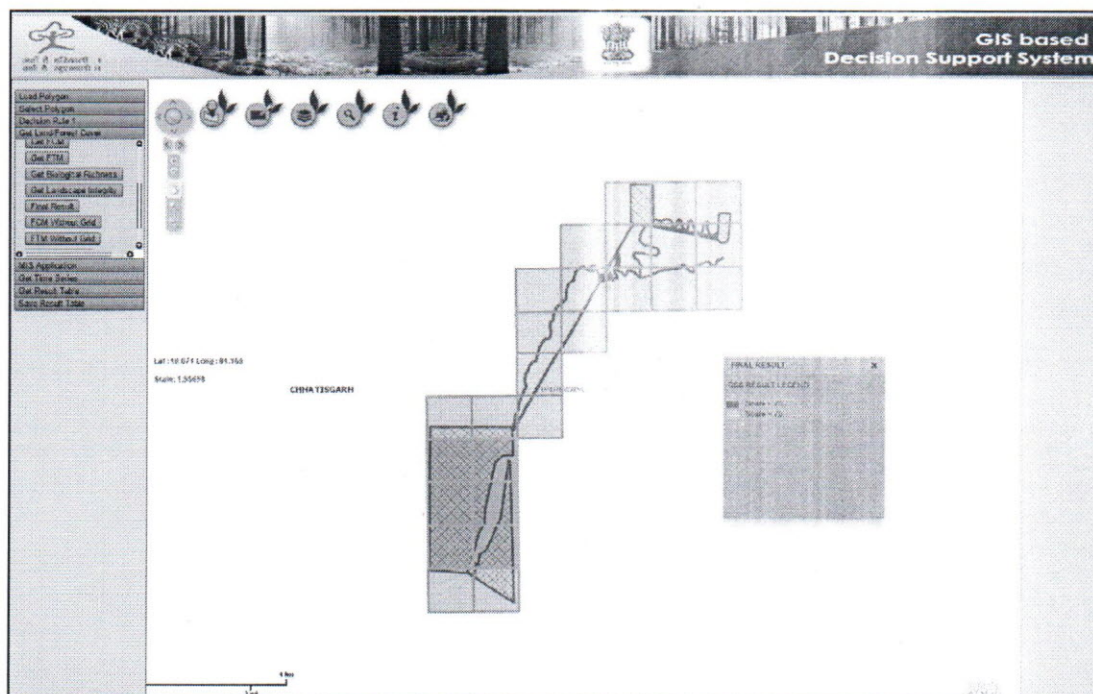


- II. Very Dense Forest patch (>1 sq km): N/A
- III. Remnant Forest Type: N/A
- IV. Protected area/Tiger Reserves/Tiger corridors: N/A
- V. Wild life Species: Sloth Bear

Decision Rule no.2:

GRIDID	SCOREFCM	SCOREFTM	SCOREBR	SCORELANDSCAPE	AGGREGATESCORE
2592915	59.73	61.75	82.79	80.46	71.18
2592914	76.62	79.96	78.94	84.11	79.91
2591691	59.84	63.66	80.61	82.12	71.56
2591690	77.46	79.96	74.78	84.56	79.19
2590466	62.04	70.83	81.62	84.48	74.74
2590465	77.42	79.96	71.34	86.6	78.83

DESCRIPTION	RESULT
Total Number of Grids	6
Total no. of (1 Km X 1 Km)Grids having total score above 70	6
Final Status (based on 4 out of 6 parameters)	Inviolat

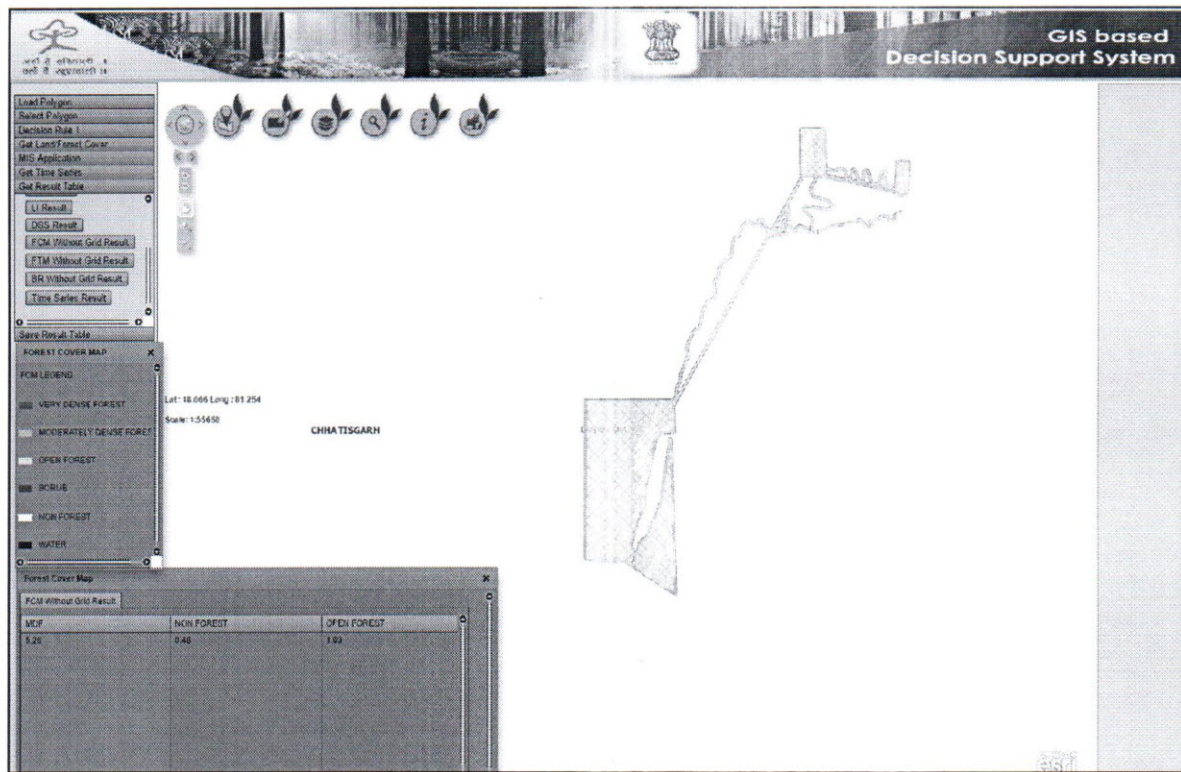


Final Result: Inviolate (based on Decision Rule 2)

Forest Cover Map:

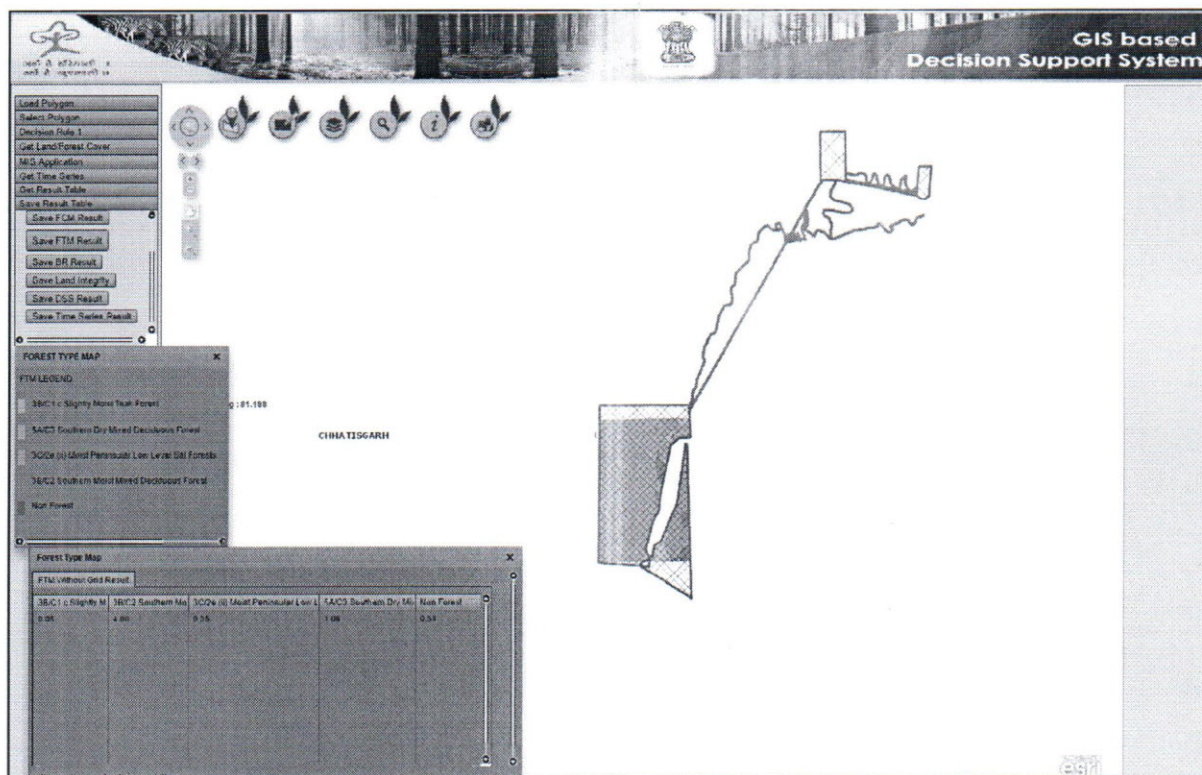
In terms of standards followed in ISFR 2015 (interpretation of satellite data period 2012-2014) regarding density classes:

- I. Very Dense Forest (Canopy density 70% & above): 0.00ha.
- II. Moderately dense Forest (canopy density 40-70%): 526 ha.
- III. Open Forest (canopy density 10-40%): 103 ha.
- IV. Land without forest: 48 ha.



Forest Type Map:

Details of Forest Types present: Moist peninsular Low Level Sal Forest (35 Ha.), Southern Moist Mixed Deciduous Forest (480 Ha.), Southern Dry Mixed Deciduous Forest (106 Ha.), Slightly Moist Teak Forest (5 Ha.) and Non-Forest (51 Ha.)



Biological Richness: Low: 201 ha., Medium: 85 ha., High: 384 ha., Non-forest: 6 ha.

