

**BEFORE THE NATIONAL GREEN TRIBUNAL
AT PRINCIPAL BENCH, NEW DELHI
ORIGINAL APPLICATION NO. 315 OF 2022**

IN THE MATTER OF:-

Saurabh Dev Pandey

...Applicant

Versus

State of Madhya Pradesh & Ors.

...Respondents

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 DATED: 5/1/23

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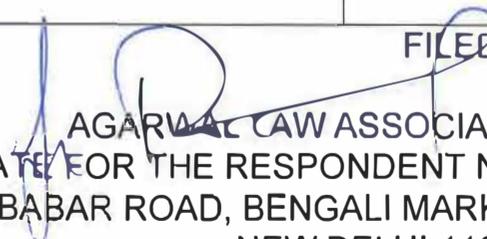
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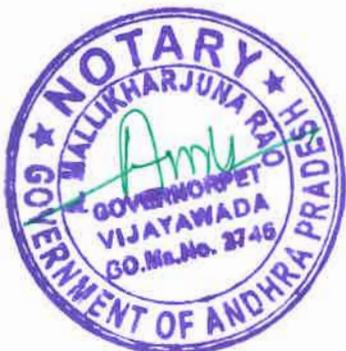
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**AFFIDAVIT IN REPLY ON BEHALF OF ANSWERING
RESPONDENT NO. 8, ANDHRA PRADESH MINERAL
DEVELOPMENT CORPORATION LIMITED (“APMDC”)**

I, V.G. Venkata Reddy, S/o Shri Subba Reddy aged about 58 years, an authorised representative of Respondent No. 8 - Andhra Pradesh Mineral Development Corporation Limited (**“answering respondent”**), having its registered office at Door No. 294/1d, 100 Ft. Road, (Tadigadapa to Enikepudu Road), Kanuru, Vijayawada – 521137, Krishna District, Andhra Pradesh, do hereby solemnly affirm and state as hereunder:

1. I am Respondent No. 8 in the present original application. I have read a copy of the Original Application No. 315/2022 (**“Original Application”**) filed by the Saurabh Dev Pandey (**“Applicant”**). I am aware of the facts of the case based on my personal knowledge as well as records maintained. Thus, I am competent and able to depose to the facts stated herein.




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2. I say that the present Application filed by the Applicant is bereft of any merits and deserves to be dismissed at the threshold. At the outset the Answering Respondent No. 8 denies each and every statement/averment in the form of allegations made in the instant Appeal to the extent the same is inconsistent with the case set out by the Answering Respondent No. 8. Nothing herein shall be construed as an admission of any of the statements made in the Original Application unless any statement is specifically admitted. No statement shall be deemed to be admitted for want of a specific traverse.

3. The answering respondent is a Government of Andhra Pradesh Undertaking and was incorporated on 24.02.1961 as a wholly owned undertaking of the Government of Andhra Pradesh for the development of mineral resources and promotion of mineral based industries including exploration, conservation, exploitation, processing, beneficiation and conversation into value added products. The Ministry of Coal, Government of India has allotted the Suliyari Coal Block situated in Singrauli District, Madhya Pradesh to answering respondent in the year 2007. However, the Hon'ble Supreme Court vide its order dated 25.08.2014 in WP (Criminal) No.120/2012 titled Manohar Lal Sharma Vs. Principal Secretary & Ors had cancelled the allocation of coal blocks including Suliyari

Coal Block of the answering respondent.




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4. That post cancellation of the coal blocks, the Central Government has enacted the Coal Mines (Special Provisions) Act, 2015.
5. That on 24.08.2016, the Nominated Authority, Ministry of Coal has executed Allotment Agreement in favour of the answering respondent and on 29.09.2016 has issued Allotment Order dated 29.09.2016 to the answering respondent in exercise of its power under Section-5 of the Coal Mines (Special Provisions) Act, 2015. The mining lease area of Suliyari mine comprises of 1298 hectares which include 259.239 hectares of forest land. The capacity of the Coal Mine is 5 MTPA.
6. The answering respondent submits that it has obtained the requisite/necessary consents/ clearances including consent to establish & consent to operate, mine opening permission and environment as well as forest clearances for starting of mining in the Suliyari Coal Block and that at present the mining activity is going on in the coal block. The mining has been started with effect from 26th August 2021. The capacity of the mine is 5 MTPA and at present the mine production from the coal block is around 1.49 MTPA (November, 2022).
7. The applicant in its Letter Petition filed before this Hon'ble Tribunal has alleged that the establishment of Suliyari Coal Block will damage the agricultural lands and cause environmental issues and of therefore, the original applicant prayed for cancellation of allotment



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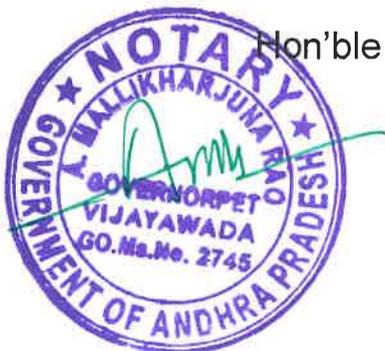
in view of preventing damage to the property and environment. It is also pertinent to note here that the applicant's father's land has been acquired for the project and the entire compensation of Rupees Two Lakhs Thirty Two Thousand Five Thousand Seventy Five (INR 2,32,575/-) has been paid to applicant's father.

8. That this Hon'ble Tribunal vide its order dated 09.05.2022 has constituted a Joint Committee comprising of representatives of the following authorities to verify the factual position and submit action taken report with this Hon'ble Tribunal.:

- i. Regional Office of the following MOEF&CC, Bhopal
- ii. Ministry of Coal, Government of India
- iii. Principal Chief Conservator of Forest (Head of Forest), State of Madhya Pradesh
- iv. State Environment Impact Assessment Authority, State of Madhya Pradesh
- v. State Pollution Control Board and
- vi. Collector, Singrauli, Madhya Pradesh

A copy of the order dt. 09.05.2022 passed by this Hon'ble Tribunal is annexed herewith and marked as **ANNEXURE R-1**.

9. That the Joint Committee in compliance of the directions given by this Hon'ble Tribunal has inspected the coal block area on 05.07.2022 and submitted its report on 19.07.2022 before this Hon'ble Tribunal for its consideration. A copy of the Joint Committee




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Report dt.19.07.2022 is annexed herewith and marked as **ANNEXURE R-2.**

10. That this Hon'ble Tribunal vide its order dated 04.08.2022 has issued notice in the Letter Petition filed by the Applicant to the answering respondent, who is the Project Proponent and coal block owner through its Executive Director, M/s Andhra Pradesh Mineral Development Corporation Ltd., Principal Chief Conservator of Forests (HoFF and Wildlife), Government of Madhya Pradesh, Director, Sanjay Gandhi Tiger Reserve and Chairman, State Board of Wildlife, Madhya Pradesh to file their response/ reply to the allegations made in the original application as well as observations made in the report of Joint Committee. A copy of the order dt. 04.08.2022 is annexed herewith and marked as **ANNEXURE R-3.**

11. It is submitted that the Joint Committee has conducted a site visit on 05.07.2022 and submitted its report on 19.07.2022, the main findings of the Joint Committee's Site Inspection Report, are reproduced below:

- a. The Suliyari Open Cast coal mine of the APMDC has been granted EC by MoEF&CC, Forest Clearance Stage II by MoEF&CC, CTO by MPPCB.
- b. The mine is situated far away from the designated CEPI area of the Singrauli Critically Polluted Area (now severely polluted area).




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- c. The number of trees felling and destruction of thick and dense forest were found to be unfounded and misconceived. As complained that 20 lac numbers of tress will be destroyed, the tree feeling number is only around 50,000, against which compensatory plantation @ 1000 numbers per hectares will be undertaken in an area of approximately 259 hectares. Also, mine management will plant trees within reclaimed mining lease area of 704 hectares approximately.
- d. Elephant movement in the area has not been noticed for the last 12-15 years. Hence there seems to be no perceivable threat to the "Elephant Corridor". Further, a comprehensive Wildlife Management Plan for the coal block amounting to Rs 31.05 Crores has been approved by Chief Wildlife Warden, Madhya Pradesh which is already being implemented.

12. The present short Affidavit is being filed by the answering Respondent in terms of Paragraph-7 of the order dt. 04.08.2022 passed by this Hon'ble Tribunal. This Hon'ble Tribunal at Paragraph-7 of the order dt. 04.08.2022 had observed as under:

7. As mentioned in para (xxi) of the above referred environmental clearance letter public hearing for the project of 5 MTPA capacity in an area of 1298 ha was conducted on 30.08.08.2019 at Playground of Government High School, Majhauilpath (core zone). Major issues raised in the public hearing included (1) Land Acquisition and R & R (2) Employment to locals (3) Plantation, Green belt development, (4) Compensatory Afforestation (5) Conservation of bio-diversity (6) Wildlife Conservation (7) Air Pollution. Appropriate action to address the issues raised in the



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Public hearing was proposed to be taken up. Since more than 45 percent population that is going to face displacement comprises of tribals, the clearance from the Ministry of Tribal Affairs, Government of India is also required. Amount of Rs. 9.9 crores has already been deposited with CAMPA for compensatory afforestation in lieu of the forest diverted i.e. 259 ha, but there is no mention of area/location where afforestation is to take place and the species to be planted. Copy of the detailed Action Plan prepared in this regard be furnished to this Tribunal. The project involves 1386 affected families and the Project Proponent has plan for Rehabilitation and Resettlement as per the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Copy of the detailed Action Plan about the Rehabilitation and Resettlement of the population which are likely to be displaced be filed before this Tribunal. The Action Plan should clearly spelt out the area where displaced persons will be resettled with details of civic amenities in the new villages, Rehabilitation and Resettlement package to be provided etc.”

13. It has been noted by this Hon'ble Tribunal in its order dated 04.08.2022 at para 5 that *“it is evident from the above said environmental clearance itself that the mining site is within 10 kms from Sanjay Gandhi Tiger Reserve ESZ boundary”*. In this regard it is submitted that as per the Gazette Notification dated 29th August 2017 issued by the Ministry of Environment, Forest and Climate Change (MOEF&CC), whereby the Ministry has notified the following under clause (1): -

*“(1) Extent and boundaries of Eco-sensitive Zone – (1)
The extent of Eco-Sensitive Zone is up to 2 kilometers from the boundary of Sanjay National Park and Sanjay Dubri Wildlife Sanctuary, which together constitute the Core Area of the Sanjay Dubri Tiger Reserve.*



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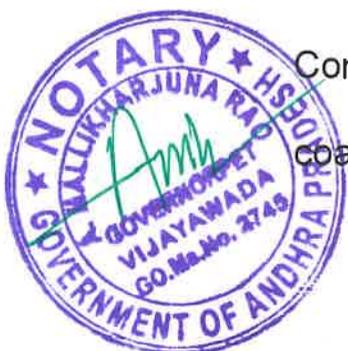
A Copy of the Gazette Notification dated 29th August 2017 issued by the MOEF&CC is annexed as **ANNEXURE R-4**

14. Further, the MOEF&CC vide its Office Memorandum F.No.22-43/2018-IA.III dated 08.08.2019 has provided the procedure for consideration of developmental projects located within 10 km of National Park / Wildlife Sanctuary seeking environmental clearance under the provisions of the Environmental Impact Assessment (EIA) Notification, 2006 and clause 4 (ii) of the said Office Memorandum clearly provides as under: -

“ii. Proposals involving developmental activity / project located outside the stipulated boundary limit of notified ESZ and located within 10 km of National Park / Wildlife Sanctuary, prior clearance from Standing Committee of the National Board for Wildlife (SCNBWL) may not be applicable. However, such proposals from environmental angle including impact of developmental activity / project on the wildlife habitat, if any, would be examined by the Sector Specific Expert Appraisal Committee and appropriate Conservation measures in the form of recommendations shall be made. These recommendations shall be explicitly mentioned in the environmental clearance letter and shall be ensured by the member secretary concerned.”

A copy of the Office Memorandum F.No.22-43/2018-IA.III dated 8th August 2019 issued by the MOEF&CC is annexed as **ANNEXURE R-5**

15. As per requirement of State Forest Department, a Site-Specific Conservation Plan / Wildlife Management Plan was prepared for the coal block project and same was approved by the Chief Wildlife

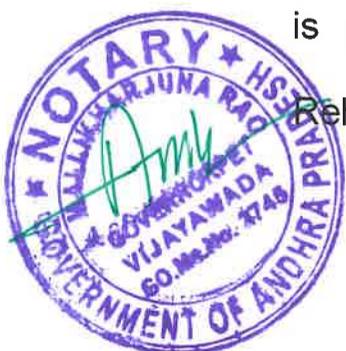


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Warden. It is pertinent to note here that Chief Wildlife Warden vide its letter no.6538 dated 16.09.2019 has approved the Site-Specific Wildlife Conservation Plan and also directed the answering respondent to deposit Rs.35.45 crores which includes Rs. 25 crores towards Sanjay Gandhi Tiger Reserve. A copy of the approved wildlife management plan of the answering respondent is annexed herewith and marked as **ANNEXURE R-6**. A copy of the approval letter no.6538 dated 16.09.2019 from Chief Wildlife Warden is annexed as **ANNEXURE R-7**.

16. In addition to the above and as directed in the approval letter of Wildlife Management Plan, an amount of Rs. 66.20 Crore was deposited in CAMPA vide RTGS payment dated 12th January 2021 including cost of Wildlife Management Plan of Rs. 35.45 Crores. Further, it is imperative to mention herein that implementation of Wildlife Management Plan is the responsibility of State Forest/Wildlife Department with the funds deposited by User Agency i.e. APMDC. A copy of the RTGS Payment to CAMPA is annexed herewith and marked as **ANNEXURE R-8**.

17. On the issue of the displacement of the local population due to coal mining, it is submitted that there is no requirement for obtaining the approval from the Ministry of Tribal Affairs, Government of India. It is pertinent to note here that all the benefits related to the Rehabilitation and Resettlement, Land Acquisition Compensation

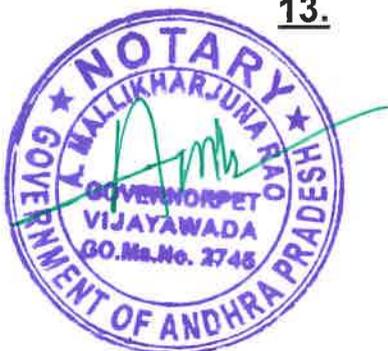


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etc. have been provided by the answering respondent to the concerned local population.

18. It is submitted that the total forest land to be diverted for the Coal Block is 259.239 Hectares, for which the Ministry of Environment, Forest and Climate Change has already granted Stage-I Forest Clearance vide letter dated 15th December 2020. A copy of the Stage-I Forest Clearance dt. 15.12.2020 is annexed herewith and marked as **ANNEXURE R-9**. That condition-wise compliance of Stage-I Forest Clearance was submitted to Divisional Forest Officer (DFO), Singrauli, vide letter dated 18th March 2021. A copy of the Stage-1 Forest Clearance Compliance Report is annexed herewith and marked as **ANNEXURE R-10**.
19. That Final Stage-2 Forest Clearance was granted on 15.06.2021 followed by the Forest Diversion order dt. 02.07.2021 of the Forest Department, State of Madhya Pradesh. The Environmental Clearance for the Coal Block was granted vide letter dated 12.04.2021. A copy of the Environment Clearance dt. 12.04.2021 is annexed herewith and marked as **ANNEXURE R-11**. A copy of the Stage-2 Forest Clearance dt. 15.06.2021 is annexed herewith and marked as **ANNEXURE R-12**. A copy of the Forest Diversion order dt. 02.07.2021 is annexed herewith and marked as **ANNEXURE R-**

13.



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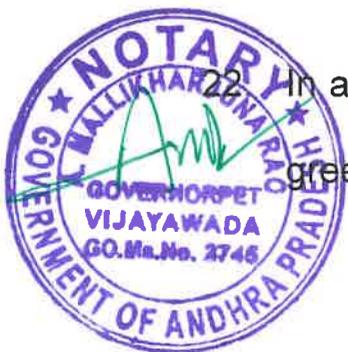
20. It is further submitted that the answering respondent has provided the non-forest land for compliance of compensatory afforestation at 267.46 hectare of land in lieu of the forest diversion of 259.239 hectares of land. It has deposited Rs. 9,93,51,319/- towards compensatory afforestation in the CAMPA Fund for carrying out the afforestation activity. Further, it is highlighted that implementation of compensatory afforestation is the responsibility of State Forest Department with the funds already deposited by Answering Respondent in the CAMPA.

21. The answering respondent has provided 267.46 hectares of land as well for carrying out the compensatory afforestation on the same. The details of area / location where afforestation is to be carried out is given below:

Sr. No.	District	Tehsil	Village Names	Area (Ha.)
1.	Singrauli	Chitrangi	Karodiya	21.43
			Rampurwa	29.40
			Jhaphrwa	52.75
			Bagadari	25.00
			Bichhi	31.01
			Dala	61.70
			Harma	46.17
	TOTAL			267.46

A copy of the map showing the area and khasra details is annexed herewith and marked as **ANNEXURE R-14**

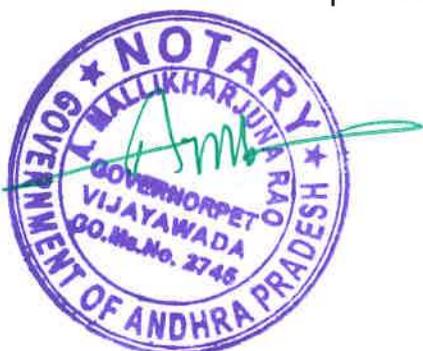
In addition to above mentioned compensatory afforestation, as per greenbelt development plan submitted to MoEF & CC as part of



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Environmental Clearance application, phase-wise plantation shall be done within mining lease area of Suliyari Coal Block. About 545260 nos. of saplings shall be planted over an area of 638.209 hectares of backfilled area, 13.778 hectares of Quarry benches and 52.643 hectares of other areas in year-wise manner till end of mining life. Since, mine is in its initial phase of mining & availability of land in the mining lease area including reclamation area is only available after excavation of coal & its backfilling ensuring safety of the benches as per DGMS guidelines, presently greenbelt development is in development stage, a pit head nursery has been developed for saplings for future greenbelt development. A copy of the greenbelt plan is annexed herewith and marked as **ANNEXURE R-15**.

23. The answering respondent submits that a comprehensive village wise plan has been prepared by the Forest Department, State of Madhya Pradesh for carrying out the plantation activities from the funds deposited by Answering respondent in the CAMPA. That as per the plan prepared by the state forest department, species majorly to be planted by the state forest department are *Shisu, Karanj, Neem, Awala, Beheda, Chironj, Kala seers, Mahua, Sagoun*. It is expected that around 1000 number of trees per hectare to be planted in 267.46 hectares amounting to about 2.67 lakh trees will be planted in compensatory afforestation area.




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24. That the coal block project involves 1599 affected families who are landowners involving 09 villages namely Khanua Naya Tola, Dongri, Jhalari, Aamdand, Majhauri Path, Belwar, Sirswah, Bajaudi and Amarikhoh and the Project Proponent has prepared a detailed plan for Rehabilitation and Resettlement as per the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. A Copy of the detailed Action Plan about the Rehabilitation and Resettlement of the population is annexed as **ANNEXURE R-16**.

25. The answering respondent submits that it has acquired 742.2 hectares of land in 9 villages, namely Aamdand, Amraikhoh, Bajaudi, Belwar, Sirswah, Dongari, Jhalari, Majhauripath and Khanuwa Naya situated in Singrauli district, State of Madhya. It is submitted that answering respondent has deposited the entire compensation amounting to Rs. 752,74,04,687/- (which include Admin Charges of Rs.35,84,47,842/- as well) with the District Collector, Singrauli, as calculated under the provisions of the Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013 for disbursal of the compensation to the affected families and till dated the District Collector has disbursed the compensation to the tune of Rs.684,01,31,593/-. It is submitted that the displaced families will be rehabilitated in village Khanua Naya Tola. A copy of the details of disbursement of compensation is annexed herewith as **ANNEXURE**



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R-17. A copy of the present status of the rehabilitation plan is annexed herewith and marked as ANNEXURE R-18.

26. The Rehabilitation and Resettlement of Project Displaced Families (PDFs) is part of project implementation and a comprehensive socio-economic survey to assess the actual R&R requirement which has already been carried out in the year 2012 based on the Model Rehabilitation Policy 2002 of Madhya Pradesh. As per survey, the project demands for approximately 1599 families to be rehabilitated and resettled. Further, since the coal block was cancelled in the year 2014 due to the judgment of Hon'ble Supreme Court in M.L Sharma case and the block again allotted to answering respondent on 29.09.2016 by the Ministry of Coal, Government of India under the Coal Mines (Special Provisions) Act, 2015. Therefore, due to this socio-economic profile of the project area has been changed from the earlier reported socio-economic survey findings done in 2012. Subsequently answering respondent has revised the Rehabilitation & Resettlement policy in 2018 which was duly approved by the Commissioner, Rewa Division, Rewa District, Madhya Pradesh and the District Collector, Singrauli, Madhya Pradesh.

27. The Rehabilitation & Resettlement Policy has been approved under the provisions of the Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement

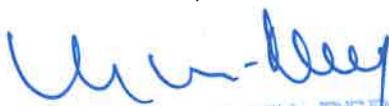


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Act, 2013. Under the approved R&R Scheme following benefits are provided: -

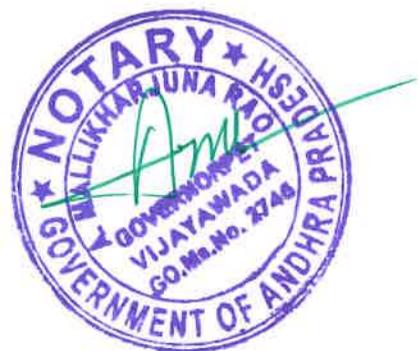
- a. Allotment of house/plot 90x60 sq. ft. plot will be given to the family displaced by the project in the selected village Khanua Naya Tola for rehabilitation. In which the house will be constructed by the company, if the house built by the company is not taken by the displaced family, then Rs.5.00 lakh will be payable by the company for the construction of the house. If a family does not want to take a plot in the resettlement colony, then an amount of 2.00 lakh will be paid in lieu of the plot.
- b. If a displaced family does not want to take both the plot and the house, then Rs.2.00 lakh will be payable instead of the plot and Rs.5.00 lakh instead of the house. Altogether Rs 7.00 lakh will be payable.
- c. **Employment Allowance-** If at least one member of each family displaced by the project is not given employment by the company within 03 years from the date of award, then that person will be given monthly living at the rate of Minimum Government Agricultural Wage Rate (MAW). Allowance Rs.7000/- Will be given If the head of the family is a female member, then she will also be eligible to get subsistence allowance, but this




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unemployment allowance will be payable for a period of 03 years from the date of displacement, provided that Rs.5.00 lakh by the company for self-employment to an adult member of that family. If lump sum amount is not paid.

- d. Grant for Cattle Shed 50,000/- (fifty thousand) will be payable by the company to each displaced family in one lump sum for making cattle crowd for the cattle of the displaced.
- e. **Free transportation arrangements and transportation expenses** - The displaced family's household items, building materials, movable property, pets, agricultural implements, agricultural produce and transportation of his family will be arranged by the company free of cost. Apart from this, a lump sum financial assistance of Rs 50,000/- (fifty thousand) will be given to the head of the displaced family by the company as transportation expenses.
- f. **Old Age Pension** - Women and male members of every displaced family, whose age has become 55 years on the date of award, will get Rs.2000/- (two thousand) per month.




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- g. Education and Scholarship Higher Secondary with all facilities with playground for the study of children of each family displaced from the project area. Age has become 55 years on the date of passing of the award. Rs 2000/ thousand per month).
- h. The title of the plot will be issued to the displaced in the resettlement colony on the basis of the allotment letter of the company on the prescribed format by the concerned Tehsildar. On which the displaced person will get all the rights of the land owner. And the transfer can be done on the basis of the lease issued by the Tehsildar. The lessee Bhumiswami will have the right to transfer the land as per the law.
- i. **Education and Scholarship Program-** The construction of a higher secondary level school building with all facilities for the study of the children of each family displaced from the project area will be done by the company in Rehabilitation Village Khanua Naya Tola. In this school, children studying from class 01 to class 12 will be provided free education and every child studying in the displaced / affected family will be provided free books, stationery, school uniform by the company. To encourage the students studying in the school, the



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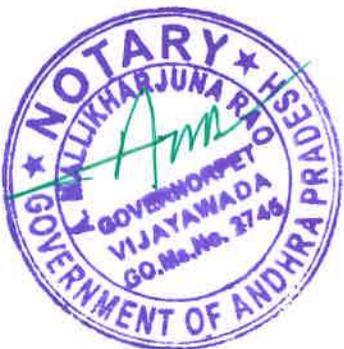
following scholarship will also be provided by the company every month for Class 01 to 12 Boy- 500 & girl child- 600 and 50,000 will be given to the 10th and 12th first class passed students/girls.

- j. **Medical Facility-** A fully equipped hospital will be constructed by the company in Rehabilitation Village, Khanua Naya Tola, in which there will be provision of maternity home, pathology lab, emergency medical room, outpatient medical room, dispensary, archives office and waiting house, drinking water etc. Free medical facilities will be provided to the family members displaced / affected by the project in this hospital.
- k. **Mahua and Tendupatta Collection Allowance-** The head of any such family displaced from the project area who used to earn his family living by collecting Mahua or Tendu leaves. So, on the basis of the application of that person, after getting confirmation from the Forest Department, in the event of being found correct, the minimum agricultural wage rate fixed by the government for a minimum of 500 working days, which will not be less than Rs. 50000 / - (fifty thousand), Will be payable in one lump sum.




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- l. **Job Training and Scholarship to Displaced Families**
- At least one member of each family displaced by the project.
- m. Priority will be given in providing employment as unskilled labor in the construction works being carried out in the project area. Persons displaced for employment in the project will register their names with the project representatives. The cooperation of the Sarpanch of the concerned Gram Panchayat will be required in this work.
- n. **Training to the displaced-** The company will organize free industrial and computer training for the displaced from recognized institutions. And employment will be ensured by the company to the trained youth and girls. During the scholarship training, a member of the displaced family, who is receiving training, will be provided a scholarship of 1000 / - per month according to the merit.
- o. **Self-employment-** Skill development training will be organized by the company to develop the ability of the displaced to establish their own employment.



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Kanuru, Vijayawada-521 107.

p. **Explanation of Employment-** Employment means that by issuing direct appointment orders to a displaced in their project by the company, regular monthly salary is given and regular deduction is made like regular employees. This employment will be as per the rules of the company. In which Provident Fund, Gratuity and other allowances will be provided. Any person will be engaged in employment work through cooperative societies or through individual contracts. If at least one member of the displaced family is not employed by the company or he does not want to do the job himself, then a lump sum grant of Rs.5.00 lakh (Rs. five lakh) for self-employment to one member of that family.

q. Allotment of shops built in Rehabilitation Village Khanua Naya Tola will be made free of cost to the displaced families, 90 percent reservation of shops will be made for them. The above reservation will be done mainly for shops of grocery, general stores, medicine, milk, bread, laundry, vegetables, fruits etc. One of these shops will be kept safe for fair price shop. The priority order of shop allotment will be as follows:

i. Self-help groups (for all sections) run by women.

Physically Handicapped Persons (for all categories),




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 Raipur, Vijayawada-521 137.

- ii. Scheduled Tribe Persons
- iii. Persons belonging to Scheduled Castes.
- iv. Other Backward Classes Persons
- v. Members of the family run by female head (for all classes).
- vi. Person from multi-displaced family (for all classes).
- vii. General category people.

However, if the applications of several persons eligible for allotment of the specified categories from the above number are brought to get the shop, then in such a situation, according to the availability of the shop, that category will be removed from the lottery system. In such a situation, according to the availability of the shop, the person of that class will be eligible to get the shop through the lottery system.

- r. **Formation of Shramkari Contract Committees-** Labor contract committees will be formed only by the members of the displaced family from the project. Priority will be given to the members of these committees in completing the construction or other works that will be done by the project, all the action related to the formation of such self-employment committees and groups will be done by



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the company. The registration of these societies will be done by the Deputy Registrar Co-operative Societies.

28. The answering respondent further craves liberty of this Hon'ble Tribunal to file a further parawise reply/additional affidavit as may be required at the appropriate stage.

29. In view of the above facts as narrated above, it is most humbly prayed that the present Original Application filed by the Applicant ought to be dismissed for the reasons as mentioned above.

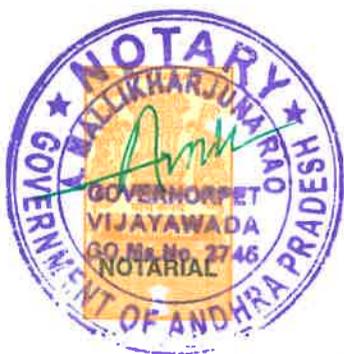

DEPONENT
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VERIFICATION

I, V.G. Venkata Reddy, the abovenamed deponent, do hereby verify that the contents of the foregoing reply affidavit are true and correct to my knowledge and no part of it is false and no material has been concealed therefrom.

Verified at VIJAYAWADA on this 02nd day of January, 2023.


DEPONENT
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 (Tadigadapa to Enikepadu Road)
 Kanuru, Vijayawada-521 137.





A. MALLIKHARJUNA RAO
 B.Com., B.L
 Advocate / Notary
 #29-1-30A, Governorpet,
 VIJAYAWADA-520 002 A P

02/01/2023

ANNEXURE-R1

Item No.6

(Court No. 2)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH**

(By Video Conferencing)

Original Application No.315/2022

Saurabh Dev Pandey

Applicant

Versus

State of M.P. & Ors

Respondent

Date of hearing: 09.05.2022

**CORAM: HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER
HON'BLE DR. AFROZ AHMAD, EXPERT MEMBER****Application is registered based on a complaint received by Email****ORDER**

1. The prayer in the present letter petition sent by Dr. Saurabh Dev Pandey resident of 180/40, Thana Road, Bedhan, District Singrauli is for cancellation of allotment of Suliayari Coal Block has been allotted to Andhra Pradesh Mineral Development Corporation (APMDC) at Singrauli.
2. The applicant has averred that Suliayari Coal Block has been allotted to Andhra Pradesh Mineral Development Corporation (APMDC) at Singrauli which has been reported to be 22nd most polluted area in the World. Establishment of Suliayari Coal Block will damage the agricultural lands of the applicant and many other farmers apart from damaging big land area of natural dense forest. About 20 lakh trees will be cut on the border of Suliayari Coal Block. These areas are adjoining dense forest of Chhattisgarh which is rich habitat of hundreds of wild elephants and also an elephant corridor is proposed since many decades. The allotment may be cancelled in view of preventing damage to property and environment.

As
TRUE COPY

3. In view of the serious allegations made in the present letter petition, we consider it appropriate to have a factual and action taken report from a Joint Committee comprising of representative of Regional Office of MoEF&CC, Bhopal, Ministry of Coal, Government of India, PCCF (HOF), State of Madhya Pradesh, SEIAA, State of Madhya Pradesh, State PCB and Collector, Singrauli and direct the same to verify the factual position, look into the grievances of the applicants and take remedial action in accordance with law by following due process within one month from the date of receipt of a copy of this order. State PCB will be the nodal agency for co-ordination and compliance. Factual and action taken report may be furnished within two months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/OCR Support PDF and not in the form of Image PDF.

List the matter for further consideration on 04.08.2022.

A copy of this order, along with a copy of the complaint, be forwarded to the Regional Office of MoEF&CC, Bhopal, Ministry of Coal, Government of India, PCCF (HOF), State of Madhya Pradesh, SEIAA, State of Madhya Pradesh, State PCB and Collector, Singrauli by e-mail for compliance.

Arun Kumar Tyagi, JM

Dr.Afroz Ahmad, EM

May 9, 2022
Original Application No. 315/2022
AG

As
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REPORT OF THE JOINT COMMITTEE

**IN COMPLIANCE WITH THE HON'BLE
NATIONAL GREEN TRIBUNAL ORDER
DATED 09-05-2022**

**IN O.A. 315 / 2022 (SAURABH DEV
PANDEY VS. STATE OF MP & ORS.)**

**REPORT OF THE JOINT COMMITTEE CONSTITUTED BY HON.
NGT VIDE ORDER DATED 09-05-2022 IN OA 315/2022
(SAURABH DEV PANDEY VS. STATE OF MP AND ORS.)**

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4.	Enclosure 3: Copy of the consent dated 19-12-21 granted by MPPCB	25-31
5.	Enclosure 4 : Copy of the Final Approval/ Stage II Clearance dated 15-06-21 for diversion of 259.239 hectare of forest land	32-35
6.	Enclosure 5 : Details of tress in revenue land & rehabilitation area	36
7.	Enclosure 6: Copy of the approval dated 16-09-19 of Wildlife Conservation Plan	37-47
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**REPORT OF THE JOINT COMMITTEE CONSTITUTED BY HON.
NGT VIDE ORDER DATED 09-05-2022 IN OA 315/2022
(SAURABH DEV PANDEY VS. STATE OF MP AND ORS.)**

1.0 Background :

1.1 Shri Sourabh Dev Pandey, resident of 180/40, Thana Road, Baidhan, district Singrauli (MP) had sent an e- mail dated 10/03/2022 to the Registrar General of the NGT, addressing to the Hon. Chairperson of the NGT that, the Singrauli district of MP is endowed with mineral wealth, but the air quality of the area is toxic to the citizens, and the area has been declared as Critically Polluted Area; in such a situation Singrauli is being further cursed by allotting the Suliyari Coal Block to Andhra Pradesh Mineral Development Corporation (APMDC); this coal block will not only deprive many farmers of their agriculture land but will also be a cause of cutting of around 20 lacs trees of the natural forest; it has also been alleged that the coal adjoins the State of UP and Chhattisgarh and hundreds of elephants that reside and move in these jungles; that an elephant corridor was earlier proposed in this area but that project has also been shelved; that APMDC has produced falsified documents to mislead the Central Government so that the permission for felling of the tress can be obtained easily. He has also alleged that the Suliyari Coal Block allotment shall be cancelled forthwith for the conservation of environment and public good. The complainant has attached with his complaint two news paper cuttings in which the allegations as mentioned above have been published.

- 1.2 Hon. NGT admitted the complaint of Shri Pandey as OA 315 of 2022 and vide its order dated 9-5-2022 was pleased to order that :

“In view of the serious allegations made in the present letter petition, we consider it appropriate to have a factual and action taken report from a Joint Committee comprising of representative of Regional office of MoEF&CC, Bhopal, Ministry of Coal, Government of India, PCCF (HOF), State of Madhya Pradesh, SEIAA, State of Madhya Pradesh, state PCB and Collector, Singrauli and, direct the same to verify the factual position, look into the grievances of the applicants and take remedial action in accordance with law by following due process within one month from the date of receipt of a copy of this order. State PCB will be the nodal agency for co-ordination and compliance. Factual and action taken report may be furnished within two months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/OCR Support PDF and not in the form of Image PDF.”

- 1.3 In compliance of the order of Hon. NGT, a committee comprising of the following officers visited the site of the Suliyari Coal Block on 05-07-2022:

S.No.	Name of the Officer	Designation	Department
1.	Shri Sunil Agarwal	PCCF (CAMPA)	Forest Department GoMP
2.	Shri Anandji Prasad	Advisor (Project)	Ministry of Coal, GoI
3.	Shri Anil Kumar Sharma	Member	MP-SEIAA,
4.	Shri V.B. Meena	Scientist, C	MoEF&CC, I.R.O. Bhopal
5.	Shri Akash Singh	SDM, Sarai	Representing Collector, Singrauli
6.	Shri H.K. Sharma	Zonal Officer	MPPCB, Jabalpur

1.4 Collector, Singrauli could not join the committee because of his engagements in the local municipal and panchayat elections. Other officials Shri Madhu V. Raj, DFO Singrauli & Shri Mukesh Shrivastav, Regional officer, MPPCB, Singrauli were also present during the inspection. On behalf of the APMDC mine management, Shri A. Lakashmana Rao, GM Coal, Shri Bachcha Prasad Cluster Head Singrauli from the side of mine development organisation M/s Adani Enterprises Ltd, and others were present. The petitioner Mr. Pandey was informed well in advance through e-mail about the proposed visit. He was also contacted on his available mobile number, on 4th July and 5th too, which was found switched off and no telephonic contact could be made. He himself had not tried to revert to the e-mail intimation, thereby indicating his unwillingness to participate in the inspection.

2.0 About Suliyari Mine :

2.1 The Suliyari Mine is situated in the Sarai Tehsil of the Singrauli district. The mine is situated on the Suliyari-Dongri Road, which passes through the mine lease area, and is proposed to be shifted in due course of time. Mine co-ordinates are –

Latitude: 23⁰55' 30.23" N to 23⁰58'17.12" N and

Longitude: 82⁰18' 46.09" E to 82⁰20' 51.08" E.

The mine is not situated in the designated Critically Polluted Area of Singrauli, the road distance is approximately 65-70 km while the aerial distance is approximately 30 km. An indicative google earth screenshot is placed as **ENCLOSURE 1**.

- 2.2 The forest area diverted for this mine neither comes under any National Park nor in any Wildlife Sanctuary. Mine area is away from Eco Sensitive Zone of Sanjay Tiger Reserve.
- 2.3 The mine lease area is 1298 hectares and it falls in 9 villages, namely Amadand, Amraikhoh, Bajaudi, Dhirauli, Jhalari, Majhaulipath and Seerswah.
- 2.4 The mine of the Andhra Pradesh Mineral Development Corporation (APMDC) has been granted Environmental Clearance (EC) as per the provisions of the EIA Notification, 2006 by MoEF&CC on 12-04-21, for a capacity of 5 MTPA. A copy of the EC is placed as **ENCLOSURE 2**. The mine has been granted CTO by the MPPCB, presently for the mining in 95 hectares of the land which is valid till 31-07-2022, a copy of which is placed as **ENCLOSURE 3**.
- 2.5 As per the EC, the land use details of the mine are as under:

S.No.	Land Use	Within ML Area	Outside ML Area	Total
1.	Agriculture Land	251.860	-	251.860
2.	Forest Land	259.239	-	259.239
3.	Waste Land	396.720	-	396.720
4.	Grazing land	0.00	-	0.00
5.	Surface Water Bodies	46.060	-	46.060
6.	Settlements	51.990	-	51.990
7.	Others (Barren Tenancy Land)	292.131	-	292.131
	Old Excavation Area(East Quarry)	-	-	-
	Old Excavation Area(West Quarry)	-	-	-
	Old OB Dumps	-	-	-
	Road & Mine Infrastructure	-	-	-
	R & R Colony (Proposed)	-	118.5	118.5
	Staff Colony (Proposed)	-	5.0	5.0
	Green Belt	-	-	-
	Balance Area	-	-	-
	Total Project Area	1298.000	123.5	1421.5

3.0 Forest Area & Trees :

- 3.1 The forest cover which falls in the mining lease area of the APMDC Suliyari mine is 259.239 hectares, which includes 226.349 hectares of forest area and 32.89 hectares of revenue forest. Out of this, 156.68 hectares is protected forest area while 69.669 hectares is reserve forest.
- 3.2 The final approval / stage II clearance for the diversion of 259.239 hectares of the forest land for Suliyari Open Cast Coal mining in favour of APMDC has been granted by MoEF&CC on 15-06-2021, a copy of which has been placed as **ENCLOSURE 4**.
- 3.3 Unlike mentioned in the letter complaint, the no. of tress that have been recorded in the records of the forest department as well as the revenue department are as under:

Land Details	Area (Hectares)	No. of Trees
Forest Land	226.349	15710
Revenue Forest	32.89	458
Revenue Area	Privately Owned land	19191
	Government Land	13101
	TOTAL:	48460

Apart from the above count, few pollarded trees are also available in the forest area, which is approximately 2000-2500 in numbers. The details of the tress in revenue land and rehabilitation area are placed as **ENCLOSURE 5**.

- 3.4 Felling of the trees after Stage II diversion of the forest land, has been started and around 7900 tress have been fallen. Approximately an area of 89 hectares of forest land and 32.89 hectares of revenue forest land has already been

handed over to the project proponent. During the forest inspection, the reserve forest density has been found to be better than the protected forest density. A few patches of diverted forest land is having moderate dense forest while most of the forest area is found to be open forest.

- 3.5 Project Proponent has made available equivalent non forest land for the compensatory afforestation. In addition to this, a sum of Rs. 9,93,51,319 has also been deposited in CAMPA account for undertaking plantation work. The area preparation work like fencing of area, pit digging etc for plantation has been started and plantation will be done in July, 2022.
- 3.6 Thus, the notion of the complainant that trees, numbering 20 lacs will be fallen and cut, was not found to be correct during the inspection by the team and has been found to be highly exaggerated.

4 Elephant Movement and Corridor :

- 4.1 It is respectfully submitted that the working plan for this area was prepared way back in 2008. At that point in time, there would have been elephant movement in the area and provision had been made in the plan for conserving the elephant corridor.
- 4.2 However no movement of the elephant in the area has been noticed for the last 12-15 years by the forest department. During inspection, the senior and aged villagers have reported that they have also not seen or heard of the elephant movement in the nearby areas for last many years.
- 4.3 A new working plan for this region is under preparation and the contention of the complainant that the project of the

elephant has been shelved (ठन्डे बस्ते में डाल दिया) is misconceived and unfounded.

- 4.5 To mitigate the adverse effects of this mine on elephants, a Wildlife Management Plan has been prepared and this wildlife management plan is duly approved by Chief Wildlife Warden of Madhya Pradesh. A copy of approval dated 16-9-19 is enclosed as **ENCLOSURE 6**. User agency has deposited an amount of Rs. 31.05 Cr. in CAMPA fund for implementation of this management plan.

5. Conclusion:

- 5.1 Based on the inspection by the joint committee, following conclusions are drawn, which are as under:

- *The Suliari Open Cast coal mine of the APMDC has been granted EC by MoEF&CC, Forest Clearance Stage II by MoEF&CC, CTO by MPPCB.*
- *The mine is situated far away from the designated CEPI area of the Singrauli Critically Polluted Area (now severely polluted area).*
- *The number of tree felling and destruction of thick and dense forest were found to be unfounded and misconceived. As complained that 20 lac numbers of tress will be destroyed, the tree feeling number is only around 50,000, against which compensatory plantation @ 1000 numbers per hectares will be undertaken in an area of approximately 259 hectares. Also mine management will plant trees within reclaimed mining lease area of 704 hectares approximately.*

- *Elephant movement in the area has not been noticed for the last 12-15 years. Hence there seems to be no perceivable threat to the “Elephant Corridor”. Also a Wildlife Management Plan amounting to Rs 31.05 Cr has been approved by Chief Wildlife Warden, which is being implemented.*

Report is being submitted for the kind perusal of Hon. NGT in compliance of its order dated 09-05-2022. Photographs as taken during the visit are also enclosed.

(Anandji Prasad)
Advisor (Project)
Ministry of Coal, GoI

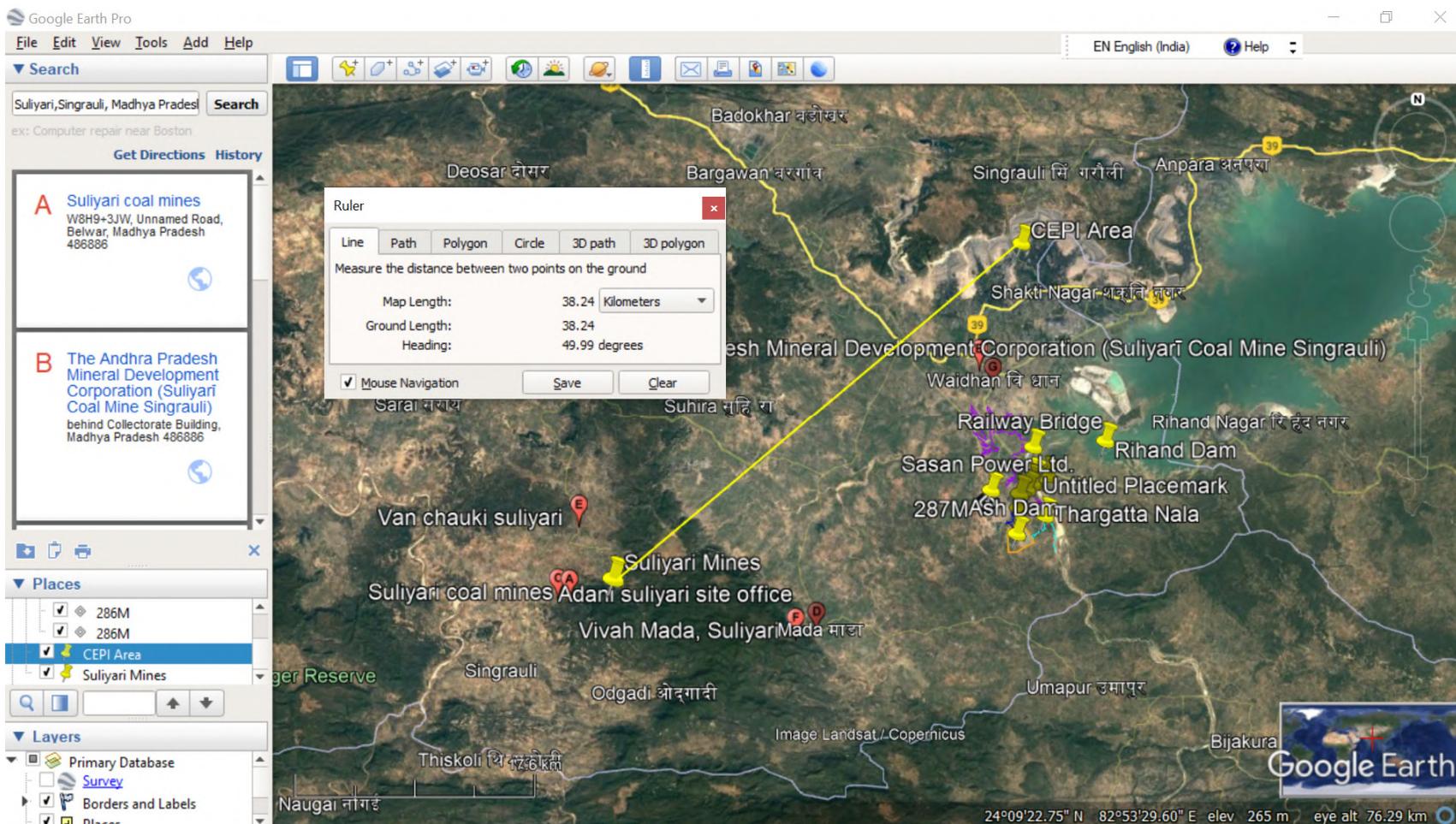
(Anil Kumar Sharma)
Member
MP-SEIAA

(Sunil Agarwal)
PCCF (CAMPA)
Forest Department
GoMP

(H.K. Sharma)
Zonal Officer
MPPCB, Jabalpur

(V.B. Meena)
Scientist, C, Regional
Office, MoEF&CC,
Bhopal

(Akash Singh)
SDM, Tehsil Sarai
Representing Collector,
Singrauli



ENCLOSURE 1



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

ENCLOSURE 2

Indira Paryavaran Bhawan,
 Jorbagh Road, N Delhi - 3
 Email: lk.bokolia@nic.in Tel: 01124695363

Dated: 12th April, 2021

To

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

Sub: Suliyari Coal Mining Project of 5.0 MTPA of M/s Andhra Pradesh Mineral Development Corporation Limited in mine lease area of 1298 ha located in Singrauli Coalfields, Tehsil Sarai, District Singrauli (Madhya Pradesh) –For Environmental Clearance – reg.

Sir,

This has reference to your online proposal No. IA/MP/CMIN/73904/2018 dated 6th April, 2020, submitted to this Ministry for grant of Environmental Clearance (EC) in terms of the provisions of the Environment Impact Assessment (EIA) Notification, 2006 under the Environment (Protection) Act, 1986 for Suliyari Coal Mining Project of 5.0 MTPA of M/s Andhra Pradesh Mineral Development Corporation Limited in mine lease area of 1298 ha located in Singrauli Coalfields, Tehsil Sarai, District Singrauli (Madhya Pradesh).

2. The project/activity is covered under category 'A' of item 1(a) 'Mining of Minerals' the Schedule to the EIA Notification, 2006
3. The proposal was considered by the sectoral Expert Appraisal Committee (EAC) in its 51st meeting held on 5th December, 2019, 54th EAC held on 17th April, 2020 and 56th EAC meeting held on 20th June, 2020. The details of the project, as per the documents submitted by the project proponent, and also as informed during the meeting, are reported to be as under: -
 - (i) The project area is covered under Survey of India Topo Sheet No. 64 I/5 and is bounded by the geographical coordinates ranging from latitudes 23°55'30.23"N to 23°58'17.12"N and longitudes 82°18'46.09"E to 82°20'51.08"E.
 - (ii) Coal linkage of the project is proposed for sale of coal to be used by end use plants (viz. Thermal Power plants).
 - (iii) Joint venture cartel - Not Applicable

- (iv) Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 13th January, 2010 has imposed moratorium on grant of environment clearance.
- (v) Employment generation: employment to 1157 persons will be provided from the project.
- (vi) The project is reported to be beneficial in terms of the following: (a) Employment generation (b) Revenue generation to the Govt. (c) Meet the rising demand of coal for power generation (d) Peripheral development, CSR and CER activities.
- (vii) Total mining lease area as per block allotment is 1298 ha. Mining Plan (Including Progressive Mine Closure Plan) has been approved by the Ministry of Coal on 08.07.2019.
- (viii) The land usage pattern of the project is as follows:

Pre-mining land use details**(Area in Ha)**

S. No.	Land Use	Within ML Area	Outside ML Area	Total
1	Agricultural Land	251.860	-	251.860
2	Forest Land	259.239	-	259.239
3	Wasteland	396.720	-	396.720
4	Grazing Land	0.000	-	0.000
5	Surface Water Bodies	46.060	-	46.060
6	Settlements	51.990	-	51.990
7	Others (Barren Tenancy Land)	292.131	-	292.131
	Old Excavation Area (East Quarry)	-	-	-
	Old Excavation Area (West Quarry)	-	-	-
	Old OB Dumps	-	-	-
	Roads & Mine Infrastructure	-	-	-
	R & R Colony (proposed)	-	118.500	118.500
	Staff Colony (proposed)	-	5.000	5.000
	Green Belt	-	-	-
	Balance Area	-	-	-
	Total Project Area =	1298.000	123.500	1421.500

Post Mining

S. No.	Land use	Land use (ha)				Total
		Plantation	Water Body	Public Use	Undisturbed	
1	External OB Dump	-	-	-	-	0
2	Top Soil Dump	-	-	-	-	0
3	Excavation	-	-	-	-	
	Void	13.778	160.070	-	-	173.848

	Backfilled area	638.209	107.979	251.860	-	998.048
4	Roads	-	-	23.069	-	23.069
5	Built-up Area	-	-	0.697	-	0.697
6	Green Belt	-	-	-	-	0.000
7	Undisturbed Area	52.643	-	-	-	102.338
8	Safety Zone / Rationalization Area	-	-	-	-	78.864
9	Diversion / Below River / Nala / Canal	-	23.474	-	-	23.474
10	Water Body	-	-	-	-	268.049
11	Staff Colony	-	-	-	-	
	Total Area	704.63	291.523	301.847	0	1298

(ix) Total geological reserve reported in the mine lease area is 142.36 MT with 113.08 MT mineable reserve. Out of total mineable reserve of 113.08 MT, 107.43 MT are available for extraction. Percent of extraction is 95%.

(x) 13 seams with thickness ranging from 0.5 m – 5.82 m are workable. Grade of coal is G7, stripping ratio 7.29 m³ per tonne of coal, while gradient is 1 to 5°.

(xi) Method of mining operations envisages by Open cast (Surface miner for coal extraction) method

(xii) Life of mine is 22 years.

(xiii) The project has 1 (temporary) external OB dump in an area of 59.56 ha with 74 m height and 146.59 Mm³ of OB. The only external OB Dump shall be re-handled and backfilled during 6th to 11th year of mining. The OB from the current mining operations shall be backfilled from 4th year onwards. 1 internal OB (backfilled area) in an area of 998.015 ha with 783.28 Mm³ of OB is envisaged in the project.

(xiv) Total quarry area is 1171.896 ha out of which backfilling will be done in 998.015 ha while final mine void will be created in an area of 173.881 ha with a depth of 170 m. Backfilled quarry area of (638.209 ha) and upper benches of mine void (13.778 ha) shall be reclaimed with plantation. Final mine void (160.070 ha) and lower benches of backfilled area (107.979 ha) will be converted to water body.

(xv) Transportation of coal has been proposed by road in mine pit head, from surface to siding by road and from siding by rail.

(xvi) Reclamation Plan in an area of 704.630 ha, comprising of 638.209 ha of backfilled area (internal dump). In addition to this, an area of 52.643 ha, included in the safety zone/rationalization area, has also been proposed for green belt development.

(xvii) 259.239 ha of forest land has been reported to be involved in the project. Application for diversion of forest for non-forestry purposes has been applied vide proposal no. FP/MP/MIN/28619/2017 dated 21.08.2017. Approval under the Forest (Conservation) Act, 1980

for diversion of 259.239 ha of forest land for non-forestry purposes is under process. Stage – I FC proposal has been recommended by DFO, Singrauli to CCF, Rewa on 20.11.2019.

(xviii) No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported with 10 km boundary of the project except Sanjay Gandhi Tiger Reserve ESZ boundary wherein the project is at about 7.8 kms from ESZ boundary.

(xix) The ground water level has been reported to be varying between 9.76 m to 13.60 m during pre-monsoon and between 6.51 m to 9.41 m during post-monsoon. Total water requirement for the project is 3780 KLD (Avg.) & 4695 KLD (peak).

(xx) Application for obtaining the approval of the Central Ground Water Authority for dewater mine water for industrial usage has been submitted on 26th April, 2019.

(xxi) Public hearing for the project of 5 MTPA capacity in an area of 1298 ha was conducted on 30.08.2019 at Playground of Govt. High School, Majhailpath (core zone). Major issues raised in the public hearing include (1) Land Acquisition and R&R (2) Employment to locals (3) Plantation, Green belt development, (4) Compensatory Afforestation (5) Cons. of bio-diversity (6) Wildlife conservation (7) Air Pollution. Appropriate action to address the issues raised in the Public Hearing is proposed to be taken up.

(xxii) Hurdul nalla is flowing inside the boundary of lease. The nallah will be diverted in consultation with the Water Resource Department of the State Government.

(xxiii) No court cases, violation cases are pending against the project of the PP.

(xxiv) The project involves 1386 project affected families. R&R of the PAPs will be done as per LARR 2013.

(xxv) Total cost of the project is Rs. 85427 lakhs. Cost of production is Rs. 1650/- per tonne, CSR cost is Rs. 5 per tonne, R&R cost is Rs 150 crores (approx.). Environment Management Cost is Rs. 1.65 crores (capital) and 1.0 crore (recurring).

4. The proposal was considered by the sectoral Expert Appraisal Committee (EAC) in its 56th EAC meeting held on 30th June, 2020 & 9th meeting held on 26th February, 2021 and recommended for grant of Environment Clearance. Based on recommendations of the EAC, the Ministry of Environment, Forest and Climate Change hereby accords approval for Suliaryi Coal Mining Project of 5.0 MTPA of M/s Andhra Pradesh Mineral Development Corporation Limited in mine lease area of 1298 ha located in Singrauli Coalfields, Tehsil Sarai, District Singrauli (Madhya Pradesh) for life of the mine or 30 years whichever is earlier, under the provisions of Environment Impact Assessment Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the following terms & conditions / specific conditions for environmental safeguards as stated below:-

- (i) The project proponent shall obtain Consent to Establish/Operate from the State Pollution Control Boards for the proposed peak capacity of 5 MTPA (Peak) prior to commencement of the increased production.
- (ii) Third party monitoring (by NEERI/CIMFR/IIT) for air quality shall be carried out at identified locations, both ambient and the process area, to arrive at impact of the proposed expansion. The results along with the recommendation shall be presented before the EAC to assess the efficacy and adequacy of pollution control measures.

- (iii) No water from Hurdul Stream shall be used for any project activity
- (iv) Top soil should be stored separately at marked area.
- (v) Transportation of coal from Coal Handling Plant shall be through mechanized covered trucks for 5 years. No transportation by trucks after 5 years and proposed railway siding should be constructed without any delay.
- (vi) The State Pollution Control Board, while considering consent to operate for the project, shall ensure that with the proposed coal transportation by road, air quality would remain within the national ambient air quality standards
- (vii) To control the production of dust at source, the crusher and in-pit belt conveyors shall be provided with mist type sprinklers.
- (viii) Mitigating measures shall be undertaken to control dust and other fugitive emissions all along the roads by providing sufficient fixed type water sprinklers. Adequate corrective measures shall be undertaken to control dust emissions, which would include mechanized sweeping, water sprinkling/mist spraying on haul roads and loading sites, long range misting/fogging arrangement, wind barrier wall and vertical greenery system, green belt, dust suppression arrangement at loading and unloading points, etc.
- (ix) Continuous monitoring of occupational safety and other health hazards, and the corrective actions need to be ensured.
- (x) Persons of nearby villages shall be given training on livelihood and skill development to make them employable.
- (xi) Mechanism for treating stored mine water shall be developed to avoid any ground and surface water contamination
- (xii) Mining shall be carried out only by surface miners for the project and silo loading through in-pit conveyor should be installed to avoid road transportation in 5 years.
- (xiii) Efforts shall be made for utilizing alternate sources of surface water, abandoned mines or else whatsoever and thus minimizing the dependability on a single source.
- (xiv) The total industrial water demand (peak) in operation phase (@3135 m³/d) shall be met by utilizing treated mine discharge water. Additionally, ~60 m³/d of water discharged from vehicle washing area and pit head bath shall be re-used for dust suppression after settlement of solids and separation of oil and grease through oil and grease trap. Also, about 120 m³/d of treated water from the township shall be re-used for irrigation of green belt development
- (xv) Active OB Dump should not be kept barren/open and should be covered by temporary grass to avoid air born of particles
- (xvi) Project proponent to plant 150,000 nos. of native trees with broad leaves along the transportation route in three years to prevent the effect of air pollution. After completion of tree plantation, number of trees shall be duly endorsed from District Forest Officer.
- (xvii) Commitment made during public consultation process shall be adhere to. The proposed amount earmarked for CER activities shall be considered as part of Environment Management Plan, which shall be accomplished within period of 5 years"
- (xviii) Project Proponent shall obtain blasting permission from DGMS for conducting mining operation near villages and also explore deployment of rock breakers of suitable capacity in

- the project to avoid blasting very near to villages. There shall be no damages caused to habitation/structures due to blasting activity.
- (xix) The Project Proponent shall comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors. State Government shall ensure that the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department in strict compliance of judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.
- (xx) Project Proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) in case of intersecting the Ground water table. The intersecting ground water table can only be commencing after conducting detailed hydrogeological study and necessary permission from the CGWA. The Report on six monthly basis on changes in Ground water level and quality shall be submitted to the Regional Office of the Ministry, CGWA and State Pollution Control Board.
- (xxi) Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. The Recommendations of National Institute for ensuring good occupational environment for mine workers shall be implemented; The prevention measure for burns, malaria and provision of anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.
- (xxii) Project Proponent shall follow the mitigation measures provided in Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014, titled "Impact of mining activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".
- (xxiii) The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours.
- (xxiv) The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be implemented in consultation with the State Forest and Wildlife Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.
- (xxv) Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing

mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEFCC.

- (xxvi) The Project Proponent shall undertake the plantation in peripheral zone as given in the EIA/EMP report with at least 90% survival rate and complete the entire plantation within 3 years from the date of start of mining operations.
- (xxvii) PP shall submit water bodies Conservation Plan and also PP shall take care of downstream town/villages for water supply. Study the impact of embankment along river and propose mitigation measures bearing in mind that no villages shall be flooded due to embankment.
- (xxviii) Project Proponent shall leave 50 m-60 m barrier blasting permission from DGMS for conducting mining operation from the diverted stream and do plantation along both sides of stream.
- (xxix) PP shall be monitoring inlet and outlet of diverted stream with respect to quality and quantity (Digital flow meter to check the volumetric flow rate) quarterly and submits its report to SPCB and Ministry's Regional Office.
- (xxx) PP shall maintain the diverted stream and accordingly maintenance schedule should be submitted to State Pollution Control Board.
- (xxxi) PP shall plant 200 ha of Sal trees(only) and create a nursery of 5 ha to distribute the species freely in the region for redevelopment of Sal forest in the region.
- (xxxii) Prior green belt of at least 10-20 m width shall be developed in more than 40% of the total project area, mainly along the plant/mine periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be as per the the CPCB guidelines in consultation with the State Forest Department.
- (xxxiii) In addition, the project proponent shall develop greenbelt outside the plant premises such as avenue plantation, plantation in vacant areas, social forestry etc.
- (xxxiv) Monitoring of compliance of EC conditions may be submitted with third party audit every year.
- (xxxv) Seasonal River water quality monitoring to be conducted except non-monsoon season for the drinking water parameter including BOD, COD, TSS and data so generated to be provided to SPCB through web portal and respective RO, MoEF&CC in the six monthly compliance.
- (xxxvi) Peripheral Green belt development inside R&R colony and Project Township shall be developed. Only 60t dumper for coal transportation to reduce number of trucks and 100t/150t dumper for OB handling shall be used till the development of railway siding (5 years).
- (xxxvii) Ultra-Sonic Flow Meter shall be installed for measuring of quantity of effluent in ETP and STP. Continuous online monitoring system (24 x7) shall be installed for measuring effluent quality and same shall be connected to SPCB website

4.1 The grant of environmental clearance is further subject to compliance of the Standard EC conditions as under:

(a) Statutory compliance

- (i) The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
- (ii) The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
- (iii) The project proponent shall prepare a Site-Specific Conservation Plan / Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan/Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report (in case of the presence of schedule-I species in the study area).
- (iv) The project proponent shall obtain Consent to Establish/Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee.
- (v) The project proponent shall obtain the necessary permission from the Central Ground Water Authority.
- (vi) Solid/hazardous waste generated in the mines needs to be addressed in accordance to the Solid Waste Management Rules, 2016/Hazardous & Other Waste Management Rules, 2016.

(b) Air quality monitoring and preservation

- (i) Continuous ambient air quality monitoring stations as prescribed in the statute be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM₁₀, PM_{2.5}, SO₂ and NO_x. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months.
- (ii) The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.
- (iii) Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun etc shall be carried out in critical areas prone to air pollution (with higher values of PM₁₀/PM_{2.5}) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall

be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.

(iv) The transportation of coal shall be carried out as per the provisions and route envisaged in the approved Mining Plan or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.

(v) Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.

(vi) Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.

(vii) Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.

(c) Water quality monitoring and preservation

(i) The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board.

(ii) The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No.J-20012/1/2006-IA.11 (M) dated 27th May, 2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.

(iii) Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.

(iv) Monitoring of water quality upstream and downstream of water bodies shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.

(v) Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.

(vi) Catch and/or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be

properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.

(vii) Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming to the specific requirement (standards).

(viii) Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Adequate ETP /STP needs to be provided.

(ix) The water pumped out from the mine, after siltation, shall be utilized for industrial purpose viz. watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly.

(x) The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc. shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.

(xi) The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine up to a distance of 5 km. A riverine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.

(d) Noise and Vibration monitoring and prevention

(i) Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules, 2016 in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.

(ii) Controlled blasting techniques shall be practiced in order to mitigate ground vibrations, fly rocks, noise and air blast etc., as per the guidelines prescribed by the DGMS.

(iii) The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.

(e) Mining Plan

(i) Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.

(ii) Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).

(iii) No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980.

(iv) Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.

(f) Land reclamation

(i) Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change(MOEFCC) from time to time shall be submitted to MOEFCC/Regional Office (RO).

(ii) The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agricultural/forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27th August, 2009 and subsequent amendments.

(iii) The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining"/"post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.

(iv) Fly ash shall be used for external dump of overburden, backfilling or stowing of mine as per provisions contained in clause (i) and (ii) of subparagraph (8) of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 as amended from time to time. Efforts shall be made to utilize gypsum generated from Flue Gas Desulfurization (FGD), if any, along with fly ash for external dump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.

(v) Further, it may be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent

erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office.

(vi) The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.

(g) Green Belt

(i) The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.

(ii) Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority) shall be developed all along the major approach/ coal transportation roads.

(h) Public hearing and Human health issues

(i) Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & it's RO on six-monthly basis.

(ii) The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the personnel identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, as amended time to time.

(iii) Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.

(iv) Implementation of the action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.

(v) The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/5712014-1A.II (M) dated 29th October, 2014, titled 'Impact of mining activities on

habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.

(i) Corporate Environment Responsibility

(i) The company shall have a well laid down environmental policy duly approved by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/forest/wildlife norms/conditions. The company shall have defined system of reporting infringements/deviation/violation of the environmental/forest/wildlife norms/conditions and/or shareholders/stake holders.

(ii) A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly report to the head of the organization.

(iii) Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.

(iv) Self environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.

(j) Miscellaneous

(i) The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.

(ii) The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.

(iii) The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.

(iv) The project proponent shall monitor the criteria pollutants level namely; PM₁₀, SO₂, NO_x (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.

(v) The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.

(vi) The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/5712014-IA.II (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.

(vii) The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.

(viii) The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.

(ix) The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.

(x) The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.

(xi) No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change.

(xii) Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.

(xiii) The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

(xiv) The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.

(xv) The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

(xvi) The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.

5. The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report and also that during presentation to the EAC. All the commitments made on the issues raised during public hearing shall also be implemented in letter and spirit.

6. The proponent shall obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection. The Ministry or any other competent authority may

stipulate any further condition for environmental protection.

7. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

8. The coal company/project proponent shall be liable to pay the compensation against the illegal mining, if any, and as raised by the respective State Governments at any point of time, in terms of the orders dated 2nd August, 2017 of Hon'ble Supreme Court in WP (Civil) No.114/2014 in the matter of 'Common Cause Vs Union of India & others.

9. The concerned State Government shall ensure no mining operations to commence till the entire compensation for illegal mining, if any, is paid by the project proponent through their respective Department of Mining & Geology, in strict compliance of the judgment of Hon'ble Supreme Court.

10. This environmental clearance shall not be operational till such time the project proponent complies with the above said judgment of Hon'ble Supreme Court, as applicable, and other statutory requirements.



(Lalit Bokolia)
Director

Copy to:

1. The Secretary, Ministry of Coal, Shastri Bhawan, New Delhi
2. The APCCF, MOEF&CC, Regional Office (EZ), E-5 Arera Colony, Bhopal - 462 016
3. The Secretary, Department of Environment & Forests, Government of Madhya Pradesh, Secretariat, Bhopal
4. The Chairman, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, Delhi -32
5. The Chairman, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi
6. The Chairman, Madhya Pradesh State Pollution Control Board, Paryavaran Parisar, E-5, Arera Colony, Bhopal - 462 016
7. The District Collector, Singrauli, Government of Madhya Pradesh
8. Monitoring File/Guard File/Record File
9. PARIVESH Portal



(Lalit Bokolia)
Director



Consent Order

M.P. Pollution Control Board
E-5, Arera Colony
Paryavaran Parisar, Bhopal-466016 MP
Tele : 0755-2466191, Fax-0755-2463742

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RED-LARGE

CCA

CONSENT NO: ***

PCB ID: 134529

ENCLOSURE 3

Order No: MP/PCB/AS/19/12/2021

Consent No:AW-54869

To,
Suliyari Opencast Coal Mines Project
Through Executive Director, Andhra Pradesh Mineral Development Corporation Ltd.
99 K- Devangan Bhawan, Pachkhora, Waidhan
Dist : Singrauli (MP)

Subject: Grant of Consent to Operate under section 25 of the Water (Prevention & Control of Pollution) Act,1974 under section 21 of the Air (Prevention & Control of Pollution) Act,1981

- Ref:
- 1.Your CCA Fresh Application Receipt No. 1082575-02/07/2021, presentation dated 15-7-21, your letter no. APMDC/Head Office/ Suliyari/CTO/21-22/667 dated 16-7-21 and last communication received on Dt. 24-07-2021
 2. Environmental clearance granted by MoEF&CC vide letter no. J11015/35/2018-I.A.II(M) dated 12.04.2021.
 3. Mining Lease allocation vide letter no. F3-56/2028/12/1 dated 07-07-2021 of Mineral Resource Department, GoMP & Mining Lease executed dated 20 /07/21
 - 4.Consent to operate granted vide CCA No. 53714 dt 30.07.2021.

With reference to your above application for consent to operate has been considered under the aforesaid Acts and existing rules therein. The M. P. Pollution Control Board has agreed to grant consent up to 31/07/2022, subject to the fulfillment of the terms & conditions, enclosed with this letter and-

SUBJECT TO THE FOLLOWING CONDITIONS :-

- a. Location: 1298 hectare of mining lease at villages Dongri, Jhalri, Aamdad, Majholipath, Belwar, Seerswah, Bajaudi & Dhirauli between latitude 23°55'30.23"N & 23°58'17.12"N and longitude 82°18'40.09" E & 82°20'51.08" E at Tehsil Sarai, Distt. Singrauli (MP)
- b. Permitted Area for Mining: 95 Hectares
- c. Product & Production Capacity:

Product	Qty / year
MINING OF COAL	1.67 M.M.T. (One decimal Six Seven Million Metric Tonnes)

- Note: 1. For any change in above industry shall obtain fresh consent from the Board.
 2. Attention shall be paid for the compliance of all the conditions specifically conditions no. 4, 17-21 under Water Act and conditions no. 9-10, 17-25 under Air Act..
 3. **As committed vide letter dt 8.12.21 uploaded on XGN & addressed to RO Singrauli; PP shall ensure following-CAAQMS shall be provided near pit office in 3 months time; Road sweeping machine & construction of wind breaking wall around coal stock yard shall be completed in 6 months time; PTZ camera shall be provided in 3 months time; fencing all around mine area in time bound manner; stone pitched/pucca garland drain around OB Dumping area shall be provided in time bound manner; CHP shall be commissioned at the earliest to ensure other related compliances; hazardous waste storage area shall be developed near ETP in 6 months time.**

The Validity of the consent is up to 31/07/2022 and has to be renewed before expiry of consent validity. Board reserves the right to amend/cancel / revoke the above condition in part or whole as and when required.

Enclosures:-

- * Conditions under Water Act
- * Conditions under Air Act
- * General conditions



Signature Not Verified
Digitally Signed by : A. A
Mishra, Member Secretary
Date: 19/12/2021 10:11:08 AM

ACHYUT ANAND MISHRA
Member Secretary

(Organic Authentication on AADHAR from UIDAI Server)
TPAV # BK94IIL93Q



Consent Order

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CONDITIONS PERTAINING TO WATER (PREVENTION & CONTROL OF POLLUTION) ACT 1974 :-

1. The trade effluent at out fall of the mine water after treatment shall be Nil. The daily quantity of sewage from the mine after treatment shall not exceed **5 KL/day during the consent period for which suitable septic tank and soak pit shall be installed at the earliest.**

2. Trade Effluent Treatment:-

The applicant shall provide comprehensive effluent treatment system for the treatment of mine water discharge as well as the vehicle washing / workshop area within 3 months time and maintain the same properly to achieve following standards-

pH	Between	5.5 – 9.0
Suspended Solids	Not exceed	100 mg/l.
BOD 3 Days 270C	Not exceed	30 mg/l.
COD	Not exceed	250 mg/l.
Oil and grease	Not exceed	10 mg/l.

TDS	Not exceed	2100 mg/l.
Chlorides	Not exceed	1000 mg/l.

For other parameters general standards of discharge as notified under EP Act 1986 shall be applicable.

3. Sewage Treatment :- The applicant shall provide comprehensive sewage treatment system as per the EC condition and maintain the same properly to achieve following standards-

pH	Between	5.5 – 9.0
Suspended Solids	Not exceed	100 mg/l.
BOD 3 Days 270C	Not exceed	30 mg/l.
COD	Not exceed	250 mg/l.
Oil and grease	Not exceed	10 mg/l.
Fecal Coliform (MPN/100ml)	Not exceed	1000

Sr	Water Code Qty in klpd - Kilo Ltr per Day	WC : 77	WWG : 165	Water Source	Remark
1	Domestic Purpose (in mine)	7	5	Borewell/ Treated mine water	Waste Water from all sources after treatment in the respective treatment plants to be reused for dust suppression, plantation/gardening purpose.
2	Others (Mine water discharge)	-----	100	Mine Water	
3.	Vehicle washing / Workshop	70	60	Treated mine water	

4. The effluent as well as sewage shall be treated up to prescribed Standards and reused in the process, for dust suppression, cooling and for green belt devolvement/gardening within premises. Hence zero discharge condition shall be practiced. In no case treated effluent shall be discharged outside of industry/mine premises. The proposed treatment systems for the treatment of workshop shall be completed within 3 months time.

5. Water meter preferably electromagnetic/ultrasonic type with digital flow recording facilities shall be installed separately for category wise consumption of water for Industrial cooling/boiler feed, mine spray, process & domestic purposes and data shall be submitted online through XGN monthly patrak/statements. The industry/unit shall also monitor the treated wastewater flow and report the same online through monthly patrak/statements.

6. Any change in production capacity, process, raw material used etc. and for any enhancement of the above prior permission of the Board shall be obtained. All authorized discharges shall be consistent with terms and conditions of this consent. Facility expansions, production increases or process modifications which result new or increased discharges of pollutants must be reported by submission of a fresh consent application for prior permission of the Board

7. The Consent does not authorize or approve the Construction of any physical structures or facilities or the undertaking of any work in any water course or within its high flood level (HFL) area

8. The specific effluent limitations and pollution control systems applicable to the discharge permitted herein are set forth as above conditions.

9. Limitation of discharge of oil Hazardous Substance in harmful quantities:-

The applicant shall not discharge oil or other hazardous substances in quantities defined as harmful in relevant regulations

Consent No:AW-54869



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M.P. Pollution Control Board
E-5, Arera Colony
Paryavaran Parisar, Bhopal-466016 MP
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Tele : 0755-2466191, Fax-0755-2463742

into natural water course.

10. Nothing in this Consent shall be deemed to preclude the mine of any legal action nor relieve the applicant from any responsibilities, liabilities, or penalties to which the applicant is or may be subject to clauses. Nor does this consent absolves the mine from obtaining applicable permissions / sanctions/ consent/ NOC etc from any other department / authority.

11. Provision for Electric Power Failure-

The applicant shall assure to the consent issuing authority that the applicant has installed or provided for an alternative electric power source sufficient to operate all facilities utilized by the applicant to maintain compliance with the terms and conditions of the Consent.

12. Prohibition of By pass system of treatment facilities-

The diversion or by-pass of any discharge from facilities utilized by the applicant to maintain compliance with the terms and conditions of this Consent is prohibited except :

- i. where unavoidable to prevent loss of life or severe property damage, or
- ii. Where excessive storm drainage or run off would damage any facilities necessary for compliance with the terms and conditions of this Consent. The applicant shall immediately notify the consent issuing authorities in writing of each such diversion or by-pass in accordance with the procedure specified above for reporting non-compliance.

13. The mine shall not use the water of the Hurdul stream nor the stream flow be diverted / disturbed without the approval of the competent authority.

14. Mine management shall strictly comply with the conditions stipulated in environmental clearance letter no. J11015/35/2018-IA.II(M) dated 12.04.2021.

15. The mine management shall maintain zero discharge conditions. The Mine shall optimize the water abstraction from the surface and ground water sources, if any, by utilizing the mine discharge for spraying on haul roads, mine area and loading - unloading area, for domestic & sanitary purposes by providing separate supply lines, dust suppression and for plantation in order to ensure zero discharge. The treated domestic effluent shall also be utilized accordingly and zero discharge conditions shall be maintained.

16. The mine shall not withdraw ground water for its mining and domestic activities as far as possible and treated mine water shall be used for the industrial and domestic activities. In case ground water is abstracted, the permission granted by CGWA shall be followed and recharge structures for the makeup of ground water shall be constricted.

17. The mine water should be treated in pucca siltation ponds which should be completed within 3 months time. The quality of siltation pond water shall be regularly monitored and mitigation measure taken.

18. No OB dump shall be developed at the outskirts and boundary of the mining lease area for the stacking overburden from restricted mining area of 95 hectares. The OB dump as proposed, shall be internal in an area of 129 hectares. Similarly the coal stack yard shall also be internal in an area of 8 hectares. The gradients of the OB slopes shall not exceed 28° .

19. Stone pitched / pucca garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent runoff of water and flow of sediments directly into the Hurdul Nala or Gopad river and other water bodies.

20. The mine shall also provide stone pitched / pucca garland drain all around the allotted mining lease area of 1298 hectares, with suitable arrangements of the siltation ponds and appropriately designed ETP9(s) for the treatment and recycling of the mine water discharge as well as runoff during rains.

21. The mining lease area shall be properly fenced with chain link wire mesh of 2 meters height to prevent ingress of stray animals and unauthorized person and to avert any accidents.

22. Rain water harvesting shall be undertaken to recharge ground water source and status of implementation shall be submitted to the Board. Hydro-geological study of the area shall be reviewed annually. In case any adverse effect on ground water quality and quantity is observed, mining shall be stopped and resumed only after applying mitigating steps to restore the same.

23. Industry/Institute/mine management shall submit the information online through XGN in reference to compliance of consent conditions.

Consent No:AW-54869



CONDITIONS PERTAINING TO AIR (PREVENTION & CONTROL OF POLLUTION) ACT 1981 :-

1. The applicant shall provide comprehensive air pollution control system consisting of control equipments as per the proposal submitted to the Board with reference to generation of emission and same shall be operated & maintained continuously so as to achieve the level of pollutants to the following standards:-

Name of section	Type of Emissions	Stack height (meters)	Control equipment to be installed	SPM/RSPM/SO ₂ /NO _x (Time weighted annual Average)* (µg/Nm ³)	SPM/RSPM/SO ₂ /NO _x (Time weighted 24 hr Average) (µg/Nm ³)*
Loading-unloading, Haul road, Coal Transportation Road, CHP, Railway Siding, Blasting, Drilling, OB Dumps etc	Fugitive	0	Dust Collector, Dust Suppressor, Green Belt, Water Sprinkler, Wind Breaking Wall	430/215/80/80	600/300/120/120

**At a distance of 500 m from the dust generating source*

2. Ambient air quality at the boundary of the industry/unit premises shall be monitored and reported to the Board regularly on quarterly basis: The Ambient air quality norms are prescribed in MoEF gazette notification no. GSR/826(E), dated: 16/11/09. Some of the parameters are as follows:

- Particulate Matter (less than 10 micron) - 100 µg/m³ (PM10 µg/m³ 24 hrs. basis)
- Particulate Matter (less than 2.5 micron) - 60 µg/m³ (PM2.5 µg/m³ 24 hrs. basis)
- Sulphur Dioxide [SO₂] (24 hrs. Basis) - 80 µg/m³
- Nitrogen Oxides [NO_x] (24 hrs. Basis) - 80 µg/m³
- Carbon Monoxide [CO] (8 hrs. Basis) - 2000 µg/m³

3. The industry shall take adequate measures for control of noise level generated from industrial activities within the premises less than 75 dB(A) during day time and 70 dB(A) during night time.

4. Industry/Unit shall provide with each stack port hole with safe platform of 1 meter width with support & spiral ladder/ Stepped ladder with hand rail up to monitoring platform as per specifications given in part-III emission regulation of CPCB. In no case monkey ladder shall be allowed as stack monitoring facility.

5. The industry/unit shall make the necessary arrangements for control of the fugitive emission from any source of emission/section/activities.

6. All other fugitive emission sources such as leakages, seepages, spillages etc shall be ensured to be plugged or sealed or made airtight to avoid the public nuisance.

7. The industry/ unit shall ensure all necessary arrangements for control of odour nuisance from the industrial activities or process within premises

8. All the internal roads shall be made pucca to control the fugitive emissions of particulate matter generated due to transportation and internal movements. Good housekeeping practices shall be adopted to avoid leakages, seepages, spillages etc.

9. Mine management shall install CAAQMS stations at suitable locations to monitor ambient air quality in the leased area and its vicinity and shall provide its suitable unhindered connectivity with Environment Surveillance Centre of the MPPCB and transmit the data within 3 months time. Till that time, the monitoring of the ambient air quality using high volume samplers shall be conducted daily at minimum 4 stations through NABL accredited agency and submit the report weekly to the Board.

10. No coal crushing shall be undertaken during the consent period and the coal mined through the high wall machine shall not be further subjected to crushing.

11. Mine management shall provide continues water sprinkler systems / rain gun at suitable locations on the road side and also provide proper pollution control arrangements to control the fugitive emissions generated during the mine development as well as due to transportation of Coal from mine. Major approach roads and haul roads shall be metal topped. Drills shall be wet operated to reduce the fugitive emission.



12. Sufficient number of water tanker for water sprinkling shall be provided for the control of fugitive emission from haulage and transportation.
13. Industry shall take effective steps for extensive tree plantation of the local tree species within or around the mine premises, on OB dumps etc in consultation with experts in the field for general improvement of environmental conditions
14. Mine management shall install industrial grade HD IP (Internet Protocol) Pan-Tilt-Zoom (PTZ) Camera with minimum 5X zoom and night vision facility for remote surveillance and constant vigil of emission source and effluent discharge points. Mine management shall establish suitable connectivity of IP-Camera with Environment Surveillance Centre at the HQ of M.P. Pollution Control Board for monitoring and data transmission purpose.
15. Vehicular emissions should be kept under control and regularly monitored for compliance of emission norms. Vehicles used for mining / transporting the mineral should be covered with tarpaulins and optimally loaded. The vehicles used for coal transportation shall conform to BS VI standards.
16. The Mine shall take proper action to control the noise pollution. The ambient noise level shall not exceed the limit 75dB [A] during the daytime and 70dB [A] during the night time.
17. Extensive tree plantation shall be done on both side of Mineral transportation roads and around mining lease area. The tree plantation shall be carried out in phase manner preferably with local species. Good house keeping practice shall be adopted by the Mine. More plantations with species like Neem, Pipal, Mango, Jamun, Kathal etc shall be planted.
18. Mine management shall procure the road sweeping machines exclusively for this mine. Regular wetting and sweeping of road should be practiced during mine development phase by regular sweeping machine in the area.
18. Mine management shall implement the utilization of fly ash for back filling / mixing with the OB of mined out area/voids as provided in the Fly Ash Notification, 1999.
19. Wind breaking wall around the coal stock yard shall be constructed up to 15 feet height for the dust spread control. Fixed type mist spray guns should be used for the suppression of dust.
20. Dedicated pressurized mist spray fogger machine mounted on truck vehicle equipped with the GPS shall be procured for the mine for the control of dust during mine development phase.
21. The mine management shall ensure that the railway line development up to the mine area for the loading and transportation of the coal shall be completed within 5 years beyond which the transportation of coal by road from the mine to any external public railway siding may not be permitted.
22. The mine management shall also develop the external public railway siding which is to be used by it in an environmentally sound manner as per the guidelines of the CPCB "Inventorization of Railway Sidings and Guidelines for their Environment Management-March 2015", in absence of which the use of the external railway siding may not be permitted.
23. Mine management shall strictly comply with the conditions stipulated in environmental clearance letter no. J11015/35/2018-I.A.II(M) dated 12.04.2021.
24. Controlled blasting with delay detonators should be used during blasting operations to avoid, noise, flying of debris and stones, air pollution and vibrations. Blast holes in the coal seam should be properly packed and stemmed with locking caps to harness the maximum blast energy and at the same time to minimize and prevent dust, noise, vibrations and dispersal of fly rocks.
25. The coal transportation public road shall be maintained in top motorable condition and any wear and tear, potholes etc shall be immediately repaired so as to keep the dust nuisance to a minimum.



GENERAL CONDITIONS:

MANAGEMENT & DISPOSAL OF FLY ASH

1. THE MINE MANAGEMENT SHALL ENSURE ALL THE COMPLIANCES REGARDING DISPOSAL AND UTILIZATION OF FLY ASH AS STIPULATED IN MoEF&CC NOTIFICATIONS NO. S.O. 763(E) DATED 14/9/99 AND ITS AMENDMENTS VIDE NOTIFICATION NO. S.O. 979(E) DATED 27/8/03, S.O. 2804(E) DATED 03/03/09 AND S.O. 254(E) DATED 25/1/16. SOME OF THE RELEVANT STIPULATIONS ARE AS BELOW:

A. No person or agency shall within radius of 50 kilometers (by road) from coal or lignite based thermal power plants, undertake or approve stowing of mines without using 25% of fly ash on weight to weight basis, of the total stowing materials used and this shall be done under the guidance of DGMS.

B. No agency, person or organisation shall within a radius of three hundred kilometers of a coal or lignite based thermal power plant undertake or approve or allow reclamation and compaction of low lying areas with soil; only fly ash shall be used for compaction and reclamation and they shall also ensure that such reclamation and compaction is done in accordance with specifications and guidelines laid down.

C. No person or agency shall within radius of 50 kilometers (by road) from coal or lignite based thermal power plants, undertake or approve without using 25% of fly ash on volume to volume basis of the total materials used for external dumps of over burden and same percentage in upper benches of back filling of opencast mines under the guidance of DGMS.

2A . The mine management shall submit an action plan for the utilization of fly ash in the mines in compliance of the fly ash utilization within three month's time and shall also provide mining plan containing the provisions for utilization of fly ash in the mine.

2B. The mine management shall adhere to the office memorandum (OM)of MoEF&CC dated 28-08-19 and the conditions stipulated therein pertaining to the use of fly ash in the mines, as mentioned in the para 7 of the OM. Mine shall have to follow the same and the guidelines of the CPCB entitled "*Guidelines for disposal/utilization of Fly ash for reclamation of Low Lying Areas and in stowing of abandoned mines /Quarries*" for the disposal of fly ash in mines shall be followed.

3. The applicant shall allow the staff of Madhya Pradesh Pollution Control Board and/or their authorized representative, upon the representation of credentials:

- a. To inspect raw material stock, manufacturing processes, reactors, premises etc to perform the functions of the Board.
- b. To enter upon the applicant's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this Consent.
- c. To have access at reasonable times to any records required to be kept under the terms and conditions of this Consent.
- d. To inspect at reasonable times any monitoring equipment or monitoring method required in this Consent: or,
- e. To sample at reasonable times any discharge or pollutants.

4. This consent / authorisation is transferable in nature, in case of any change in ownership / management, the new owner / partner / directors / proprietor shall immediately apply for the consent with new requisite information.

5. The issuance of this Consent does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorise any invasion of personal rights, nor any infringement of Central, State or local laws or regulations.

6. Industry shall install separate electric metering arrangement for running of pollution control devices and this arrangement shall be made in such fashion that any non functioning of pollution control devices shall immediately stop electric supply to



Consent Order

M.P. Pollution Control Board
E-5, Arera Colony
Paryavaran Parisar, Bhopal-466016 MP
Tele : 0755-2466191, Fax-0755-2463742

the production and shall remain tripped till such time unless the pollution control device/devices are made functional. The record of electricity consumption for running of pollution control equipment shall be maintained and submitted to the Board every month

7. This consent is granted in respect of Water pollution control Act 1974 or Air Pollution Control act, 1981 or Authorization under the provisions of Hazardous and other Waste (Management & Transboundary movement) Rules 2016 only and does not relate to any other Department/Agencies. License required from other Department/Agencies have to be obtained by the unit separately and have to comply separately as per there Act / Rules.

8. Balance consent/authorisation fee, if any shall be recoverable by the Board even at a later date.

9. The applicant shall submit such information, forms and fees as required by the board not later than 180 day prior to the date of expiration of this consent/authorisation

10. The industry/unit shall establish a separate environmental cell, headed by senior officer of the unit for reporting the environmental compliances. The industry/ Unit shall submit environmental statement for the previous year ending 31st March on or before 30th September every year to the Board.

11. Industry shall obtain membership of Emergency Response Center of the Board if needed.

12. Knowingly making any false statement for obtaining consent or compliance of consent conditions shall result in the imposition of criminal penalties as provided under the section 42(g) of the Water Act or section 38 (g) of the Air Act.

13. After notice and opportunity for the hearing, this consent may be modified, suspended or revoked by the Board in whole or in part during its term for cause including, but not limited to, the following :

- Violation of any terms and conditions of this Consent.
- Obtaining this Consent by misrepresentation of failure to disclose fully all relevant facts.
- A change in any condition that requires temporary or permanent reduction or elimination of the authorized discharge.

13. On violation of any of the above-mentioned conditions the consent granted will automatically be taken as canceled and necessary action will be initiated against the industry.

Consent as required under the Water (Prevention & Control of Pollution) Act, 1974, The Air (Prevention & Control of Pollution) Act, 1981 is granted to your industry subject to fulfillment of all the conditions mentioned above. For renewal purpose you shall have to make an application to this Board through XGN at least Six months before the date of expiry of this consent. The applicant without valid consent (for operation) of the Board shall not bring in to use any outlet for the discharge of effluent and gaseous emission.

For and on behalf of
M.P. Pollution Control Board

(Member Secretary)



(Organic Authentication on AADHAR from UIDAI Server)
TPAV # BK94IIL93Q

ACHYUT ANAND MISHRA
Member Secretary

Consent No:AW-54869

ENCLOSURE 4

Government of India
Ministry of Environment, Forest and Climate Change
(Forest Conservation Division)

Indira Paryavaran Bhawan,
 Jor Bag Road, Aliganj,
 New Delhi - 110003.

Dated: 15th June, 2021

To,
The Principal Secretary (Forests),
 Department of Forest and Environment,
 Government of Madhya Pradesh,
 Bhopal.

Subject: Proposal for diversion of 259.239 ha. of forest land (226.349 ha. forest land in compartment No. RF-338, RF-358, 359 & PF-315 + 32.89 ha. of Revenue forest land=259.239 ha.) for Suliyari Open Cast Coal Mining in Singrouli District in favour of M/s The Andhra Pradesh Minerals Development Corporation Limited (APMDC), Singrauli District, Madhya Pradesh State (Online proposal No. FP/MP/MIN/28619/2017) – regarding.

Madam/ Sir,

I am directed to refer to Addl. Principal Chief conservator of Forests (Land Management) and Nodal Officer, Forest (Conservation) Act, 1980, State Government of Madhya Pradesh's letter No. F-1/FP/MP/MIN/28619/2017/375 dated 25th January, 2020 on the above mentioned subject, seeking prior approval of Central Government under Section-2 (ii) of the Forest (Conservation) Act, 1980. After careful consideration of the proposal by the Forest Advisory Committee constituted by the Central Government under Section-3 of the said Act, *In-principle/Stage -I* approval for the proposal was granted by this Ministry's letter of even number dated 15.12.2020 subject to fulfilment of certain conditions prescribed therein. The State Government has furnished compliance report in respect of the conditions stipulated in the In-principle/Stage-I approval and has requested the Central Government to accord Final/Stage-II approval.

2. In this connection, I am directed to say that on the basis of the compliance report furnished by Addl. Principal Chief Conservator of Forests (Land Management) and Nodal Officer, the Forest (Conservation) Act, 1980, Government of Madhya Pradesh vide their letters No. F-1/FP/MP/MIN/28619/2017/1147 dated 25.03.2021, letter No. F-1/FP/MP/MIN/28619/2017/1390 dated 22.04.2021 and letter No. F-1/FP/MP/MIN/28619/2017/1867 dated 14.06.2021 '**Final approval /Stage – II**' of the Central Government is hereby accorded under Section -2 (ii) of the Forest (Conservation) Act, 1980 for diversion

[Handwritten Signature]
 15/06/2021

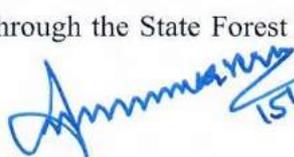
of 259.239 ha. of forest land (226.349 ha. forest land in compartment No. RF-338, RF-358, 359 & PF-315 + 32.89 ha. of Revenue forest land=259.239 ha.) for Suliyari Open Cast Coal Mining in Singrouli District in favour of M/s The Andhra Pradesh Minerals Development Corporation Limited (APMDC), Singrauli District, Madhya Pradesh, subject to fulfilment of the following conditions:

A: Conditions which need to be complied prior to handing over of forest land to user agency by the State Govt.:

- i. The User Agency shall implement the R&R Plan as per the R&R Policy of State Government in consonance with National R&R Policy, Government of India before the commencement of the project work and implementation. The said R&R Plan will be monitored by the State Government/Regional Office of MoEF&CC along with indicators for monitoring and expected observable milestones;
- ii. The State Government shall ensure that all the compensations, as per the norms and rules of the State Government to the affected persons shall be paid prior to handing over of forest land to the User agency;
- iii. The State Government shall ensure that compliance of Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 has been completed in accordance with the relevant Rules and Guidelines issued by the MoEF&CC in this regard, before handing over of forest land to the user agency;
- iv. The State Government shall ensure that proposed forest land i.e. 259.239 ha shall be handed over to the user agency only when the user agency has acquired the required non-forest land, if any, for the project;
- v. The State Government shall upload the KML files of the area under diversion and the accepted area for raising compensatory afforestation in the E-Green Watch portal of FSI, before handing over forest land to the user agency;

B: Conditions which need to be complied after handing over of forest land to the user agency by the State Govt.:

- i. Legal status of the diverted forest land shall remain unchanged;
- ii. Compensatory Afforestation shall be raised over equal identified non- forest land (NFL) land within three years from the date of Stage-II approval and maintained thereafter by the State Forest Department at the cost of the User Agency and at least 1000 plants per hectare shall be planted over identified non- forest land. If it is not possible to plant so many saplings in the area identified for CA, the balance saplings will be planted in any other forests as per prescriptions of approved working plan with provision for ten years subsequent maintenance;
- iii. The User Agency shall pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;
- iv. The User Agency either itself or through the State Forest Department shall undertake


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- fencing, protection and regeneration of the safety zone area [7.5 meters strip shall be kept within the mining lease boundary and area of the safety zone shall be part of the total area of mining lease] shall be done at the project cost within three years and maintained thereafter as per approved working plan of the State Govt.;
- v. User agency either himself or through the State Forest Department shall undertake afforestation on degraded forest land, at project cost, one and half time in extent to the area used for safety zone;
- vi. The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required;
- vii. Period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under;
- viii. No labour camp shall be established on the forest land and the User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas;
- ix. The boundary of the diverted forest land, mining lease and safety zone, as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS co-ordinates;
- x. The forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government;
- xi. No damage to the flora and fauna of the adjoining area shall be caused;
- xii. The layout plan of the mining plan/proposal shall not be changed without the prior approval of the Central Government;
- xiii. The concerned Divisional Forest Officer, will monitor and take necessary mitigative measures to ensure that there is no adverse impact on the forests in the surrounding area;
- xiv. The user agency shall explore the possibility of translocation of maximum number of trees identified to be felled and shall ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department;
- xv. The User Agency shall undertake mining in a phased manner after taking due care for reclamation of the mined over area. The concurrent reclamation plan as per the approved mining plan shall be executed by the User Agency from the very first year, and an annual report on implementation thereof shall be submitted to the Nodal

Ammas
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Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned Integrated Regional Office of the Ministry. If it is found from the annual report that the activities indicated in the concurrent reclamation plan are not being executed by the User Agency, the Nodal Officer or the concern Dy. Director General (Central) may direct that the mining activities shall remain suspended till such time, reclamation activities area satisfactorily executed;

- xvi. The User Agency shall submit the annual self -compliance report in respect of the above stated conditions to the State Government, concerned Integrated Regional Office and to this Ministry by the end of March every year regularly;
- xvii. The Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as per the para 1.21 of comprehensive guidelines issued vide this Ministry F. No.5-2/2017-FC dated 28th March, 2019;
- xviii. Any other condition that the Ministry of Environment, Forests & Climate Change may stipulate from time to time in the interest of conservation, protection and development of forests & wildlife shall be carried out by the State Government and User Agency; and
- xix. The State Government and User Agency shall ensure compliance of all conditions stipulated in the Stage-I approval letter dated 15.12.2020 for which undertakings have been obtained from the user agency and also the provisions of the all Acts, Rules, Regulations and Guidelines, relevant Hon'ble Court Order (S) and NGT Order (S), if any, pertaining to this project for the time being in force, as applicable to the project.

Yours faithfully,

(Shrawan Kumar Verma)

Dy. Inspector General of Forests

Copy to:

1. The P.C.C.F & HoFF, Department of Environment & Forest, Government of Madhya Pradesh, Bhopal.
2. The Regional Officer, Integrated Regional Office, MoEF&CC, Bhopal.
3. The Nodal Officer, FCA, Department of Environment & Forest, Government of Madhya Pradesh, Bhopal.
4. User Agency.
5. Monitoring Cell, FC Division, MoEF & CC, New Delhi, for uploading on PARIVESH portal.

ENCLOSURE 5

माइनिंग लीज की ग्राम के भूमियों पर स्थित वृक्षों का वर्णन

क्र०	ग्राम का नाम	निजी भूमि पर स्थित वृक्षों की कटाई का अनुमति कलेक्टर महोदय द्वारा दी गई है, जिसकी कटाई की जानी है।	निजी भूमि पर स्थित वृक्षों की संख्या (एवार्ड अनुसार)	शा० भूमि पर स्थित वृक्षों की संख्या जिसकी कटाई की जानी है (म०प्र० भू-राजस्व संहिता 1959 के तहत)
1	झलरी	6579	8486	4976
2	अमरई खाह	0	53	0
3	घिरीली	0	0	1089
4	बजौडी	0	0	155
5	शिरसाक	535	825	274
6	बलवार	2081	3306	775
7	नडौलीपाठ	3566	3566	1080
8	डांगरी	645	731	2515
9	आमडाड	507	933	228
	योग	13913	17900	11092

नोट-कुल 108.18 हे० निजी भूमि जो की संपटी जांन की भूमि है और उस पर स्थित वृक्षों की कटाई की अनुमति कलेक्टर महोदय से नही ली गई है इस कारण से निजी भूमि के एवार्ड मे वर्णित वृक्षों की संख्या एवं कलेक्टर महोदय द्वारा दी गई वृक्षों की कटाई की अनुमति की संख्या में अन्तर है।

पुनर्वास ग्राम		
10	खनुआ नया टोला	127
		1291
		1009

नोट-पुनर्वास ग्राम खनुआ नया टोला मे स्थित वृक्षों की कटाई के संबंध में कलेक्टर महोदय द्वारा निर्देशित किया गया है कि आवश्यक वृक्षों की ही कटाई किया जाना है इस तारताम्य में अब तक आवश्यक 127 वृक्षों को काटने की अनुमति कलेक्टर महोदय द्वारा प्रदान की गई है।

उपखण्ड अधिकारी
धेवर जिला सिंगरीली (म.प्र.)

कार्यालय प्रधान मुख्य वन संरक्षक (वन्यप्राणी), मध्य प्रदेश

प्रगति भवन, भोपाल विकास प्राधिकरण, तृतीय तल, एम.पी.नगर, भोपाल

दूरभाष : 0755-2674318, 2674337, फैक्स : 0755-2766316

E-mail : pccwf@mp.gov.in

ENCLOSURE 6

क्रमांक / व.प्र. / मा.चि. / 6538
प्रति

भोपाल, दिनांक 16/09/2019

✓ Executive Director,

The Andhra Pradesh Mineral Development Corporation Limited,

(A State Government of A.P. Undertaking)

Door No. 294/11D,

100 Feet Tadigadapa to Entkepadu Road,

Kanur, Vijayawada-521137 (E-mail- info@apmdc.ap.gov.in)

विषय :-

Submission of 'Site Specific Wildlife Conservation Plan along with a location plan and list of flora & fauna' for authentication w.r.t. the proposed Suliyari Coal Mine (5.0 MTPA) with an area of 1298 Ha in Singrauli Coalfields, at village-Aamdam, Bajaudi, Belwar, Dongari, Dhirauli, Jhalari, Majhauilipath and Seerswah, Teshil: Sarai, Singrauli District of Madhya Pradesh-Reg.

संदर्भ :-

क्षेत्र संचालक, राजय टाइगर रिजर्व, सीधी का पत्र क्र./मा.चि./2019/5125 दिनांक 11.07.2019

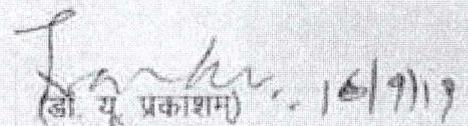
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उपरोक्त विषयांतर्गत सुलियारी कोल माइन (क्षमता 5.0 एम.टी.पी.ए.) ग्राम आमदह, बजौदी, बेलवार, डोंगरी, धिरौली, झालरी, मझौलीपथ एवं सीरसवाह तहसील-सरई, जिला सिंगरौली, मध्यप्रदेश के प्रस्तावित रकबा 1298 हेक्टेयर में कोयला खनन हेतु भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय (कोल माइनिंग डिविजन) नई दिल्ली द्वारा प्रकरण में दिनांक 03.07.2018 को टी.ओ.आर. जारी किया गया है। उक्त टी.ओ.आर. के बिन्दु क्रमांक (xxi) के अनुसार प्रस्तावित क्षेत्र से 10 कि.मी. की परिधि में स्थित राष्ट्रीय उद्यान/अपसरण्य/ बायोस्फियर रिजर्व की जानकारी तथा परिशिष्ट के बिन्दु क्रमांक (xvii) के अनुसार प्रस्तावित क्षेत्र से 10 कि.मी. की परिधि में Flora-Fauna की जानकारी, कॉरीडोर की जानकारी, प्रस्तावित क्षेत्र से 15 कि.मी. के भीतर Ecologically sensitive area or used as a migratory corridor की जानकारी के साथ मुख्य वन्यप्राणी अभिरक्षक से अनुमोदित EIA-EMP Report प्रस्तुत करने के निर्देश के जारी किये गये हैं। भारत सरकार के निर्देशानुसार संदर्भित पत्र से प्रकरण में आपके द्वारा प्रस्तुत संशोधित वन्यप्राणी संरक्षण योजना क्षेत्र संचालक, राजय टाइगर रिजर्व सीधी द्वारा अपनी अनुशंसा सहित अनुमोदन हेतु इस कार्यालय को प्रेषित की गई है।

प्रेषित संशोधित वन्यप्राणी संरक्षण योजना के चैप्टर-4 के अनुसार सिंगरौली वनमण्डल में ग्रामों के विस्थापन एवं वन्यप्राणियों के प्रबंधन, संरक्षण एवं संवर्धन के लिए रुपये 6.40 करोड़, राजय टाइगर रिजर्व के लिए रुपये 25 करोड़ एवं खनन क्षेत्र के लिए रुपये 4.05 करोड़ का इस प्रकार कुल रुपये 35.45 करोड़ (पैंतीस करोड़ पैंतालीस लाख रुपये) का 10 वर्ष हेतु प्रावधान रखा गया है, जिसकी प्रति सलगन है। उक्त संशोधित वन्यप्राणी संरक्षण योजना रुपये 35.45 करोड़ (पैंतीस करोड़ पैंतालीस लाख रुपये) का अनुमोदन किया जाता है।

वन्यप्राणी संरक्षण योजना में चैप्टर-4 के पृष्ठ क्रमांक-92, 93 एवं 94 पर वन्यप्राणी प्रबंधन हेतु दर्शाये गये कार्यों के लिए प्रावधानित राशि वनमण्डलाधिकारी, सिंगरौली सामान्य वनमण्डल एवं क्षेत्र संचालक, राजय टाइगर रिजर्व, सीधी को समय सीमा में उपलब्ध कराने का कष्ट करें, ताकि वन्यप्राणी संरक्षण एवं प्रबंधन हेतु प्रावधानित कार्यों को समय पर पूर्ण किया जा सके।

सलगन :- उपरोक्तानुसार।


(डॉ. यू. प्रकाशम) 16/9/19

मुख्य वन्यप्राणी अभिरक्षक एवं
प्रधान मुख्य वन संरक्षक (वन्यप्राणी), म.प्र.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

- I Suliari Coal Block is located in Singrauli Coalfield (Main Basin), village(s) Aamdand, Bajaudi, Belwar, Dongari, Dhirauli, Jhalari, Majhaulipath and Seerswah, Tehsil: Sarai, Singrauli district of Madhya Pradesh. The coal block is bounded between latitude 23°55'28"N to 23°58'15"N and longitudes 82°18'52"E to 82°20'58"E and is covered by Survey of India Toposheet no. 64 I/5.
- II The total area involved in this project is 1298 ha, out of which 259.399 ha is forest land. The block is located at about 75 km south-west the district headquarter, Singrauli; and at a distance of 45 km south-west of the tehsil headquarter, Waidhan town. Waidhan-Sidhi State Highway via Bargawan traverses 25 km north of the block and runs almost along the boundary of Moher Sub-Basin & Main Basin.
- III In the buffer zone (10 km radius of the project area) there are only one Reserve Forest and one Protected Forests as detailed below:-

Sr. No.	RF/PF	Direction	Distance (KM)
1.	Mohanban RF	All Directions	Within Mine lease also
2.	Langhadol PF	SW	9.1

- IV In the buffer zone (10 km radius of the project area) there are following water bodies are present as detailed below:-

9	Water bodies	1) Hurdul Nala -Within ML area 2) Amra Nala-2.3 km, SW 3) Sulkhia Nala-8.3 km, NW 4) Chiraha Nala-7.1 km, S	5) Biniao Nala-7.2 km, SSE 6) Nimji Nala- 8.1 km, SW 7) Gopad River-8.9 km, W
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Suliari Coal Block is located in Singrauli Coalfield (Main Basin), Village Aamdand, Bajaudi, Belwar, Dongari, Dhirauli, Jhalari, Majhaulipath and Seerswah, Tehsil: Sarai, Singrauli district of Madhya Pradesh. Waidhan-Sidhi State Highway via Bargawan traverses 25 km north of the block and runs almost along the boundary of Moher Sub-Basin & Main Basin. A metalled road Parsona to Mara is



located further east of the block. Nearest railway station Bargwan is located at a distance of 25 km from the Suliyari Coal Mine on Chopan-Singrauli-Katni line of Central Railway. Renukoot, an important industrial township & railway station is located at a distance of 125 km from the mine on Chopan-Garhwa section of eastern railway. Renukoot township is well connected with Hawrah, Tatanagar, Delhi etc. by direct train. Nearest airport Varanasi is located at a distance of 294 km from the mine.

- V The block area has highly undulating and rugged topography. The northern and southern parts of the mine are occupied by hillocks with maximum elevation upto 500m AMSL. In general, the elevation of ground varies from 441.07 m AMSL as observed in borehole MS-2 to 499.23 m AMSL in borehole MS-37 located in the south-western and northern parts of the mine respectively. A few hillocks are also observed in the eastern part of the mine.
- VI As **per Socio-economic** status of this coal block, there are 7 villages (*Aamdand, Bajaudi, Belwar, Dongari, Jhalari, Majhaulipath, Sirswah*) within the core zone and total 42 villages in the study area. Summary of demographic pattern of the study area is given below:

Demographic profile of the study area

Item	Unit	* 2011	# 2018
No. of House Hold	No.	11373	13602
Population		53356	63814
Male	No. of people (%)	30768 (57.67%)	36799
Female		22588 (42.33%)	27015
Sex Ratio	(Female per 1000 males)	734	734
Schedule Castes	No. of people (%)	8331 (15.61%)	9964
Schedule Castes (Male)	No.	4735	5663
Schedule Castes (Female)		3596	4301
Schedule Tribes	No. of people (%)	22067 (41.36%)	26392
Schedule Tribes (Male)	No.	11349	13573
Schedule Tribes (Female)		10718	12819
Population density **	No. of people per sq. km	115	137
Literates	No. of people (%)	25982 (48.69%)	31074



Item	Unit	* 2011	# 2018
No. of House Hold	No.	11373	13602
Male		18258 (70.27%)	21837
Female		7724 (29.73%)	9238
Illiterates		27374 (51.31%)	32739
Male	No. of people (%)	12510 (45.70%)	14962
Female		14864 (54.30%)	17777

Source: * Census of India (MP) Series-24; Part-XII-B, 2011; ** (study area = 465.290 sq.km)

projected population of villages under the study area. The decadal growth rate of 28% has been considered.

- VII According to the '**India State of Forest Report -2017**' (latest) the total forest area of the Singrauli district is 2,189 Km² which is 38.57 % of the geographical area. The forest area included, 398 Km² (39800 Ha) of very dense forest, 1014 Km² (101400 Ha) of medium dense forest and 777.0 Km² (77700 Ha) of open forest.

The present Working Plan of Singrauli forest division is valid from 2009-10 to 2018-19. According to revised Forest Types (Champion and Seth 1968) the study area has been classified as Dry Peninsular Sal Forest (5B/C1c), Northern Dry Mixed Deciduous Forest (5B/C2), and Dry Bamboo Brakes (5/E9). In this Working Circle Sal occurs either pure or in mixture with (*Shorea robusta*), Saja (*Terminalia tomentosa*), Dhaora (*Anogeissus latifolia*), Bija (*Pterocarpus marsupium*), Sena (*Lagerstroemia parviflora*), Salia (*Boswellia serrata*), Tinsa (*Ougeinia oojeinensis*), Sagaun (*Tectona grandis*), Kari (*Saccopetalum tomentosum*) etc.

- VIII The **flora** existing in the core and buffer zone are Sal (*Shorea robusta*), Teak (*Tectona grandis*), Haldu (*Adina cordifolia*), Dhaora (*Anogeissus latifolia*), Kardhai (*Anogeissus pendula*), Saliha (*Boswellia serrata*), Char (*Buchnanian lanzan*), Dhobin (*Dalbergia paniculata*), Tendu (*Dyospyros melanoxylon*), Amla (*Emblica officinalis*), Lendia (*Lagerstroemia parviflora*), Gunja (*Lannea coromandelica*), Mahua (*Madhuca indica*), Bija (*Pterocarpus marsupium*), Kusum (*Schleichera oleosa*), Bhelwa (*Semecarpus anacardium*), Jamun (*Syzygium cumini*), Harra (*Terminalia chebula*), Bahara (*Terminalia belerica*), Saja (*Terminalia tomentosa*) etc. **Grasses** noticed are *Aristida* (*Aristida funiculata*),



Chloris (Chloris barbata), Digitaria (Digitaria radicata), Dimeria, Dactyloctenium (Dactyloctenium aegyptium), Setaria (Setaria glauca), Cenchrus (Cenchrus biflorus), Cyperus etc. **Weeds** noticed are *Ageratum conyzoides, Alysicarous and Euphorbia sp.*

Sal (*Shorea robusta*) is another important timber species in Madhya Pradesh. It is a large evergreen tree belonging to the family Dipterocarpaceae. Sal forests of Madhya Pradesh are ecologically very important as they mark the termination of the great Sal zone of the Central Indian peninsula. Sal forests are located in the eastern part of the state while teak forests are localized in the western part. In between, there is a transition belt of mixed miscellaneous forests.

Fauna noticed are –

mammals- Hare (*Lepus nigricollis*), Palm Squirrel (*Funambulus pennati*), Spotted deer (*Axix axix*), Bat (*Pteropus giganteus*), Mongoose (*Herpestes edwardi*), Red faced Monkey (*Macaca mulata*), Sloth Bear (*Melursus ursinus*), Barking Deer (*Muntiacus muntjak*), Wolf (*Canis lupus pallipes*), Black faced Langur (*Semnopithecus entellus*), Hyena (*Hyaena hyaena*), Fox (*Vulpes bengalensis*), Porcupine (*Histrix indica*), Jackal (*Canis aureus*), Wild Boar (*Sus scrofa cristetus*).

Birds- Brown fish Owl (*Bubo zeylonensis*), Blue Rock Pigeon (*Columba livia*), Asian Koel (*Eudynamys scolopacea*), Rufous Wood Pecker (*Micropternus brachyurus*), Pied Kingfisher (*Ceryle rudis*), Painted Partridge (*Galloperdix lunulata*), Bengal Vulture (*Galloperdix lunulata*), Indian Great horned Owl (*Bubo bengalensis*), Common Parakeet (*Psittacula eupatria*), Grey Jungle Fowl (*Gallus sonneratti*), Jungle Myna (*Acridotheres tristis*), Indian Cuckoo (*Cuculus micropterus*), Indian Roller (*Coracias behghalensis*), Spotted Dove (*Streptopelia chinensis*), Bush Quail (*Perdica asiatica*), Chestnut bellied Sand Grouse (*Pterocies exustus*), Peacock (*Pavo cristatus*), Cattle Egret (*Bubulus ibis*), Green Imperial Pigeon (*Ducula aenea*).

Reptiles- Indian Rock Python (*Python molurus*), Indian Chameleon (*Chameleon zeylanicus*), Garden Lizard (*Calotes versicolor*), Rat Snake (*Elephe radiata*), Indian Cobra (*Naja naja*) **Fishes-** *Catla catla* (Katla), *Cirrhinus mrigala* (Mrigal), *Tor tor* (Mahaseer), *Mastooembelus armatus* (Bam), *Labeo rohita* (Rohu), *Labeo bata*.



- IX The anticipated degradation due to this project are Air pollution, Noise pollution, Accidental death of wildlife (Rarely), Litter generation, Habitat degradation, forest fire, and Fragmentation of habitat etc. In view of these, mitigation measures like Improvement and Protection to Habitat, fire protection, awareness promotion, cattle immunization and incentive to villagers are provided in the core area of this project. Where as in the buffer area mitigation measures like Wildlife Habitat Improvement, Fire protection Measures, anti-depredation squad, Compassionate grant and creation of water hole have been proposed. The total cost of this plan is **Rs.31.05 Crores** including cost escalations of 20% over a Plan period of **25 years**. Out of this Rs. **4.05 Crores** is for Mining lease area and **Rs. 27.00 Crores** for the Impact area of 10 km radius from the periphery of the coal mine block (**Rs. 25.00 Crores for Sanjay Tiger Reserve and Rs. 2.00 Crore for Singrauli Forest Division**).
- X A monitoring committee will be formed with the Chairmanship of Conservator of forest Waidhan circle where DFO, Waidhan Division will be the Member Secretary and other members will be Range Officer, Forester and Forest Guard. Apart from this the village head of surrounding villages will participate in the half yearly meeting where progress and impact of the prescriptions of this plan will be discussed in detail. Any addition or modification to the prescriptions approved by Chief Wildlife Warden will be undertaken.

MECON Limited wishes to place on record its deep appreciation for the trust reposed in MECON by APMDC and for the active interest and help extended by concerned APMDC officials. Cooperation extended to MECON by the officials of State Forest department is also acknowledged. MECON has engaged M/s Vardan Environet for technical assistance in carrying out the study including preparation of the report.



CHAPTER-4

**MANAGEMENT STRATEGIES
WITHIN THE PROJECT
AREA WITH FINANCIAL
FORECAST**

4.0 MANAGEMENT STRATEGIES WITHIN THE PROJECT AREA WITH FINANCIAL FORECAST

A. Interventions to be implemented by the project authority inside the project area with justification. All measures are discussed in Chapter-3. The financial requirement of various interventions suggested in the plan as per current costs is given in flowing table for the plan period of 10 years and annual cash flow for the core area of the project. All activities within the core area will be implemented by the project proponent.

B. Relevant provision of Environmental plan for the project and the intervention overlapping in nature are to be specified.

Financial provision of works in Coal Mine area of Suliyari with wage rate@ Rs. 312/-.

Table-4.1: Financial Forecast

(A)M.L. Area:

Sl. No.	Management interventions	Estimated Cost (in Lac)
Habitat Improvement		
1	Protection to Forest (1298ha or 1300ha) / 100 ha =13 person @ Rs.312/- per day X 30 days X 12 months X 20 years (@ 1 person per 100 ha)	292.032
2	Reclamation of Mine Pit	Included in Mining plan at Page no. 27-28; clause 12.12 & 12.13 and also included in EIA/EMP Report Chapter 6; clause 6.5
3	Soil erosion control on OB Dump	
4	Water Pollution Control	
5	Dust Pollution Control	
Fire Protection		
6	(a) Fire line Creation 10 km in PF @ Rs.25,000/- per km	2.50
	(b) Cost of Fire Blower Rs.50,000/- x 4 Nos.	2.00
Awareness Promotion		
7	Promotion Awareness on L.S.	10 .00
Total (a)		306.532
Contingencies 10%		30.653
Total (b)		337.185
+ 20 % Escalation		67.437
Grand Total		404.622
		Or
		405
		<i>(Rupees Four Crores Five Lakhs only)</i>



(B) Impact Area:**I. Singrauli Forest Division**

S. No.	Management Interventions	Budget (Lakh)
1.	Rehabilitation from Forest Area	100.00
2.	Water source development	40.00
3.	Up-gradation of forest route (For Wildlife Management)	30.00
4.	Strengthening of Communication Instruments	30.00
Total		200.00

II. Sanjay Tiger Reserve:

S. No.	Management Interventions	Budget (Lakh)
1.	Study project on wild elephant habitat use and mitigation measures to minimize man-elephant conflict through WII or other technical Institute	50.00
2.	Wildlife estimation: Trap camera and other suitable instruments will be procured and used for wildlife estimation and presence in sensitive areas	100.00
3.	Meadow development in relocated villages	100.00
4.	Water harvesting structures/saucers creation and maintenance	50.00
5.	Procurement of truck mounted tankers (2)- their operational and maintenance cost for transporting water for filling saucers in peak summer and fire fighting	50.00
6.	Procuring vehicles on rent for patrolling under electric lines, along railway track, water bodies, fire and poaching sensitive areas (10 vehicles @ Rs. 40,000/- PM including PoC and operational cost)	48.00
7.	Fire fighting equipments and squads including construction of five watch towers	80.00
8.	Strengthening of patrolling camps-providing basic facilities in camps like drinking water, solar light, toilets, fencing etc and field gear like uniform, boots, caps, raincoat, cycles, first aid kit, water bottles, gamcha, winter jackets, mosquito nets, camp cots, sleeping bags, cooking facilities, buckets, torches, cane, camp furniture, storage tanks etc.	500.00
9.	Corpus fund for payment of property damage by wild animals, medical aid to injured humans/cattle and other exigencies to be kept at the disposal of Field director, Sanjay Tiger Reserve and DFO Singrauli	100.00
10.	Inoculation of livestock – purchase of medicines, ice boxes, honorarium to go-sevak and cold chain	30.00
11.	Conveyance facility to field director/Superintendent Bagdora/DFO singrauli for monitoring including cost of POL/Maintenance and a driver on daily wages basis	30.00
12.	Signages along roadside and in prominent and sensitive areas	12.00
13.	Appropriate fencing along village-forest interface to prevent wild animals from damaging the crop	200.00



Wildlife Conservation Plan for Suliyari Coal Mine in Singrauli Forest Division, Singrauli district, M.P. of M/s APMD

14.	Development and maintenance of patrolling camps/watch towers/entry points/barriers etc.	200.00
15.	Up gradation/maintenance of roads, culverts, causeways	200.00
16.	Procurement of rescue equipments for rescue of problematic/straying animals including customized rescue vehicle with cage, its POL, maintenance and operating charges	350.00
17.	Human resource development-training/study tour of staff, villagers, anti depredation squads including training equipments and development of training centre	20.00
18.	Construction of building: for field functionaries manials, drivers including solar electrification	50.00
19.	Strengthening of offices: maintenance of building, procurement of office furniture, generator, inverters, water coolers, computers and peripherals, photocopier, fax machine etc	30.00
20.	Strengthening of communication network, procurement of wireless sets, mobiles, batteries, inverters, internet facilities	20.00
21.	Construction of animal enclosures and maintenance of existing enclosures for safe release of wild animals	250.00
22.	Development of nature interpretation centre and awareness programme	30.00
	Total	2500.00

(C) Total Cost of the plan

Sl. No.	Description	Cost in Lac.
01	Mining lease area	405
02	Impact area	
	I. Singrauli Forest Division	200
	II. Sanjay Tiger Reserve	2500
	Total	3105

(Rupees Thirty One Crore and Five Lakhs only)



SULIYARI OPEN CAST COAL MINES OF APMDC: 05-07-2022



VIEW OF THE MINE LEASE AREA, FOREST COVER & OVER BURDEN





TREE FELLING IN DIVERTED FOREST AREA OF MINING LEASE



TREE FELLING IN DIVERTED FOREST LAND



TREE FELLING IN DIVERTED FOREST LAND & MUNARA



MINE OB DUMP & GARLAND DRAIN



ACTIVE MINING SITE VIEW



INTERACTION WITH LOCALS

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ANNEXURE-R3

Item No.02

(Court No. 2)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH**

(By Video Conferencing)

Original Application No.315/2022

Saurabh Dev Pandey

...Applicant

Versus

State of M.P. & Ors.

...Respondents

Date of hearing: 04.08.2022

**CORAM: HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER
HON'BLE DR. AFROZ AHMAD, EXPERT MEMBER**

Applicant: None.

Respondents: Mr. Raghav Sharma and Mr. Kanisk Arora, Advocate for
MPPCB

Application is registered based on a complaint received by Email.

ORDER

1. The prayer in the present letter petition sent by Dr. Saurabh Dev Pandey resident of 180/40, Thana Road, Bedhan, District Singrauli is for cancellation of allotment of Suliayari Coal Block to Andhra Pradesh Mineral Development Corporation (APMDC) at Singrauli.

2. The applicant has averred that Suliayari Coal Block has been allotted to Andhra Pradesh Mineral Development Corporation (APMDC) at Singrauli which has been reported to be 22nd most polluted area in the World. Establishment of Suliayari Coal Block will damage the agricultural lands of the applicant and many other farmers apart from damaging big land area of natural dense forest. About 20 lakh trees will be cut on the border of Suliayari Coal Block. These areas are adjoining to dense forest of Chhattisgarh which is rich habitat of hundreds of wild elephants and also an

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elephant corridor is proposed since many decades. The allotment may be cancelled in view of preventing damage to property and environment.

3. Vide order dated 09.05.2022, this Tribunal constituted a Joint Committee comprising of Regional Office of MoEF&CC, Bhopal, Ministry of Coal, Government of India, PCCF (HOF), State of Madhya Pradesh, SEIAA, State of Madhya Pradesh, State PCB and Collector, Singrauli and directed the same to submit factual and action taken report within two months. The relevant part of the order is reproduced hereunder:-

“In view of the serious allegations made in the present letter petition, we consider it appropriate to have a factual and action taken report from a Joint Committee comprising of representative of Regional Office of MoEF&CC, Bhopal, Ministry of Coal, Government of India, PCCF (HOF), State of Madhya Pradesh, SEIAA, State of Madhya Pradesh, State PCB and Collector, Singrauli and direct the same to verify the factual position, look into the grievances of the applicants and take remedial action in accordance with law by following due process within one month from the date of receipt of a copy of this order. State PCB will be the nodal agency for co-ordination and compliance. Factual and action taken report may be furnished within two months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/OCR Support PDF and not in the form of Image PDF....”

4. In compliance thereof, the Joint Committee inspected the area on 05.07.2022 and has submitted report vide email dated 19.07.2022. The relevant part of the report is reproduced as under:-

“2.0 About Suliyari Mine :

2.1 *The Suliyari Mine is situated in the Sarai Tehsil of the Singrauli district. The mine is situated on the Suliyari-Dongri Road, which passes through the mine lease area, and is proposed to be shifted in due course of time. Mine coordinates are –*

Latitude: 23°55'30.23" N to 23°58'17.12" N and

Longitude: 82°18' 46.09" E to 82°20' 51.08" E.

The mine is not situated in the designated Critically Polluted Area of Singrauli, the road distance is approximately 65-70 km while the aerial distance is approximately 30 km. An indicative google earth screenshot is placed as
ENCLOSURE 1.

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- 2.2 The forest area diverted for this mine neither comes under any National Park nor in any Wildlife Sanctuary. Mine area is away from Eco Sensitive Zone of Sanjay Tiger Reserve.
- 2.3 The mine lease area is 1298 hectares and it falls in 9 villages, namely Amadand, Amraikhoh, Bajaudi, Dhirauli, Jhalari, Majhaulipath and Seerswah.
- 2.4 The mine of the Andhra Pradesh Mineral Development Corporation (APMDC) has been granted Environmental Clearance (EC) as per the provisions of the EIA Notification, 2006 by MoEF&CC on 12-04-21, for a capacity of 5 MTPA. A copy of the EC is placed as **ENCLOSURE 2**. The mine has been granted CTO by the MPPCB, presently for the mining in 95 hectares of the land which is valid till 31-07-2022, a copy of which is placed as **ENCLOSURE 3**.
- 2.5 As per the EC, the land use details of the mine are as under:

S.No.	Land Use	Within ML Area	Outside ML Area	Total
	Agriculture Land	251.860	-	251.860
	Forest Land	259.239	-	259.239
	Waste Land	396.720	-	396.720
	Grazing land	0.00	-	0.00
	Surface Water Bodies	46.060	-	46.060
	Settlements	51.990	-	51.990
	Others (Barren Tenancy Land)	292.131	-	292.131
	Old Excavation Area(East Quarry)	-	-	-
	Old Excavation Area(West Quarry)	-	-	-
	Old OB Dumps	-	-	-
	Road & Mine Infrastructure	-	-	-
	R & R Colony (Proposed)	-	118.5	118.5
	Staff Colony (Proposed)	-	5.0	5.0
	Green Belt	-	-	-
	Balance Area	-	-	-
	Total Project Area	1298.000	123.5	1421.5

3.0 Forest Area & Trees :

- 3.1 The forest cover which falls in the mining lease area of the APMDC Suliyari mine is 259.239 hectares, which includes 226.349 hectares of forest area and 32.89 hectares of revenue forest. Out of this, 156.68 hectares is protected forest area while 69.669 hectares is reserve forest.
- 3.2 The final approval / stage II clearance for the diversion of 259.239 hectares of the forest land for Suliyari Open Cast Coal mining in favour of APMDC has been granted by MoEF&CC on 15-06-2021, a copy of which has been placed as **ENCLOSURE 4**.
- 3.3 Unlike mentioned in the letter complaint, the no. of tress that have been recorded in the records of the forest

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department as well as the revenue department are as under:

Land Details	Area (Hectares)	No. of Trees
Forest Land	226.349	15710
Revenue Forest	32.89	458
Revenue Area	Privately Owned land	19191
	Government Land	13101
	TOTAL:	48460

Apart from the above count, few pollarded trees are also available in the forest area, which is approximately 2000-2500 in numbers. The details of the tress in revenue land and rehabilitation area are placed as **ENCLOSURE 5**.

- 3.4 Felling of the trees after Stage II diversion of the forest land, has been started and around 7900 tress have been fallen. Approximately an area of 89 hectares of forest land and 32.89 hectares of revenue forest land has already been handed over to the project proponent. During the forest inspection, the reserve forest density has been found to be better than the protected forest density. A few patches of diverted forest land is having moderate dense forest while most of the forest area is found to be open forest.
- 3.5 Project Proponent has made available equivalent non forest land for the compensatory afforestation. In addition to this, a sum of Rs. 9,93,51,319 has also been deposited in CAMPA account for undertaking plantation work. The area preparation work like fencing of area, pit digging etc for plantation has been started and plantation will be done in July, 2022.
- 3.6 Thus, the notion of the complainant that trees, numbering 20 lacs will be fallen and cut, was not found to be correct during the inspection by the team and has been found to be highly exaggerated.

4 Elephant Movement and Corridor :

- 4.1 It is respectfully submitted that the working plan for this area was prepared way back in 2008. At that point in time, there would have been elephant movement in the area and provision had been made in the plan for conserving the elephant corridor.
- 4.2 However no movement of the elephant in the area has been noticed for the last 12-15 years by the forest department. During inspection, the senior and aged villagers have reported that they have also not seen or heard of the elephant movement in the nearby areas for last many years.

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- 4.3 *A new working plan for this region is under preparation and the contention of the complainant that the project of the elephant has been shelved (ठंडे बस्ते में डाल दिया) is misconceived and unfounded.*
- 4.5 *To mitigate the adverse effects of this mine on elephants, a Wildlife Management Plan has been prepared and this wildlife management plan is duly approved by Chief Wildlife Warden of Madhya Pradesh. A copy of approval dated 16-9-19 is enclosed as **ENCLOSURE 6**. User agency has deposited an amount of Rs. 31.05 Cr. in CAMPA fund for implementation of this management plan.*

5. Conclusion:

5.1 Based on the inspection by the joint committee, following conclusions are drawn, which are as under:

- *The Suliyari Open Cast coal mine of the APMDC has been granted EC by MoEF&CC, Forest Clearance Stage II by MoEF&CC, CTO by MPPCB.*
- *The mine is situated far away from the designated CEPI area of the Singrauli Critically Polluted Area (now severely polluted area).*
- *The number of tree felling and destruction of thick and dense forest were found to be unfounded and misconceived. As complained that 20 lac numbers of trees will be destroyed, the tree felling number is only around 50,000, against which compensatory plantation @ 1000 numbers per hectares will be undertaken in an area of approximately 259 hectares. Also mine management will plant trees within reclaimed mining lease area of 704 hectares approximately.*
- *Elephant movement in the area has not been noticed for the last 12-15 years. Hence there seems to be no perceivable threat to the "Elephant Corridor". Also a Wildlife Management Plan amounting to Rs 31.05 Cr has been approved by Chief Wildlife Warden, which is being implemented."*

5. We have gone through the report. In the report, it has been mentioned that the mining site is away from Sanjay Tiger Reserve without giving the distance. Condition no. (xviii) in environmental clearance letter dated 12.04.2021 issued by Government of India, Ministry of Environment, Forest and Climate Change, Impact Forest Division reads as under:-

"(xviii) No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported with 10km boundary of the project except Sanjay Gandhi Tiger Reserve ESZ boundary wherein the project is at about 7.8 kms from ESZ boundary."

It is evident from the above said environmental clearance itself that the mining site is within 10 kms from Sanjay Gandhi Tiger Reserve ESZ boundary.

6. The Project was considered by the sectoral Environmental Appraisal Committee (EAC) in its 56th EAC meeting held on 30.06.2020 and 9th meeting held on 26.02.2021 which recommended for grant of environmental clearance. Copies of the EIA and EMP reports, on the basis of which clearance had been granted, be filed before this Tribunal.

7. As mentioned in para (xxi) of the above referred environmental clearance letter public hearing for the project of 5 MTPA capacity in an area of 1298 ha was conducted on 30.08.08.2019 at Playground of Government High School, Majhailipath (core zone). Major issues raised in the public hearing included (1) Land Acquisition and R & R (2) Employment to locals (3) Plantation, Green belt development, (4) Compensatory Afforestation (5) Conservation of bio-diversity (6) Wildlife Conservation (7) Air Pollution. Appropriate action to address the issues raised in the Public hearing was proposed to be taken up. Since more than 45 percent population that is going to face displacement comprises of tribals, the clearance from the Ministry of Tribal Affairs, Government of India is also required. Amount of Rs. 9.9 crores has already been deposited with CAMPA for compensatory afforestation in lieu of the forest diverted i.e. 259 ha, but there is no mention of area/location where afforestation is to take place and the species to be planted. Copy of the detailed Action Plan prepared in this regard be furnished to this Tribunal. The project involves 1386 affected families and the Project Proponent has plan for Rehabilitation and Resettlement as per the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Copy of the detailed Action Plan about the Rehabilitation and Resettlement of the population which are likely to be displaced be filed before this Tribunal. The Action Plan should clearly spelt out

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the area where displaced persons will be resettled with details of civic amenities in the new villages, Rehabilitation and Resettlement package to be provided etc.

8. Copies of EIA/EMP/Action Plans referred to above be filed within two months by way of E-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/OCR Supported PDF and not in the form of Image PDF.

9. Notice, along with the application and the report of the Joint Committee be issued to the Project Proponent through Executive Director, M/s The Andhra Pradesh Mineral Development Corporation Limited, 295/1D, 100 Feet Tadigadapa to Anikepadu Road, Kanur, Vijaywada- 521137, Andhra Pradesh, Principal Chief Conservator of Forests (HoFF and Wildlife), Government of Madhya Pradesh, Director, Sanjay Gandhi Tiger Reserve, Chairman, State Board of Wildlife, Madhya Pradesh requiring them to file their response/ reply to the allegations made in the application as well as observations made in the report of Joint Committee within two months by way of E-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/OCR Supported PDF and not in the form of Image PDF.

10. List the matter for further consideration on 21.10.2022.

Arun Kumar Tyagi, JM

Dr. Afroz Ahmad, EM

August 04, 2022
AG

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ANNEXURE-R4

भारत का राजपत्र

The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित

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पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 28 अगस्त, 2017

का. आ. 2811(अ).—भारत सरकार, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय की अधिसूचना सं. का. आ. 1277 (अ) तारीख 31 मार्च, 2016 उन सभी व्यक्तियों से, जिनके उससे प्रभावित होने की संभावना थी, उस तारीख से, जिसको उस राजपत्र की प्रतियां, जिसमें यह अधिसूचना अंतर्विष्ट है, उपलब्ध करा दी गई थीं, साठ दिन की अवधि के भीतर आक्षेपों और सुझावों को आमंत्रित करते हुए एक प्रारूप अधिसूचना प्रकाशित की गई थी;

और, प्रारूप अधिसूचना अन्तर्विष्ट करने वाले राजपत्र की प्रतियां जनता को तारीख 31 मार्च, 2016 को उपलब्ध करा दी गई थीं;

और, प्रारूप अधिसूचना के प्रतिउत्तर में सभी व्यक्तियों और पणधारियों से प्राप्त आक्षेपों और सुझावों पर केंद्रीय सरकार द्वारा सम्यक् रूप से विचार किया गया;

और, संजय डुबरी बाघ संरक्षित जिसमें संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य सम्मिलित हैं जो 1674.512 वर्ग किलोमीटर में फैला है जिसमें से 812.581 वर्ग किलोमीटर का क्षेत्र बाघ संरक्षित का कोर क्षेत्र है और 861.931 वर्ग किलोमीटर का क्षेत्र बफर क्षेत्र है और बाघ संरक्षित का क्षेत्र, जिसके अंतर्गत दोनों कोर और बफर क्षेत्र सम्मिलित हैं, मध्य प्रदेश और छत्तीसगढ़ राज्यों में फैला है;

और, संजय राष्ट्रीय उद्यान (464.643 वर्ग किलोमीटर) और संजय डुबरी वन्यजीव अभयारण्य (347.938 वर्ग किलोमीटर) मध्य प्रदेश में स्थित हैं और दोनों संरक्षित क्षेत्र एक साथ मिलकर, संजय डुबरी बाघ के कोर क्षेत्र को गठित करते हैं, जो 812.581 वर्ग किलोमीटर में फैले हुए है;

और, संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य में सूखे से आर्द्र पर्णपाती प्रकार के प्रायद्वीय वनस्पति हैं जो कि खुले से अधिक घने वन क्षेत्रों के लिए जाने जाते हैं;

और, संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य बांधवगढ़-संजय-गुरु घासीदास-पलामू परिदृश्य का भाग है जो कि चार संभावित बाघ मेटा-जनसंख्या परिदृश्य में से एक है;

और, संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य बाघ के लिए बांधवगढ़ बाघ आरक्षित के साथ गलियारे की संयोजकता प्रदान करता है और जंगली हाथियों के लिए पलामू बाघ आरक्षित के साथ गलियारे की संयोजकता प्रदान करता है;

और, संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य विभिन्न प्रकार के जीवजन्तुओं का वास है; यह 9 संकटापन्न (3 गंभीर रूप से लुप्तप्राय, 3 लुप्तप्राय और 3 कमजोर) और 15 अनुसूची-I पशुओं को आश्रय प्रदान करता है; उक्त आरक्षिती में बाघ, तेंदुआ और रीछ की प्रमुख प्रजातियां पाई जाती हैं; उक्त आरक्षिती में कभी-कभी हाथियों के झुंडों के झुंड का प्रमुख आकर्षण होते हैं, जबकि चीतल, नीलगाय, सांभर, चौसिंगा, चिंकारा, मुंजक और जंगली सूअर प्रमुख शिकार प्रजाति हैं; संजय डुबरी वन्यजीव अभयारण्य के डुबरी और बस्तुआ श्रेणी और संजय राष्ट्रीय उद्यान के पोंडी श्रेणी में बाघ की जनसंख्या के लिए आश्रय प्रदान करते हैं, जबकि राष्ट्रीय उद्यान की मोहन श्रेणी हाथियों की जनसंख्या के लिए है;

और, विभिन्न बारहमासी नदियां अर्थात् गोपद, बनस, मवाई, महान, कोडमर, उमरारी संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य से होते हुए बहती है;

और, संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य में जीवजंतु की व्यापक विविधता है जिसमें बाघ, तेंदुआ, रीछ, चीतल, सांभर, चौसिंगा मृग, चिंकारा, मुंजक और जंगली सूअर सम्मिलित हैं;

और, संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य के चारों ओर के क्षेत्र को, जिसका विस्तार और सीमाएं इस अधिसूचना के पैरा 1 में विनिर्दिष्ट हैं, जो पारिस्थितिक तथा पर्यावरण की दृष्टि से पारिस्थितिक संवेदी जोन के रूप में पूर्वोक्त बाघ अभयारण्य के कोर क्षेत्र को साथ-साथ गठित करता है सुरक्षित और संरक्षित करना तथा उक्त पारिस्थितिक संवेदी जोन में उद्योगों या उद्योगों के वर्गों के प्रचालन तथा प्रसंस्करण करने को प्रतिषिद्ध करना आवश्यक है;

अतः, इसलिए, केन्द्रीय सरकार, पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के उपनियम (3) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उपधारा (2) और उपधारा (3) के खंड (v) और खंड (xiv) और उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, मध्य प्रदेश और छत्तीसगढ़ राज्यों में फैले संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य जो बाघ संरक्षिती के कोर क्षेत्र को गठित करते हैं, की सीमा से 2 किलोमीटर तक की विस्तारित क्षेत्र को संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य पारिस्थितिक संवेदी जोन (जिसे इसमें इसके पश्चात् पारिस्थितिक संवेदी जोन कहा गया है) के रूप में अधिसूचित करती है, जिसका विवरण निम्नानुसार है, अर्थात् :-

1. पारिस्थितिक संवेदी जोन का विस्तार और उसकी सीमाएं--(1) पारिस्थितिक संवेदी जोन का विस्तार संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य जो संजय डुबरी बाघ आरक्षित के कोर क्षेत्र को गठित करते हैं, की सीमा से 2 किलोमीटर तक होगा।

(2) पारिस्थितिक संवेदी जोन 1053.243 वर्ग किलोमीटर के क्षेत्र में फैला है, जिसके अंतर्गत संजय डुबरी बाघ आरक्षित का 861.931 वर्ग किलोमीटर का बफर क्षेत्र और जिसमें छत्तीसगढ़ राज्य का 32.759 वर्ग किलोमीटर का क्षेत्र सम्मिलित है।

(3) मुख्य बिंदुओं के निर्देशांकों के साथ पारिस्थितिक संवेदी जोन का मानचित्र **उपाबंध I** के रूप में उपाबद्ध है।

(4) पारिस्थितिक संवेदी जोन में मध्य प्रदेश के तीन जिले अर्थात् शहडोल, सिद्धि और सिंगरौली के 98 ग्रामों और छत्तीसगढ़ के महेन्द्रगढ़ जिले के 3 ग्राम सम्मिलित हैं।

(5) पारिस्थितिक संवेदी जोन के अंतर्गत आने वाले ग्रामों की सूची **उपाबंध II** के रूप में उपाबद्ध है।

(6) पारिस्थितिक संवेदी जोन का क्षेत्र **उपाबंध III** के रूप में उपाबद्ध है।

2. पारिस्थितिक संवेदी जोन के लिए आंचलिक महायोजना - (1) राज्य सरकार, पारिस्थितिक संवेदी जोन के प्रयोजन के लिए राजपत्र में इस अधिसूचना के प्रकाशन की तारीख से दो वर्ष की अवधि के भीतर, स्थानीय व्यक्तियों के परामर्श से और राज्य सरकार में सक्षम अधिकारी के अनुमोदन के लिए इस अधिसूचना में दिए गए अनुबंधों का पालन करते हुए आंचलिक महायोजना तैयार करेगी।

(2) राज्य सरकार द्वारा पारिस्थितिक संवेदी जोन के लिए आंचलिक महायोजना ऐसी रीति जो इस अधिसूचना में विनिर्दिष्ट है तथा सुसंगत केंद्रीय और राज्य विधियों के अनुरूप और केंद्रीय सरकार द्वारा जारी मार्गनिर्देशों, यदि कोई हों, द्वारा तैयार होगी।

और केंद्रीय सरकार द्वारा जारी मार्गनिर्देशों, यदि कोई हों, द्वारा तैयार होगी।

(3) आंचलिक महायोजना, पारिस्थितिक और पर्यावरणीय संबंधी बातों को उक्त योजना में समाकलित करने के लिए राज्य सरकार के सभी विभागों के परामर्श से तैयार होगी, अर्थात्:-

- (i) पर्यावरण;
- (ii) वन और वन्यजीव;
- (iii) कृषि और बागवानी ;

- (iv) राजस्व;
- (v) शहरी विकास;
- (vi) पर्यटन सहित पारिस्थितिक पर्यटन;
- (vii) ग्रामीण विकास;
- (viii) सिंचाई और बाढ़ नियंत्रण;
- (ix) नगरपालिक और शहरी विकास;
- (x) पंचायती राज;
- (xi) लोक निर्माण विभाग।

(4) आंचलिक महायोजना अनुमोदित विद्यमान भू-उपयोग, अवसंरचना और क्रियाकलापों पर कोई निर्वधन अधिरोपित नहीं करेगी जब तक कि इस अधिसूचना में इस प्रकार विनिर्दिष्ट न हो और आंचलिक महायोजना सभी अवसंरचना और क्रियाकलापों में जो अधिक दक्षता और पारिस्थितिक अनुकूल हों का संवर्धन करेगी।

(5) आंचलिक महायोजना में अनाच्छादित क्षेत्रों के जीर्णोद्धार, विद्यमान जल निकायों के संरक्षण, आवाह क्षेत्रों के प्रबंधन, जल-संभरों के प्रबंधन, भूतल जल के प्रबंधन, मृदा और नमी संरक्षण, स्थानीय समुदायों की आवश्यकताओं तथा पारिस्थितिक और पर्यावरण से संबंधित ऐसे अन्य पहलुओं, जिन पर ध्यान देना आवश्यक है, के लिए उपबंध होंगे।

(6) आंचलिक महायोजना सभी विद्यमान पूजा स्थलों, ग्रामों और नगरीय बंदोबस्तों, वनों के प्रकार और किस्मों, कृषि क्षेत्रों, ऊपजाऊ भूमि, हरित क्षेत्र जैसे उद्यान और उसी प्रकार के स्थान, उद्यान कृषि क्षेत्र, फलोउद्यान, झीलों और अन्य जल निकायों का अभ्यंकन करेगी और इस योजना के मानचित्र के साथ विद्यमान और प्रस्तावित भूमि उपयोग विशेषताओं का विवरण संलग्न होगा।

(7) आंचलिक महायोजना पारिस्थितिक संवेदी जोन में विकास को विनियमित करेगा और अनुच्छेद 4 में सारणी में सूचीबद्ध प्रतिषिद्ध, विनियमित क्रियाकलापों का पालन करेगा और स्थानीय समुदायों की आजीविका सुरक्षा के लिए पर्यावरण अनुकूल विकास को सुनिश्चित करने को बढ़ावा देगा।

(8) इस प्रकार अनुमोदित आंचलिक महायोजना इस अधिसूचना के उपबंधों के अनुसार मानीटरी के अपने कृत्यों को करने के लिए मानीटरी समिति के लिए एक संदर्भ दस्तावेज होगी।

3. राज्य सरकार द्वारा किए जाने वाले उपाय-- राज्य सरकार इस अधिसूचना के उपबंधों को प्रभावी करने के लिए निम्नलिखित उपाय करेगी, अर्थात्:--

(1) **भू-उपयोग -** (क) पारिस्थितिक संवेदी जोन में वनों, उद्यान-कृषि क्षेत्रों, कृषि क्षेत्रों, आमोद-प्रमोद के प्रयोजन के लिए चिन्हित किए गए पार्कों और खुले स्थानों का वृहद वाणिज्यिक या आवासीय काम्प्लैक्स औद्योगिक क्रियाकलापों के लिए उपयोग या संपरिवर्तन नहीं होगा:

परंतु पारिस्थितिक संवेदी जोन के भीतर भाग में कृषि और अन्य भूमि का संपरिवर्तन मानीटरी समिति की सिफारिश पर राज्य सरकार के पूर्व अनुमोदन से, स्थानीय निवासियों की निम्नलिखित आवासीय जरूरतों को पूरा करने के लिए अनुज्ञात किया जाएगा, जैसे:-

- (i) विद्यमान सड़कों को चौड़ा करना और उन्हें सुदृढ़ करना तथा नई सड़कों का संनिर्माण;
- (ii) अवसंरचना और नागरिक सुविधाओं का संनिर्माण और नवीकरण;
- (iii) प्रदूषण उत्पन्न न करने वाले लघु उद्योग;
- (iv) कुटीर उद्योगों जिसके अंतर्गत ग्रामीण उद्योग हैं; सुविधाजनक भण्डार और स्थानीय सुख-सुविधाओं जो पारिस्थितिक पर्यटन में सहायक हैं जिसमें गृह वास सम्मिलित है; और
- (v) संवर्धित क्रियाकलाप और पैरा 4 के अधीन दिए गए हैं:

परंतु यह और भी कि राज्य सरकार के पूर्व अनुमोदन तथा संविधान के अनुच्छेद 244 और तत्समय प्रवृत्त विधि के उपबंधों के अनुपालन के बिना, जिसके अंतर्गत अनुसूचित जनजाति और अन्य परंपरागत वन निवासी (वन अधिकारों की मान्यता) अधिनियम, 2006 (2007 का 2) भी है, वाणिज्यिक या उद्योग विकास क्रियाकलापों के लिए जनजातीय भूमि का उपयोग अनुज्ञात नहीं होगा:

परंतु यह और भी कि पारिस्थितिक संवेदी जोन के भीतर भू-अभिलेखों में प्रकट होने वाली कोई त्रुटि, मानीटरी समिति के विचार प्राप्त करने के पश्चात् राज्य सरकार द्वारा प्रत्येक मामले में एक बार संशोधित होगी और उक्त त्रुटि के संशोधन की सूचना केंद्रीय सरकार के पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय को देनी होगी।

परंतु यह और भी कि उपर्युक्त त्रुटि के संशोधन में इस उप-पैरा के अधीन यथा-उपबंधित के सिवाय किसी भी दशा में भू-उपयोग का परिवर्तन सम्मिलित नहीं होगा :

परंतु यह और भी कि जिससे हरित क्षेत्र में जैसे वन क्षेत्र, कृषि क्षेत्र आदि में कोई पारिणामिक कटौती नहीं होगी और वनरोपण तथा विरासत और जैव विविधता संबंधी क्रियाकलापों के साथ अनप्रयुक्त या अनुत्पादक कृषि क्षेत्रों में पुनः वनीकरण करने के प्रयास किए जाएंगे।

(2) **प्राकृतिक जल स्रोतों** -- आंचलिक महायोजना में सभी प्राकृतिक जल स्रोतों, नदियों या जलसरणी के आवाह क्षेत्र की पहचान की जाएगी और उसमें उनके संरक्षण और पुनरुद्भूतकरण के लिए योजना सम्मिलित होगी।

(3) **पर्यटन/पारिस्थितिक पर्यटन** -- (क) पारिस्थितिक संवेदी जोन के भीतर सभी नए पारिस्थितिक पर्यटन क्रियाकलाप या विद्यमान पर्यटन संबंधी क्रियाकलाप पारिस्थितिक संवेदी जोन के लिए पर्यटन महायोजना के अनुसार होंगे।

(ख) पर्यटन महायोजना पर्यटन विभाग, द्वारा राज्य सरकार के पर्यावरण और वन विभाग के परामर्श से तैयार होगी।

(ग) पर्यटन महायोजना आंचलिक महायोजना के एक घटक के रूप में होगी।

(घ) पारिस्थितिक पर्यटन संबंधी क्रियाकलाप निम्नलिखित के अधीन विनियमित होंगे, अर्थात्:-

(i) संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य की सीमा से एक किलोमीटर के भीतर या पारिस्थितिक संवेदी जोन के विस्तार तक, जो भी निकट हो, किसी होटल या रिसोर्ट का नया सन्निर्माण अनुज्ञात नहीं किया जाएगा तथा संजय राष्ट्रीय उद्यान और संजय डुबरी वन्यजीव अभयारण्य की सीमा से एक किलोमीटर की दूरी से परे पारिस्थितिक संवेदी जोन के विस्तार तक नए होटलों और रिसोर्टों की स्थापना पर्यटन महायोजना के अनुसार पारिस्थितिक पर्यटन सुविधाओं के लिए पूर्व सीमांकित और पदाभिहित क्षेत्रों में ही अनुज्ञात की जाएगी।

(ii) पारिस्थितिक संवेदी जोन के अन्दर सभी नए पर्यटन क्रिया-कलाप या विद्यमान पर्यटन क्रियाकलापों के विस्तार केन्द्रीय सरकार, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय द्वारा जारी मार्गदर्शी सिद्धांतों तथा पारिस्थितिक पर्यटन पर बल देते हुए राष्ट्रीय बाघ संरक्षण प्राधिकरण द्वारा जारी पारिस्थितिक पर्यटन मार्गदर्शी सिद्धांतों (समय-समय पर यथा-संशोधित) के अनुसार होगा।

(iii) आंचलिक महायोजना का अनुमोदन किए जाने तक, पर्यटन के लिए विकास और विद्यमान पर्यटन क्रियाकलापों के विस्तार को वास्तविक स्थल विनिर्दिष्ट संवीक्षा तथा मानीटरी समिति की सिफारिश पर आधारित संबंधित विनियामक प्राधिकरणों द्वारा अनुज्ञात किया होगा।

(4) **नैसर्गिक विरासत** -- पारिस्थितिक संवेदी जोन में महत्वपूर्ण नैसर्गिक विरासत के सभी स्थलों जैसे सभी जीन कोश आरक्षित क्षेत्र, शैल विरचनाएं, जल प्रपातों, झरनों, घाटी मार्गों, उपवनों, गुफाएं, स्थलों, भ्रमण, अश्वरोहण, प्रपातों आदि की पहचान की जाएगी और विरासत संरक्षण योजना आंचलिक महायोजना के भाग के रूप में परिरक्षण और संरक्षण के लिए तैयार की जाएगी।

(5) **मानव निर्मित विरासत स्थल** - पारिस्थितिक संवेदी जोन में भवनों, संरचनाओं, शिल्प-तथ्य, ऐतिहासिक, कलात्मक और सांस्कृतिक महत्व के क्षेत्रों की पहचान और उनके संरक्षण के लिए विरासत योजना आंचलिक महायोजना के भाग के रूप में तैयार की जाएगी।

(6) **ध्वनि प्रदूषण** -- पारिस्थितिक संवेदी जोन में ध्वनि प्रदूषण की रोकथाम और नियंत्रण का पर्यावरण (संरक्षण) अधिनियम, 1986, के अधीन ध्वनि प्रदूषण (विनियमन और नियंत्रण) नियम 2000 के अनुसार अनुपालन किया जाएगा।

(7) **वायु प्रदूषण** -- पारिस्थितिक संवेदी जोन में, वायु प्रदूषण का निवारण और नियंत्रण वायु (प्रदूषण निवारण और नियंत्रण) अधिनियम, 1981 (1981 का 14) के उपबंधों के अनुसरण में अनुपालन किया जाएगा।

(8) **बहिस्त्राव का निस्सारण** -- पारिस्थितिक संवेदी जोन में उपचारित बहिस्त्राव का निस्सारण पर्यावरण (संरक्षण) अधिनियम, 1986 और उसके अधीन बनाए गए नियमों के उपबंधों के अधीन आने वाले पर्यावरणीय प्रदूषकों के निस्सारण के लिए साधारण मानकों के अनुसार होगा।

(9) **ठोस अपशिष्ट** -- ठोस अपशिष्टों का निपटान और प्रबंधन निम्नलिखित रूप में होगा--

(क) पारिस्थितिक संवेदी जोन में ठोस अपशिष्ट निपटान और प्रबंधन समय-समय पर संशोधित ठोस अपशिष्ट प्रबंधन नियम, 2016, जो भारत सरकार के पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय की अधिसूचना सं. का.आ. 1357(अ) तारीख 8 अप्रैल, 2016 द्वारा प्रकाशित किए गए थे, के उपबंधों के अनुसार किया जाएगा ;

अकार्बनिक सामग्री का निपटान पारिस्थितिक संवेदी जोन के बाहर पहचान किए गए स्थल पर किसी पर्यावरणीय स्वीकृत रीति में होगा;

(ख) पारिस्थितिक संवेदी जोन के अंतर्गत ठोस अपशिष्टों के सुरक्षित और पर्यावरणीय ध्वनि प्रबंधन) ईएसएम (की पहचान की गई तकनीकों के उपयोग की विद्यमान नियमों और विनियमों के अनुरूप अनुमति दी जाएगी।

(10) **जैव चिकित्सीय अपशिष्ट-** जैव चिकित्सीय अपशिष्ट प्रबंधन निम्नलिखित रूप में होगा—

(क) पारिस्थितिक संवेदी जोन में जैव चिकित्सीय अपशिष्टों का निपटान भारत सरकार के पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय की समय-समय पर यथा संशोधित अधिसूचना सं.का.नि 343 (अ) तारीख 28 मार्च 2016 द्वारा प्रकाशित जैव चिकित्सीय अपशिष्ट प्रबंधन नियम, 2016 के उपबंधों के अनुसार किया जाएगा ।

(ख) पारिस्थितिक संवेदी जोन के अंतर्गत जैव-चिकित्सा अपशिष्टों के सुरक्षित और पर्यावरणीय ध्वनि प्रबंधन) ईएसएम (की पहचान की गई तकनीकों के उपयोग की विद्यमान नियमों और विनियमों के अनुरूप अनुमति दी जाएगी।

(11) **प्लास्टिक अपशिष्ट प्रबंधन:-** पारिस्थितिक संवेदी जोन में प्लास्टिक अपशिष्ट प्रबंधन का निपटान भारत सरकार के पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय की अधिसूचना सा.का.नि 340(अ), तारीख 18 मार्च, 2016 द्वारा प्रकाशित प्लास्टिक अपशिष्ट प्रबंधन नियम 2016 के उपबंधों के अनुसार किया जाएगा।

(12) **संनिर्माण और विध्वंस अपशिष्ट प्रबंधन:-** पारिस्थितिक संवेदी जोन में संनिर्माण और विध्वंस अपशिष्ट प्रबंधन भारत सरकार के पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय की अधिसूचना सा.का.नि 317(अ), तारीख 29 मार्च, 2016 द्वारा प्रकाशित संनिर्माण और विध्वंस प्रबंधन नियम, 2016 के उपबंधों के अनुसार किया जाएगा ।

(13) **ई-अपशिष्ट:-** पारिस्थितिक संवेदी जोन में ई-अपशिष्ट प्रबंधन का निपटान भारत सरकार के पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय द्वारा ई-अपशिष्ट प्रबंधन नियम, 2016 के उपबंधों के अनुसार किया जाएगा।

(14) **यानीय परिवहन:-** परिवहन की यानीय संचालन आवास के अनुकूल रीति में विनियमित होंगी और इस संबंध में आंचलिक महायोजना में विनिर्दिष्ट उपबंध समाविष्ट किए जाएंगे और आंचलिक महायोजना के तैयार होने और राज्य सरकार के सक्षम प्राधिकारी द्वारा के अनुमोदित होने तक, मानीटरी समिति सुसंगत अधिनियमों तथा तदधीन बनाए गए नियमों और विनियमों के अधीन यानीय संचालन के अनुपालन को मानीटर करेगी ।

(15) **यानीय प्रदूषण:-** लागू विधियों के अनुसार यानीय प्रदूषण की रोकथाम और नियंत्रण का अनुपालन किया जाएगा और स्वच्छक ईंधन उदाहरण के लिए सीएनजी आदि, के उपयोग के लिए प्रयास किए जाएंगे ।

(16) **औद्योगिक ईकाइयां:-** (i) पारिस्थितिक संवेदी जोन के भीतर किन्हीं नए प्रदूषणकारी उद्योगों की स्थापना की अनुमति नहीं दी जाएगी।

(ii) पारिस्थितिक संवेदी जोन में केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा फरवरी, 2016 में जारी दिशानिर्देशों में केवल गैर- केवल अप्रदूषणकारी उद्योगों की स्थापना को वर्गीकरण के अनुसार अनुमति दी जाएगी, जब तक कि इस अधिसूचना में इस प्रकार विनिर्दिष्ट न हो।

(17) **पहाड़ी ढलानों का संरक्षण:-** पहाड़ी ढलानों का संरक्षण निम्नानुसार है:-

(क) आंचलिक महायोजना में पहाड़ी ढलानों पर क्षेत्रों को उपदर्शित किया जाएगा जहां किसी भी संनिर्माण की अनुमति नहीं दी जाएगी ।

(ख) कटाव के एक उच्च डिग्री के साथ विद्यमान खड़ी पहाड़ी ढलानों या ढलानों पर किसी भी संनिर्माण की अनुमति नहीं दी जाएगी ।

(18) केन्द्रीय सरकार और राज्य सरकार, यदि यह आवश्यक समझती है, इस अधिसूचना के उपबंधों को प्रभावी करने में अन्य उपाय विनिर्दिष्ट करेगा।

4. पारिस्थितिक संवेदी जोन में प्रतिषिद्ध या विनियमित किए जाने वाले क्रियाकलापों की सूची - पारिस्थितिक संवेदी जोन में सभी क्रियाकलाप पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) के उपबंधों और तटीय विनियमन जोन (सीआरजेड), 2011 और पर्यावरणीय प्रभाव आकलन (ईआईए) अधिसूचना, 2006 और अन्य लागू विधियों जिसके अन्तर्गत वन (संरक्षण) अधिनियम, 1980 (1980 के 69), भारतीय वन अधिनियम, 1927 (1927 के 16), वन्यजीव (संरक्षण) अधिनियम, 1972 (1972 के 53) के उपबंधों तथा उनमें किए गए संशोधनों द्वारा शासित होंगे और नीचे दी गई सारणी में विनिर्दिष्ट रीति में विनियमित होंगे, अर्थात् :-

सारणी

क्रम सं.	क्रियाकलाप	टीका-टिप्पणी
क. प्रतिषिद्ध क्रियाकलाप		
1.	वाणिज्यिक खनन, पत्थर उत्खनन और उनको तोड़ने की इकाइयां ।	(क) सभी नए और विद्यमान खनन (लघु और वृहत खनिज), पत्थर की खानें और उनको तोड़ने की इकाइयां वास्तविक स्थानीय निवासियों की घरेलू आवश्यकताओं के सिवाय नहीं होंगी जिसमें निजी उपयोग के लिए मकानों के संनिर्माण या मरम्मत के लिए भूमि को खोदना और मकान बनाने के लिए देशी टाइलों का निर्माण भी सम्मिलित है; (ख) खनन संक्रियाएं, माननीय उच्चतम न्यायालय की रिट याचिका (सिविल) सं. 1995 का 202 टी.एन. गौडाबर्मन थिरुमूलपाद बनाम भारत संघ के मामले में आदेश तारीख 4 अगस्त, 2006 और रिट याचिका (सिविल) सं. 2012 का 435 गोवा फाउंडेशन बनाम भारत संघ के मामले में तारीख 21 अप्रैल, 2014 के अंतरिम आदेश के सर्वदा अनुसरण में होंगी ।
2.	प्रदूषण (जल या वायु या मृदा या ध्वनि, आदि) कारित करने वाले उद्योगों की स्थापना ।	(क) कोई नया उद्योग या पारिस्थितिक संवेदी जोन में प्रदूषण फैलाने वाले उद्योगों के विस्तार की अनुमति नहीं दी जाएगी। (ख) पारिस्थितिक संवेदी जोन के भीतर केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा फरवरी, 2016 में जारी दिशानिर्देशों में सिर्फ गैर- प्रदूषित उद्योगों को स्थापना के अनुसार अनुज्ञात किया जाएगा, जब तक कि इस अधिसूचना में इस प्रकार विनिर्दिष्ट न हो।
3.	वृहत जल विद्युत परियोजना की स्थापना ।	लागू विधियों के अनुसार प्रतिषिद्ध (अन्यथा उपबंधित के सिवाय) होंगे ।
4.	किसी परिसंकटमय पदार्थों का उपयोग या उत्पादन या प्रसंकरण ।	लागू विधियों के अनुसार प्रतिषिद्ध (अन्यथा उपबंधित के सिवाय) होंगे ।
5.	प्राकृतिक जल निकायों या सतही क्षेत्र में अनुपचारित बहिर्वाह का निस्सारण ।	लागू विधियों के अनुसार प्रतिषिद्ध (अन्यथा उपबंधित के सिवाय) होंगे ।
6.	फर्मों, कंपनियों द्वारा बड़े पैमाने पर वाणिज्यिक पशुधन संपदा और कुक्कुट फार्मों की स्थापना ।	स्थानीय जरूरतों को पूरा करने के सिवाय लागू विधियों के अनुसार प्रतिषिद्ध (अन्यथा उपबंधित के सिवाय) होंगे।
7.	नई आरा मिलों की स्थापना।	पारिस्थितिक संवेदी जोन के भीतर नई या विद्यमान आरा मिलों का विस्तार अनुज्ञात नहीं होगा ।
8.	ईट भट्टों की स्थापना करना।	लागू विधियों के अनुसार प्रतिषिद्ध (अन्यथा उपबंधित के सिवाय) होंगे ।
9.	पोलिथीन बैगों का उपयोग ।	लागू विधियों के अनुसार प्रतिषिद्ध (अन्यथा उपबंधित के सिवाय) होंगे ।
10.	जलावन लकड़ी का वाणिज्यिक उपयोग।	लागू विधियों के अनुसार प्रतिषिद्ध (अन्यथा उपबंधित के सिवाय) होंगे ।
11.	नए काष्ठ आधारित उद्योग ।	लागू विधियों के अनुसार प्रतिषिद्ध (अन्यथा उपबंधित के सिवाय) होंगे ।
ख. विनियमित क्रियाकलाप		
12.	होटल और रिसोर्ट का वाणिज्यिक स्थापना ।	पारिस्थितिक अनुकूल पर्यटन क्रियाकलाप के लिए लघु अस्थायी संरचनाओं के सिवाय नए वाणिज्यिक होटलों और रिसोर्टों को संरक्षित क्षेत्र की सीमा के एक कि.मी. के भीतर या पारिस्थितिक संवेदी जोन के विस्तार तक, जो भी निकट हो अनुज्ञात नहीं किया जाएगा : परन्तु संरक्षित क्षेत्र की सीमा से एक किलोमीटर से परे या पारिस्थितिक संवेदी जोन के विस्तार तक, जो भी निकट हो, सभी नए पर्यटन क्रियाकलापों या विद्यमान क्रियाकलापों का विस्तार यथा लागू पर्यटन महायोजना तथा

		मार्गदर्शी सिद्धांतों के अनुरूप होगा।
13.	संनिर्माण क्रियाकलाप।	(क) संरक्षित क्षेत्र की सीमा से एक किलोमीटर के भीतर या पारिस्थितिक संवेदी जोन के विस्तार तक जो भी निकट हो, किसी भी प्रकार का वाणिज्यिक संनिर्माण अनुज्ञात नहीं किया जाएगा: परंतु स्थानीय लोगों को पैरा 3 के उप पैरा (1) में सूचीबद्ध क्रियाकलापों सहित उनके उपयोग के लिए उनकी भूमि में स्थानीय निवासियों की आवासीय आवश्यकताओं को पूरा करने लिए संनिर्माण करने की अनुमति भवन उपविधियों के अनुसार दी जाएगी। (i) विद्यमान सड़कों को चौड़ा करना और उन्हें सुदृढ़ करना तथा नई सड़कों का संनिर्माण; (ii) बुनियादी ढांचों और नागरिक सुख-सुविधाओं का संनिर्माण और नवीकरण; (iii) फरवरी, 2016 में केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा किए गए वर्गीकरण के अनुसार परिभाषित गैर-प्रदूषणकारी लघु उद्योग; (iv) कुटीर उद्योगों जिनके अंतर्गत ग्रामीण उद्योग हैं; सुविधा भण्डार और स्थानीय सुख सुविधाओं जो पारिस्थितिक पर्यटन में जिस में ग्रह वास भी है सहायक हो; और (v) इस अधिसूचना में सूचीबद्ध संबंधित क्रियाकलापों की सूची : (ख) परन्तु ऐसे लघु उद्योगों जो प्रदूषण उत्पन्न नहीं करते हैं, से संबंधित संनिर्माण क्रियाकलाप विनियमित किए जाएंगे और लागू नियमों और विनियमों, यदि कोई हों, के अनुसार सक्षम प्राधिकारी की पूर्व अनुमति से ही न्यूनतम पर रखे जाएंगे। (ग) एक किलोमीटर से आगे वह आंचलिक महायोजना की अनुसार विनियमित होंगे।
14.	प्रदूषण उत्पन्न न करने वाले लघु उद्योग।	फरवरी, 2016 में केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा जारी उद्योगों में वर्गीकरण के अनुसार गैर-प्रदूषणकारी उद्योग और अपरिसंकट में, लघु और सेवा उद्योग, कृषि, पुष्प कृषि, उद्यान कृषि या पारिस्थितिक संवेदी जोन से देशी सामग्री से उत्पादों को उत्पन्न करने वाले कृषि आधारित उद्योग सक्षम प्राधिकारी द्वारा अनुज्ञात होंगे।
15.	बकरी और भेड़ की वाणिज्यिक पालना।	लागू विधियों के अधीन विनियमित होगी।
16.	वृक्षों की कटाई।	(क) राज्य सरकार में सक्षम प्राधिकारी की पूर्व अनुमति के बिना वन, सरकारी या राजस्व या निजी भूमि पर वृक्षों की कोई कटाई नहीं होगी। (ख) वृक्षों की कटाई संबंधित केंद्रीय या राज्य अधिनियम या उसके अधीन बनाए गए नियमों के उपबंध के अनुसार विनियमित होगी।
17.	वन उत्पादों और गैर काष्ठ वन उत्पादों का संग्रहण (एनटीएफपी)।	लागू विधियों के अधीन विनियमित होंगे।
18.	प्रवासी चरवाहे।	लागू विधियों के अधीन विनियमित होंगे।
19.	विद्युत और दूरसंचार टावरों का परिनिर्माण और केवल विद्युताना और अन्य बुनियादी ढांचे।	लागू विधियों के अधीन विनियमित होंगे। भूमिगत केवल विद्युताने जाने को बढ़ावा दिया जाएगा।
20.	नागरिक सुविधाओं सहित बुनियादी ढांचे।	लागू विधियों नियमों और विनियमों मार्गी सिद्धांतों के अनुसार न्यूनीकरण की उपायों के साथ, और उपलब्ध किए जाएंगे।
21.	विद्यमान सड़कों को चौड़ा करना और उन्हें सुदृढ़ करना तथा नई सड़कों का संनिर्माण।	लागू विधियों नियमों और विनियमों मार्गी सिद्धांतों के अनुसार न्यूनीकरण की उपायों के साथ, और उपलब्ध किए जाएंगे।
22.	पर्यटन से संबंधित क्रियाकलाप करना जैसे गर्म हवा के गुब्बारे, हेलीकाप्टर, ड्रोन, माइक्रोलाइट्स आदि द्वारा पारिस्थितिक संवेदी जोन क्षेत्र के ऊपर से उड़ना	लागू विधियों के अधीन विनियमित होंगे।

23.	पहाड़ी ढालों और नदी तटों का संरक्षण ।	लागू विधियों के अधीन विनियमित होंगे ।
24.	रात्रि में यानीय यातायात का संचलन ।	लागू विधियों के अधीन वाणिज्यिक प्रयोजन के लिए विनियमित होंगे ।
25.	स्थानीय समुदायों द्वारा चलाई जा रही कृषि और बागवानी प्रथाओं के साथ पशुपालन, पशुपालन कृषि, जलकृषि और मछली पालन।	स्थानीय लोगों के उपयोग के लिए लागू विधियों के अधीन विनियमित होंगे ।
26.	प्राकृतिक जल निकायों या सतही क्षेत्र में उपचारित अपशिष्ट जल/बहिर्वाह का निस्सारण ।	उपचारित अपशिष्ट जल/बहिर्वाह का निस्सारण जल निकायों में प्रवेश नहीं करने दिया जाएगा। उपचारित अपशिष्ट जल के पुनर्चक्रण और पुनः उपयोग के लिए प्रयास किए जाएंगे। उपचारित अपशिष्ट जल/बहिर्वाहों का निस्सारण लागू विधियों के अनुसार विनियमित किया जाएगा ।
27.	सतह और भूजल का वाणिज्यिक निष्कर्षण ।	लागू विधियों के अधीन विनियमित होंगे ।
28.	खुले कुआ, बोर कुआ, आदि के लिए कृषि और अन्य उपयोग ।	लागू विधियों के अधीन विनियमित और क्रियाकलापों की समुचित प्राधिकारी द्वारा मानीटरी की जाएगी।
29.	ठोस अपशिष्ट प्रबंधन/जैव-चिकित्सीय अपशिष्ट प्रबंधन।	लागू विधियों के अधीन विनियमित होंगे ।
30.	विदेशी प्रजातियों को लाना ।	लागू विधियों के अधीन विनियमित होंगे ।
31.	पारिस्थितिक-पर्यटन।	लागू विधियों के अधीन विनियमित होंगे ।
32.	वाणिज्यिक साइनबोर्ड और होर्डिंग ।	लागू विधियों के अधीन विनियमित होंगे ।
ग. संवर्धित क्रियाकलाप		
33.	वर्षा जल संचयन ।	सक्रिय रूप से बढ़ावा दिया जाए ।
34.	जैविक खेती ।	सक्रिय रूप से बढ़ावा दिया जाए ।
35.	सभी गतिविधियों के लिए हरित प्रौद्योगिकी को ग्रहण करना ।	सक्रिय रूप से बढ़ावा दिया जाए ।
36.	कुटीर उद्योगों जिसके अंतर्गत ग्रामीण कारीगर आदि भी हैं ।	सक्रिय रूप से बढ़ावा दिया जाए ।
37.	नवीकरणीय ऊर्जा स्रोत और ईंधन का उपयोग ।	बायो गैस, सौर लाइट, आदि का संवर्धन किया जाएगा।
38.	कृषि वानिकी ।	सक्रिय रूप से बढ़ावा दिया जाएगा ।
39.	पारिस्थितिक अनुकूल परिवहन का उपयोग ।	सक्रिय रूप से बढ़ावा दिया जाएगा ।
40.	कौशल विकास ।	सक्रिय रूप से बढ़ावा दिया जाएगा ।
41.	निम्नीकृत भूमि या वन या आवास की बहाली ।	सक्रिय रूप से बढ़ावा दिया जाएगा ।
42.	पर्यावरणीय जागरुकता ।	सक्रिय रूप से बढ़ावा दिया जाएगा ।

5. **मानीटरी समिति-** केंद्रीय सरकार, पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उपधारा (3) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए तीन वर्ष की अवधि के लिए पारिस्थितिक संवेदी जोन की निगरानी प्रभावी के लिए मानीटरी समिति गठित करती है, जो निम्नलिखित से मिलकर बनेगी:--

1. प्रभागीय आयुक्त, रीवा — अध्यक्ष ;
2. प्रभागीय आयुक्त, शहडोल — सदस्य ;
3. जिला कलेक्टर, सिंगरौली — सदस्य;
4. जिला कलेक्टर, शहडोल — सदस्य;
5. जिला कलेक्टर, सिद्धि — सदस्य;
6. अधीक्षक अभियंता, लोक निर्माण विभाग, शहडोल — सदस्य ;
7. अधीक्षक अभियंता, लोक स्वास्थ्य विभाग, शहडोल — सदस्य ;
8. मुख्य कार्यकारी अधिकारी, जिला पंचायत, सिंगरौली — सदस्य ;
9. मुख्य कार्यकारी अधिकारी, जिला पंचायत, शहडोल — सदस्य ;
10. मुख्य कार्यकारी अधिकारी, जिला पंचायत, सिद्धि — सदस्य ;

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| 11. राज्य सरकार के नगर और ग्राम योजना विभाग का प्रतिनिधि | — सदस्य ; |
| 12. राज्य प्रदूषण नियंत्रण बोर्ड का प्रतिनिधि | — सदस्य; |
| 13. पर्यावरण के क्षेत्र में कार्य करने वाले गैर सरकारी संगठन का मध्य प्रदेश सरकार द्वारा प्रत्येक मामले में तीन वर्ष की अवधि के लिए नामनिर्दिष्ट किए जाने वाला एक प्रतिनिधि | — सदस्य; |
| 14. राज्य के किसी विख्यात संस्थान या विश्वविद्यालय से प्रतिनिधि पारिस्थितिक और पर्यावरण के क्षेत्र से मध्य प्रदेश सरकार द्वारा प्रत्येक मामले में तीन वर्ष की अवधि के लिए नामनिर्दिष्ट किए जाने वाला एक विशेषज्ञ | — सदस्य; |
| 15. राज्य जैव विविधता बोर्ड सदस्य | — सदस्य; |
| 16. क्षेत्र निदेशक, संजय डुबरी बाघ आरक्षिती | — सदस्य सचिव ; |

6. निर्देश का निबंधन

- (1) मानीटरी समिति का कार्यकाल तीन वर्ष की अवधि के लिए होगी ।
 - (2) मानीटरी समिति इस अधिसूचना के उपबंधों के अनुपालन को मानीटर करेगी ।
 - (3) पारिस्थितिक संवेदी जोन में भारत सरकार के तत्कालीन पर्यावरण और वन मंत्रालय की अधिसूचना सं. का.आ. 1533(अ) तारीख 14 सितंबर, 2006 की अनुसूची में के अधीन सम्मिलित क्रियाकलापों और इस अधिसूचना के पैरा 4 के अधीन प्रतिषिद्ध गतिविधियों के सिवाय आने वाले ऐसे क्रियाकलापों की दशा में वास्तविक विनिर्दिष्ट स्थलीय दशाओं पर आधारित मानीटरी समिति द्वारा संवीक्षा की जाएगी और उक्त अधिसूचना के उपबंधों के अधीन पूर्व पर्यावरण निकासी के लिए केन्द्रीय सरकार के पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय को निर्दिष्ट की जाएगी ।
 - (4) इस अधिसूचना के पैरा 4 के अधीन यथा-विनिर्दिष्ट प्रतिषिद्ध क्रियाकलापों के सिवाय, भारत सरकार के पर्यावरण और वन मंत्रालय की अधिसूचना संख्यांक का.आ. 1533(अ) तारीख 14 सितंबर, 2006 की अधिसूचना के अनुसूची के अधीन ऐसे क्रियाकलापों, जिन्हें सम्मिलित नहीं किया गया है, परंतु पारिस्थितिक संवेदी जोन में आते हैं, ऐसे क्रियाकलापों की वास्तविक विनिर्दिष्ट स्थलीय दशाओं पर आधारित मानीटरी समिति द्वारा संवीक्षा की जाएगी और उसे संबद्ध विनियामक प्राधिकरणों को निर्दिष्ट किया जाएगा ।
 - (5) मानीटरी समिति का सदस्य-सचिव या संबद्ध उपायुक्त, ऐसे व्यक्ति के विरुद्ध, जो इस अधिसूचना के किसी उपबंध का उल्लंघन करता है, पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 19 के अधीन परिवाद फाइल करने के लिए सक्षम होगा ।
 - (6) मानीटरी समिति, मुद्दा दर मुद्दा के आधार पर अपेक्षाओं पर निर्भर रहते हुए संबद्ध विभागों के प्रतिनिधियों या विशेषज्ञों, औद्योगिक संगमों या संबद्ध पणधारियों के प्रतिनिधियों को अपने विचार-विमर्श में सहायता के लिए आमंत्रित कर सकेगी ।
 - (7) मानीटरी समिति प्रत्येक वर्ष की 31 मार्च तक की राज्य के मुख्य वन्यजीव रक्षक को अपनी वार्षिक कार्रवाई रिपोर्ट **उपाबंध IV** पर उपाबद्ध रूप विधान के अनुसार उक्त वर्ष के 30 जून तक प्रस्तुत करेगी ।
 - (8) केन्द्रीय सरकार का पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय मानीटरी समिति को अपने कृत्यों के प्रभावी निर्वहन के लिए समय-समय पर ऐसे निदेश दे सकेगा, जो वह ठीक समझे ।
7. इस अधिसूचना के उपबंधों को प्रभाव देने के लिए केन्द्रीय सरकार और राज्य सरकार अतिरिक्त उपाय, यदि कोई हों, विनिर्दिष्ट कर सकेंगे ।
 8. इस अधिसूचना के उपबंध, भारत के माननीय उच्चतम न्यायालय या उच्च न्यायालय या राष्ट्रीय हरित प्राधिकरण द्वारा पारित कोई आदेश या पारित होने वाले किसी आदेश, यदि कोई हों, के अधीन होंगे ।

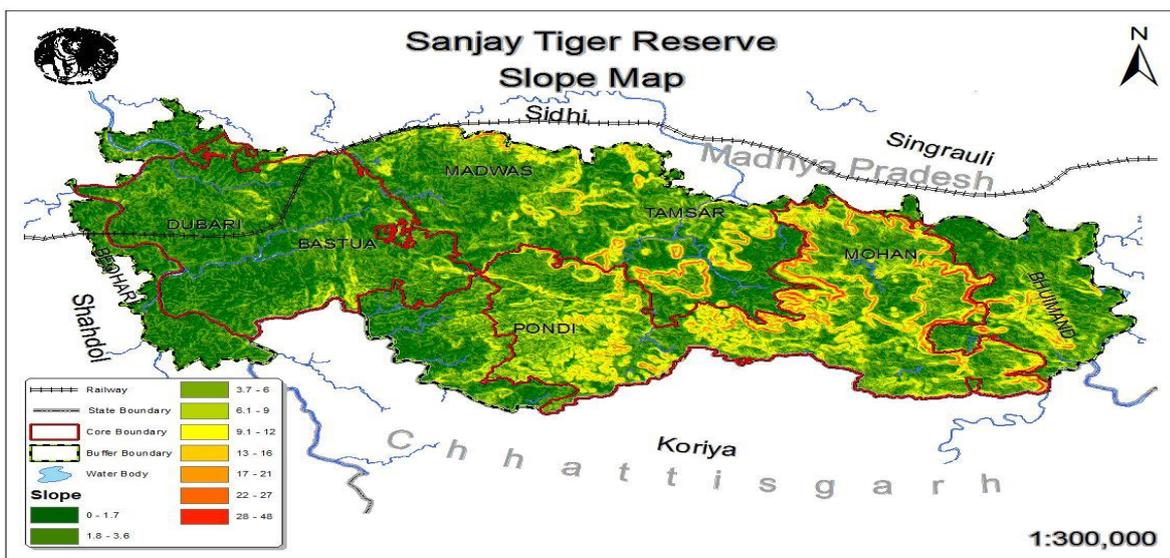
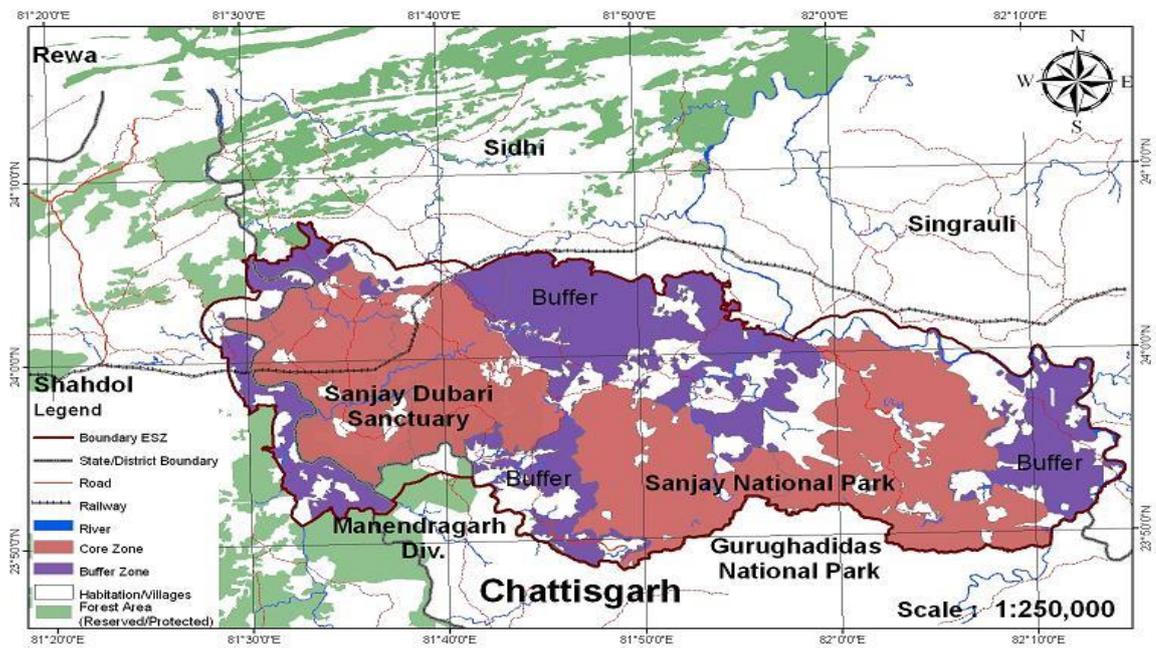
[फा.सं. 25/122/2015-ईएसजेड]

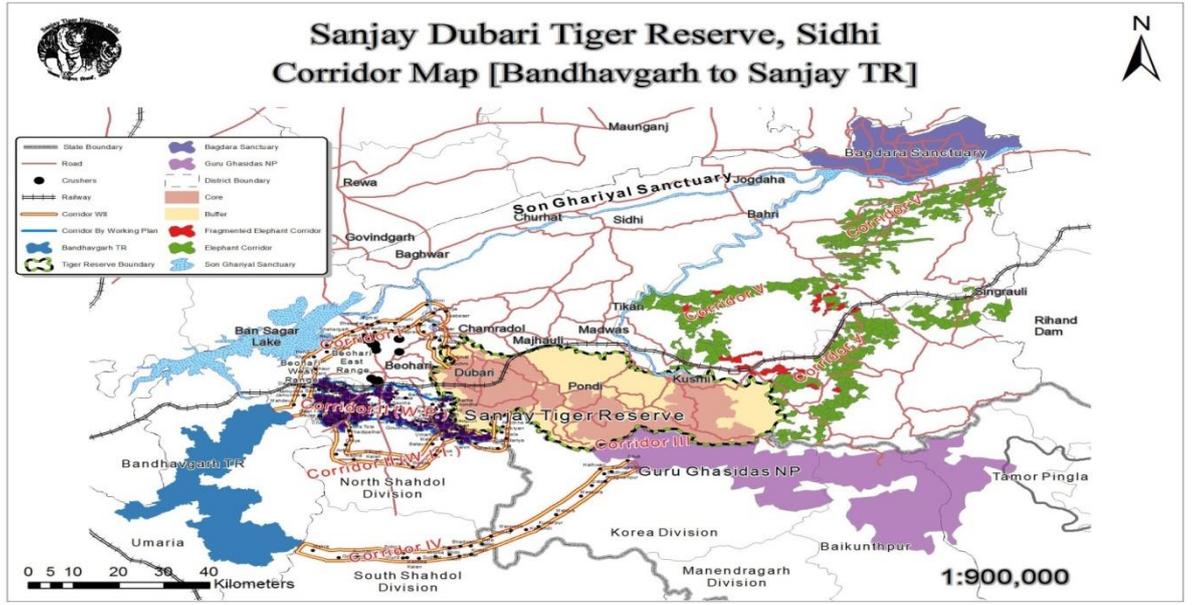
ललित कपूर, वैज्ञानिक 'जी'

उपाबंध I

अक्षांश और देशांतर के साथ पारिस्थितिक संवेदी जोन का मानचित्र

Eco Sensitive Zone of Sanjay Tiger Reserve, Sidhi M.P.





मुख्य अवस्थानों के साथ संजय बाघ आरक्षिती के पारिस्थितिक संवेदी जोन की सीमा के भू मण्डलीय स्थिति प्रणाली निर्देशांक

बिंदु नाम	अक्षांश	देशांतर
पू 1	23° 51' 4.984" उ	82° 10' 35.933" पू
पू 2	23° 53' 25.401" उ	82° 14' 37.832" पू
उ 1	24° 5' 35.843" उ	81° 35' 27.404" पू
उ 2	24° 7' 39.568" उ	81° 32' 45.529" पू
द 1	23° 48' 33.513" उ	81° 47' 29.256" पू
द 2	23° 48' 23.213" उ	81° 48' 58.713" पू
प 1	24° 2' 9.668" उ	81° 28' 50.959" पू
प 2	24° 2' 7.881" उ	81° 27' 39.454" पू

उपाबंध II

पारिस्थितिक संवेदी जोन के अंतर्गत आने वाले ग्रामों की सूची के साथ निर्देशांक

पारिस्थितिक संवेदी जोन के अंतर्गत आने वाले ग्रामों की सूची के साथ निर्देशांक

क्रम. सं.	राज्य	जिला	प्रभाग	राजस्व	अक्षांश (डी डी)	देशांतर (डी डी)	विस्तार (हेक्टेयर)
1	मध्य प्रदेश	शहडोल	उत्तर शहडोल	बुचरो	24.06114528	81.52151722	1794.853
2	मध्य प्रदेश	शहडोल	उत्तर शहडोल	कुदारा	23.91503278	81.52030056	693.179
3	मध्य प्रदेश	शहडोल	उत्तर शहडोल	काइलरी	23.96599944	81.50953639	1938.728
4	मध्य प्रदेश	शहडोल	उत्तर शहडोल	जमुरी	23.88525167	81.55605833	1915.454
5	मध्य प्रदेश	शहडोल	उत्तर शहडोल	बेलहा	23.91849667	81.53654583	493.147
6	मध्य प्रदेश	शहडोल	उत्तर शहडोल	मीथउली	23.88924972	81.53362889	289.247
7	मध्य प्रदेश	शहडोल	उत्तर शहडोल	कुथुली	23.88027861	81.5836125	843.066
8	मध्य प्रदेश	शहडोल	उत्तर शहडोल	खरगरी	23.86470222	81.60479889	1579.521

9	मध्य प्रदेश	शहडोल	उत्तर शहडोल	धोनहा	23.986195	81.48775389	1299.505
10	मध्य प्रदेश	शहडोल	उत्तर शहडोल	पालाहा	23.91116083	81.52471694	71.81
11	मध्य प्रदेश	शहडोल	उत्तर शहडोल	पीपरी	23.87020083	81.54230167	180.02
12	मध्य प्रदेश	शहडोल	उत्तर शहडोल	बनसा	24.1077325	81.50593056	298.25
13	मध्य प्रदेश	शहडोल	उत्तर शहडोल	खादहा	23.98067361	81.49064639	507.46
14	मध्य प्रदेश	शहडोल	उत्तर शहडोल	सरबरी	24.04489333	81.4979525	341.96

उत्तर शहडोल कुल

12246.197

15	मध्य प्रदेश	सिद्धि	संजय टी आर	बरकादोल	24.07353472	81.57295167	249.23
16	मध्य प्रदेश	सिद्धि	संजय टी आर	बसतुआ	24.00224861	81.73506556	1185.39
17	मध्य प्रदेश	सिद्धि	संजय टी आर	गोलीफरी	23.89886111	81.90297222	201.47
18	मध्य प्रदेश	सिद्धि	संजय टी आर	कुदरिया	24.033250583	81.70979139	330.09
19	मध्य प्रदेश	सिद्धि	संजय टी आर	पीपराही	24.03804111	81.69738222	735.06
20	मध्य प्रदेश	सिद्धि	संजय टी आर	पोनरी	23.96293028	81.77484833	1133.9

संजय बाघ आरक्षित कुल

3835.14

21	मध्य प्रदेश	सिद्धि	सिद्धि	अमगाँव	23.98001278	81.81507694	1170.41
22	मध्य प्रदेश	सिद्धि	सिद्धि	अराडंडी	23.88909472	82.23856444	34.19
23	मध्य प्रदेश	सिद्धि	सिद्धि	अनरोला	23.8721775	82.15683694	445.81
24	मध्य प्रदेश	सिद्धि	सिद्धि	बखही	23.97058417	81.99451361	401.7
25	मध्य प्रदेश	सिद्धि	सिद्धि	बेलगाँव	23.89326444	82.13598806	129.02
26	मध्य प्रदेश	सिद्धि	सिद्धि	बैनल	23.86788861	82.12681472	186.45
27	मध्य प्रदेश	सिद्धि	सिद्धि	बेनदो	23.93543889	82.20335972	279.47
28	मध्य प्रदेश	सिद्धि	सिद्धि	भागवर	23.96700167	81.97676056	305.71
29	मध्य प्रदेश	सिद्धि	सिद्धि	आमराही	23.98142556	82.21455861	28.47
30	मध्य प्रदेश	सिद्धि	सिद्धि	मनवरखी	24.00096389	82.08172139	274.98
31	मध्य प्रदेश	सिद्धि	सिद्धि	भुइमर	23.96820139	82.14283833	296.77
32	मध्य प्रदेश	सिद्धि	सिद्धि	बटु	23.9521775	82.12300222	155.53
33	मध्य प्रदेश	सिद्धि	सिद्धि	छनगोहर	23.99762806	81.94620389	484
34	मध्य प्रदेश	सिद्धि	सिद्धि	दादरी	23.87652583	81.7395025	365.37
35	मध्य प्रदेश	सिद्धि	सिद्धि	देवरी	23.98053194	82.12240667	334.47
36	मध्य प्रदेश	सिद्धि	सिद्धि	धर्मादवरी	23.98290861	81.90544861	261.55
37	मध्य प्रदेश	सिद्धि	सिद्धि	धूपखर	24.00870861	81.8666625	802.89
38	मध्य प्रदेश	सिद्धि	सिद्धि	दोगहारा	23.91131361	82.20341917	121.95
39	मध्य प्रदेश	सिद्धि	सिद्धि	दूहकुरिया	23.97576639	81.79257778	181.57
40	मध्य प्रदेश	सिद्धि	सिद्धि	दूवरी	23.98738222	81.935005	661.71
41	मध्य प्रदेश	सिद्धि	सिद्धि	गडवही	23.92972028	82.1595175	109.74
42	मध्य प्रदेश	सिद्धि	सिद्धि	गडवाटा	23.97576639	82.12901861	350.74
43	मध्य प्रदेश	सिद्धि	सिद्धि	गनजर	23.91202861	81.90361278	407.97
44	मध्य प्रदेश	सिद्धि	सिद्धि	घाटीटोआ	23.96373361	82.12050028	487.07

45	मध्य प्रदेश	सिद्धि	सिद्धि	घोरबंद	23.912505	82.22956972	352.97
46	मध्य प्रदेश	सिद्धि	सिद्धि	हाइकी	23.91390833	81.73669833	222.66
47	मध्य प्रदेश	सिद्धि	सिद्धि	हरदी	23.86622056	81.73098417	502.8
48	मध्य प्रदेश	सिद्धि	सिद्धि	हरराई	23.87557278	82.10422383	256.8
49	मध्य प्रदेश	सिद्धि	सिद्धि	हरराईया	2398899056	81.92303194	199.52
50	मध्य प्रदेश	सिद्धि	सिद्धि	जवरटोला	23.88057667	82.118475	125.51
51	मध्य प्रदेश	सिद्धि	सिद्धि	जुरी	23.92209556	81.9677675	1124.38
52	मध्य प्रदेश	सिद्धि	सिद्धि	कमच	23.97124778	81.8414825	372.56
53	मध्य प्रदेश	सिद्धि	सिद्धि	करइल	23.9556325	82.15230972	143.73
54	मध्य प्रदेश	सिद्धि	सिद्धि	करौनाटी	23.97266139	81.85252639	673.6
55	मध्य प्रदेश	सिद्धि	सिद्धि	सरसोती	24.01776194	82.01816222	308.24
56	मध्य प्रदेश	सिद्धि	सिद्धि	कथाउतिया	23.96230417	82.15028444	106.97
57	मध्य प्रदेश	सिद्धि	सिद्धि	केसखरा	23.96111278	82.2084825	27.96
58	मध्य प्रदेश	सिद्धि	सिद्धि	केसलर	23.91899806	82.1436725	366.22
59	मध्य प्रदेश	सिद्धि	सिद्धि	खाइरी	23.9094075	81.723955	300.08
60	मध्य प्रदेश	सिद्धि	सिद्धि	खामडिया	23.92513361	82.1546925	86.16
61	मध्य प्रदेश	सिद्धि	सिद्धि	खमचौरा	24.08943722	82.1546925	376.67
62	मध्य प्रदेश	सिद्धि	सिद्धि	खोखारा	24.04509028	81.87283472	474.31
63	मध्य प्रदेश	सिद्धि	सिद्धि	कोरर	23.97004806	81.96913778	693.72
64	मध्य प्रदेश	सिद्धि	सिद्धि	कोला	23.85174556	81.74325528	443.45
65	मध्य प्रदेश	सिद्धि	सिद्धि	कोटमा	23.93948944	81.95603278	340.15
66	मध्य प्रदेश	सिद्धि	सिद्धि	कुनदोर	23.83059889	81.82379139	638.98
67	मध्य प्रदेश	सिद्धि	सिद्धि	कुरचु	23.84269111	82.18137917	484.16
68	मध्य प्रदेश	सिद्धि	सिद्धि	कुसमी	23.97671944	82.00190028	612.19
69	मध्य प्रदेश	सिद्धि	सिद्धि	कुथर	24.06795167	81.6293825	670.02
70	मध्य प्रदेश	सिद्धि	सिद्धि	लदगट	23.95688333	81.87877278	145.55
71	मध्य प्रदेश	सिद्धि	सिद्धि	लूरघुटी 1	23.87122444	81.75701556	474.49
72	मध्य प्रदेश	सिद्धि	सिद्धि	लूरघुटी 2	23.8672	81.758765	388.7
73	मध्य प्रदेश	सिद्धि	सिद्धि	मचेरी	23.94449306	81.15975583	58.71
74	मध्य प्रदेश	सिद्धि	सिद्धि	मच्चार काटा	23.96957139	82.16922722	1507
75	मध्य प्रदेश	सिद्धि	सिद्धि	मझौली	24.08972806	81.62238444	314.465
76	मध्य प्रदेश	सिद्धि	सिद्धि	मनवरी	23.92989889	82.00547417	78.02
77	मध्य प्रदेश	सिद्धि	सिद्धि	मटखनिया	24.03199889	81.73068639	1338
78	मध्य प्रदेश	सिद्धि	सिद्धि	मेरारिया	23.95593028	81.89363472	1104.37
79	मध्य प्रदेश	सिद्धि	सिद्धि	मेरकी	24.02124889	81.75791556	135.16
80	मध्य प्रदेश	सिद्धि	सिद्धि	ननगपोखर	23.87831306	81.71096917	110.39
81	मध्य प्रदेश	सिद्धि	सिद्धि	नौरहिया	23.90944672	81.91290528	288.84
82	मध्य प्रदेश	सिद्धि	सिद्धि	नौरहिया देवरथ	23.93448583	81.98450639	374.34

83	मध्य प्रदेश	सिद्धि	सिद्धि	नीगन्नी	2398491667	81.79493111	122.29	
84	मध्य प्रदेश	सिद्धि	सिद्धि	पीपराहा	23.96760556	81.92243611	735.06	
85	मध्य प्रदेश	सिद्धि	सिद्धि	पोरी	24.10202722	81.57896917	381.08	
86	मध्य प्रदेश	सिद्धि	सिद्धि	पुरहदोल	23.87807472	82.12645722	187	
87	मध्य प्रदेश	सिद्धि	सिद्धि	रोहल	23.92960111	81.94656139	456.92	
88	मध्य प्रदेश	सिद्धि	सिद्धि	साजादोल	23.99050833	81.87231694	242.06	
89	मध्य प्रदेश	सिद्धि	सिद्धि	सरायेहा	24.08342917	81.65758083	397.51	
90	मध्य प्रदेश	सिद्धि	सिद्धि	सरसारी	23.83685361	81.78316583	48.06	
91	मध्य प्रदेश	सिद्धि	सिद्धि	सेमरा	23.95604944	82.13694111	286.59	
92	मध्य प्रदेश	सिद्धि	सिद्धि	सोनगढ	23.99040639	82.11777111	387.55	
93	मध्य प्रदेश	सिद्धि	सिद्धि	तल	23.83697278	81.74397	234.31	
94	मध्य प्रदेश	सिद्धि	सिद्धि	त्रिचूली	23.95443972	81.87023694	88.39	
		सिद्धि कुल		26709.905				
95	मध्य प्रदेश	सिंगरौली	सिंगरौली	भरसेरा	24.01014278	82.06061778	650	
96	मध्य प्रदेश	सिंगरौली	सिंगरौली	झारा	23.99975	82.04935194	500	
97	मध्य प्रदेश	सिंगरौली	सिंगरौली	पारासी	24.03537222	82.03630611	120	
98	मध्य प्रदेश	सिंगरौली	सिंगरौली	बनजरी	24.01913556	82.0026675	810	
		सिंगरौली कुल		2080				
99	छत्तीसगढ	महेन्द्रगढ	महेन्द्रगढ	बरवही	23.90590639	81.65047917	257.78	
100	छत्तीसगढ	महेन्द्रगढ	महेन्द्रगढ	मरीसराई	23.8406425	81.67514167	361.79	
101	छत्तीसगढ	महेन्द्रगढ	महेन्द्रगढ	बरच्चा	23.86398889	81.64316556	77.23	
				महेन्द्रगढ कुल				696.77
				कुल योग (हेक्टेयर)				45568.012
				वर्ग किलोमीटर में कुल क्षेत्र				455.68012

उपाबंध III

पारिस्थितिक संवेदी जोन के सामान्य क्षेत्र

क्र.सं.	राज्य	जिला	वन प्रभाग	विधि स्थिति (क्षेत्र (हेक्टेयर))			
				आरक्षित वन	संरक्षित वन	राजस्व	कुल क्षेत्र
1	मध्य प्रदेश	सिद्धि	संजय टी आर	48.570	0.000	3835.140	3883.710
2	मध्य प्रदेश	शहडोल	उत्तर शहडोल	11614.750	521.600	12246.197	24382.547
3	मध्य प्रदेश	सिद्धि	सिद्धि	32992.870	11185.362	26709.905	70888.137
4	मध्य प्रदेश	सिंगरौली	सिंगरौली	814.000	0.000	2080.000	2894.000
5	छत्तीसगढ	महेन्द्रगढ	महेन्द्रगढ	1736.327	842.857	696.770	3275.954
				47206.517	12549.819	45568.012	105324.348
				(हेक्टेयर) में कुल क्षेत्र			105324.348

वर्ग किलोमीटर में कुल क्षेत्र

1053.24348

उपाबंध IV

पारिस्थितिक संवेदी जोन मानीटरी समिति - की गई कार्रवाई की रिपोर्ट का रूप विधान

1. बैठकों की संख्या और तिथि ।
2. बैठकों का कार्यवृत्त : कृपया मुख्य उल्लेखनीय बिंदुओं का वर्णन करें। बैठक के कार्यवृत्त को एक पृथक अनुबंध में उपाबद्ध करें।
3. आंचलिक महायोजना की तैयारी की प्रास्थिति जिसके अंतर्गत पर्यटन महायोजना।
4. भू-अभिलेख में सदृश्य त्रुटियों के सुधार के लिए ब्यौहार किए गए मामलों का सारांश।
5. पर्यावरण समाघात निर्धारण अधिसूचना, 2006 के अधीन आने वाली गतिविधियों की संविक्षा के मामलों का सारांश। ब्यौरे एक पृथक् उपाबंध के रूप में उपाबद्ध किए जा सकते हैं।
6. पर्यावरण समाघात निर्धारण अधिसूचना, 2006 के अधीन न आने वाली गतिविधियों की संविक्षा के मामलों का सारांश। ब्यौरे एक पृथक् उपाबंध के रूप में उपाबद्ध किए जा सकते हैं।
7. पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 19 के अधीन दर्ज की गई शिकायतों का सारांश।
8. कोई अन्य महत्वपूर्ण विषय।

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 28th August, 2017.

S. O. 2811(E). — WHEREAS, a draft notification was published in the Gazette of India, Extraordinary, vide notification of the Government of the India in the Ministry of Environment, Forest and Climate Change number S.O. 1277 (E), dated the 31st March, 2016, inviting objections and suggestions from all persons likely to be affected thereby within the period of sixty days from date on which copies of the Gazette containing the said notification were made available to the public;

AND WHEREAS, copies of the Gazette containing the draft notification were made available to the public on the 31st March, 2016.

AND WHEREAS, objections and suggestions received from persons and stakeholders in response to the draft notification were duly considered by the Central Government;

AND WHEREAS, the Sanjay Dubri Tiger Reserve which includes Sanjay National Park and Sanjay Dubri Wildlife Sanctuary is spread over an of 1674.512 square kilometres of which 812.581 square kilometres is Core Area of the Tiger Reserve and 861.931 square kilometre is the Buffer Area and that the Tiger Reserve including both Core and Buffer Area is spread over the States of Madhya Pradesh and Chhattisgarh;

AND WHEREAS, the Sanjay National Park (464.643 sq.km.) and Sanjay Dubri Wildlife Sanctuary (347.938 sq.km.) are located in Madhya Pradesh and both the Protected Areas together constitute the core area of the Sanjay Dubri Tiger Reserve which is spread over 812.581 square kilometers;

AND WHEREAS, Sanjay National Park and Sanjay Dubri Wildlife Sanctuary has dry to moist deciduous peninsular type of vegetation which are characterised by open to very dense forest areas;

AND WHEREAS, Sanjay National Park and Sanjay Dubri Wildlife Sanctuary form part of Bandhavgarh-Sanjay-Guru Ghasidas-Palamau landscape which is one of the four potential tiger meta-population landscape;

AND WHEREAS, Sanjay National Park and Sanjay Dubri Wildlife Sanctuary provides corridor connectivity with Bandhavgarh Tiger Reserve for tigers and corridor connectivity for wild elephants of Palamu Tiger Reserve;

AND WHEREAS, the Sanjay National Park and Sanjay Dubri Wildlife Sanctuary is home to a wide variety of fauna; it provides shelter to 9 threatened (3 critically endangered, 3 endangered and 3 vulnerable) and 15 schedule-I animals; tigers, panthers and sloth bears are the major species found in the said reserve; occasional visiting herds of elephants are the other major attraction of the said reserve while cheetals, blue-bulls, sambars, four horned antelopes, chinkaras, barking deer and wild pigs are the major prey species; Dubari and Bastua ranges of the Sanjay Dubari Sanctuary and Pondi range of the Sanjay National Park provides shelter to the tiger population, while the Mohan range of the National Park plays host to the visiting population of elephants;

AND WHEREAS, various perennial rivers, viz., Gopad, Banas, Mawai, Mahan, Kodmar, Umrari flow through the Sanjay National Park and Sanjay Dubri Wildlife Sanctuary;

AND WHEREAS, wide variety of fauna is present in Sanjay National Park and Sanjay Dubri Wildlife Sanctuary which inter alia include Tiger, Panther, Sloth bear, Cheetal, Sambhar, Four Hhorned Antelopes, Chinkara, Barking Deer and Wild Pig;

AND WHEREAS, it is necessary to conserve and protect the area, the extent and boundaries of which are specified in paragraph 1 of this notification, around the Sanjay National Park and Sanjay Dubri Wildlife Sanctuary, which together constitute the Core Area of the aforesaid Tiger Reserve, as Eco-sensitive Zone from ecological and environmental point of view and to prohibit industries or class of industries and their operations and processes in the said Eco-sensitive Zone;

NOW THEREFORE, in exercise of the powers conferred by sub-section(1) and clauses (v) and (xiv) of sub-section (2) and sub-section (3) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby notifies an area up to an extent of 2 kilometers from the boundary of Sanjay National Park and Sanjay Dubri Wildlife Sanctuary, which together constitute the Core Area of the Sanjay Dubri Tiger Reserve, as the Sanjay National Park and Sanjay Dubri Wildlife Sanctuary Eco-sensitive Zone (herein after referred to as the Eco-sensitive Zone), which is spread over the States of Madhya Pradesh and Chhattisgarh, details of which are as under, namely:-

1. Extent and boundaries of Eco-sensitive Zone.- (1) The extent of Eco-Sensitive Zone is up to 2 kilometers from the boundary of Sanjay National Park and Sanjay Dubri Wildlife Sanctuary, which together constitute the Core Area of the Sanjay Dubri Tiger Reserve.

(2) The Eco-sensitive Zone is spread over an area of 1053.243 square kilometres which includes 861.931 square kilometres Buffer Area of Sanjay Dubri Tiger Reserve and includes 32.759 square kilometres area of Chhattisgarh State.

(3) The map of the Eco-sensitive Zone along with co-ordinates of prominent points is appended as **Annexure I**.

(4) The Eco-sensitive Zone includes 98 villages in three Districts viz. Shahdol, Sidhi and Singrauli of Madhya Pradesh and 3 villages of Manendragarh District of Chhattisgarh.

(5) The list of the villages falling within the Eco-sensitive Zone is appended as **Annexure II**.

(6) The area of the Eco-sensitive Zone is appened as **Annexure-III**.

2. Zonal Master Plan for the Eco-sensitive Zone.- (1) The State Government shall, for the purpose of the Eco-sensitive Zone prepare, a Zonal Master Plan, within a period of two years from the date of publication of this notification in the Official Gazette, in consultation with local people and adhering to the stipulations given in this notification for approval of Competent Authority in the State Government.

(2) The Zonal Master Plan for the Eco-sensitive Zone shall be prepared by the State Government in such manner as is specified in this notification and also in consonance with the relevant Central and State laws and the guidelines issued by the Central Government, if any.

(3) The Zonal Master Plan shall be prepared in consultation with the following State Departments, for integrating the ecological and environmental considerations into the said plan:-

- (i) Environment;
- (ii) Forest and Wildlife;
- (iii) Agriculture and Horticulture;
- (iv) Revenue;
- (v) Urban Development;
- (vi) Tourism including eco-tourism;
- (vii) Rural Development;
- (viii) Irrigation and Flood Control;
- (ix) Municipal and Urban Development;
- (x) Panchayati Raj;

(xi) Public Works Department.

(4) The Zonal Master Plan shall not impose any restriction on the approved existing land use, infrastructure and activities, unless so specified in this notification and the Zonal Master Plan shall factor in improvement of all infrastructure and activities to be more efficient and eco-friendly.

(5) The Zonal Master Plan shall provide for restoration of denuded and degraded areas, conservation of existing water bodies, management of catchment areas, watershed management, groundwater management, soil and moisture conservation, needs of local community and such other aspects of the ecology and environment that need attention.

(6) The Zonal Master Plan shall demarcate all the existing worshipping places, villages and urban settlements, types and kinds of forests, agricultural areas, fertile lands, green area, such as, parks and like places, horticultural areas, orchards, lakes and other water bodies with supporting maps and the Plan shall be supported by maps giving details of existing and proposed land use features.

(7) The Zonal Master Plan shall regulate development in the Eco-sensitive Zone and adhere to prohibited, regulated activities listed in the Table in paragraph 4 and also ensure and promote eco-friendly development for livelihood security of local communities.

(8) The Zonal Master Plan so approved shall be the reference document for the Monitoring Committee for carrying out its functions of monitoring in accordance with the provisions of this notification.

3. **Measures to be taken by State Government.-** The State Government shall take the following measures for giving effect to the provisions of this notification, namely:-

1. Landuse.- (a) Forests, horticulture areas, agricultural areas, parks and open spaces earmarked for recreational purposes in the Eco-sensitive Zone shall not be used or converted into areas for commercial or residential complex or industrial activities:

Provided that the conversion of agricultural and other lands within the Eco-sensitive Zone may be permitted on the recommendation of the Monitoring Committee, and with the prior approval of the State Government, to meet the residential needs of the local residents and for the activities such as.-

- (i) widening and strengthening of existing roads and construction of new roads;
- (ii) construction and renovation of infrastructure and civic amenities;
- (iii) small scale industries not causing pollution;
- (iv) cottage industries including village industries; convenience stores and local amenities supporting eco-tourism including home stay; and
- (v) promoted activities given in paragraph 4:

Provided further that no use of tribal land shall be permitted for commercial and industrial development activities without the prior approval of the State Government and without compliance of the provisions of article 244 of the Constitution or the law for the time being in force, including the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (2 of 2007):

Provided also that any error appearing in the land records within the Eco-sensitive Zone shall be corrected by the State Government, after obtaining the views of Monitoring Committee, once in each case and the correction of said error shall be intimated to the Central Government in the Ministry of Environment, Forest and Climate Change:

Provided also that the correction of error shall not include change of land use in any case except as provided under this sub-paragraph:

Provided also that there shall be no consequential reduction in green area, such as forest area and agricultural area and efforts shall be made to reforest the unused or unproductive agricultural areas with afforestation and habitat and biodiversity restoration activities.

(2) Natural water bodies.- The catchment areas of all natural springs, rivers and channels shall be identified and plans for their conservation and rejuvenation shall be incorporated in the Zonal Master Plan.

(3) Tourism/ Eco-tourism.-

(a) All new eco-tourism activities or expansion of existing tourism activities within the Eco-sensitive Zone shall be as per the Tourism Master Plan for the Eco-sensitive Zone.

(b) The Tourism Master Plan shall be prepared by the State Department of Tourism in consultation with State Departments of Environment and Forests.

(c) The Tourism Master Plan shall form a component of the Zonal Master Plan.

- (d) The activities of eco-tourism shall be regulated as under, namely:-
- (i) no new construction of hotels and resorts shall be permitted within 1 km from the boundary of the Sanjay National Park and Sanjay Dubri Wildlife Sanctuary or upto the extent of the Eco-sensitive Zone whichever is nearer and beyond the distance of 1 km. from the boundary of the Sanjay National Park and Sanjay Dubri Wildlife Sanctuary till the extent of the Eco-sensitive Zone, the establishment of new hotels and resorts shall be permitted only in pre-defined and designated areas for eco-tourism facilities as per Tourism Master Plan.
- (ii) all new tourism activities or expansion of existing tourism activities within the Eco-sensitive Zone shall be in accordance with the guidelines issued by the Central Government in the Ministry of Environment, Forest and Climate Change and the eco-tourism guidelines issued by the National Tiger Conservation Authority (as amended from time to time) with emphasis on eco-tourism.
- (iii) till the Zonal Master Plan is approved, development for tourism and expansion of existing tourism activities shall be permitted by the concerned regulatory authorities based on the actual site specific scrutiny and recommendation of the Monitoring Committee.
- (4) Natural heritage.-** All sites of valuable natural heritage in the Eco-sensitive Zone, such as the gene pool reserve areas, rock formations, waterfalls, springs, gorges, groves, caves, points, walks, rides, cliffs, etc. shall be identified and a heritage conservation plan shall be drawn up for their preservation and conservation as a part of the Zonal Master Plan.
- (5) Man-made heritage sites.-** Buildings, structures, artefacts, areas and precincts of historical, architectural, aesthetic, and cultural significance shall be identified in the Eco-sensitive Zone and heritage conservation plan for their conservation shall be prepared as part Zonal Master Plan.
- (6) Noise pollution.-** Prevention and Control of noise pollution in the Eco-sensitive Zone shall be carried out in accordance with Noise Pollution (Regulation And Control) Rules, 2000 under the Environment (Protection) Act, 1986.
- (7) Air pollution.-** Prevention and control of air pollution in the Eco-sensitive Zone shall be carried out in accordance with the provisions of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and rules made thereunder.
- (8) Discharge of effluents.-** Discharge of treated effluent in the Eco-sensitive Zone shall be in accordance with the provisions of the General Standards for Discharge of Environmental Pollutants covered under the Environmental (Protection) Act, 1986 and rules made thereunder or standards stipulated by State Government.
- (9) Solid wastes.-** Disposal and management of solid wastes shall be as under:-
- (a) the solid waste disposal and management in the Eco-sensitive Zone shall be carried out in accordance with the Solid Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change vide notification number S.O. 1357 (E), dated the 8th April, 2016;
- the inorganic material may be disposed in an environmental acceptable manner at site identified outside the Eco-sensitive Zone.
- (b) Safe and Environmentally Sound Management (ESM) of Solid wastes in conformity with the existing rules and regulations using identified technologies may be allowed within Eco-Sensitive Zone.
- (10) Bio-medical waste.-** Bio medical waste management shall be as under:
- (a) The bio-medical waste disposal in the Eco-sensitive Zone shall be carried out in accordance with the Bio-Medical Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change vide Notification number GSR 343 (E), dated the 28th March, 2016.
- (b) Safe and Environmentally Sound Management (ESM) of Bio-medical wastes in conformity with the existing rules and regulations using identified technologies may be allowed within Eco-Sensitive Zone.
- (11) Plastic waste management.-** The plastic waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the Plastic Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change vide notification number G.S.R. 340(E), dated the 18th March, 2016.
- (12) Construction and demolition waste management.-** The construction and demolition waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the Construction and Demolition Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change vide notification number G.S.R. 317(E), dated the 29th March, 2016.
- (13) E-waste.-** The e- waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the E-Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change.

(14) Vehicular traffic.- The vehicular movement of traffic shall be regulated in a habitat friendly manner and specific provisions in this regard shall be incorporated in the Zonal Master Plan and till such time as the Zonal Master plan is prepared and approved by the Competent Authority in the State Government, the Monitoring Committee shall monitor compliance of vehicular movement under the relevant Acts and the rules and regulations made thereunder.

(15) Vehicular pollution.- Prevention and control of vehicular pollution shall be carried out in accordance with applicable laws and the efforts to be made for use of cleaner fuel for example CNG, etc.

(16) Industrial units.- (i) no new polluting industries shall be permitted to be set up within the Eco-sensitive Zone.

(ii) Only non-polluting industries shall be permitted within Eco-sensitive Zone as per classification of Industries in the guidelines issued by the Central Pollution Control Board in February 2016, unless otherwise specified in this notification.

(17) Protection of hill slopes.- The protection of hill slopes shall be as under:-

- the Zonal Master Plan shall indicate areas on hill slopes where no construction shall be permitted.
- no construction on existing steep hill slopes or slopes with a high degree of erosion shall be permitted.

(18) The Central Government and the State Government shall specify other additional measures, if it considers necessary, in giving effect to the provisions of this notification.

4. List of activities prohibited or to be regulated within Eco-sensitive Zone.-

All activities in the Eco-sensitive Zone shall be governed by the provisions of the Environment (Protection) Act, 1986 (29 of 1986) and the rules made thereunder including the Coastal Regulation Zone (CRZ), 2011 and the Environmental Impact Assessment (EIA) Notification, 2006 and other applicable laws including the Forest (Conservation) Act, 1980 (69 of 1980), the Indian Forest Act, 1927 (16 of 1927), the Wildlife (Protection) Act 1972 (53 of 1972), and amendments made thereto and be regulated in the manner specified in the Table below, namely:-

TABLE

S. No.	Activity	Description
A. Prohibited Activities		
1.	Commercial mining, stone quarrying and crushing units.	(a) New (minor and major minerals), stone quarrying and crushing units shall be prohibited except for meeting the domestic needs of bona fide local residents including digging of earth for construction or repair of houses and for manufacture of country tiles or bricks for housing and for personal consumption. (b) The mining operations shall be carried out in accordance with the order of the Hon'ble Supreme Court dated the 04 th August, 2006 in the matter of T.N. Godavarman Thirumulpad Vs. UOI in W.P.(C) No.202 of 1995 and dated the 21 st April, 2014 in the matter of Goa Foundation Vs. UOI in W.P.(C) No.435 of 2012.
2.	Setting of industries causing pollution (water, air, soil, noise, etc.).	(a) No new industries and expansion of existing polluting industries in the Eco-sensitive zone shall be permitted. (b) Only non-polluting industries shall be permitted within Eco-sensitive Zone as per classification of Industries in the Guidelines issued by the Central Pollution Control Board in February 2016, unless otherwise specified in this notification.
3.	Establishment of major hydroelectric project.	Prohibited (except as otherwise provided) as per applicable laws.
4.	Use or production or processing of any hazardous substances.	Prohibited (except as otherwise provided) as per applicable laws.
5.	Discharge of untreated effluents in natural water bodies or land area.	Prohibited (except as otherwise provided) as per applicable laws.
6.	Establishment of large-scale commercial livestock and poultry farms by firms, companies, etc.	Prohibited (except as otherwise provided) as per applicable laws except for meeting local needs.

7.	Setting of new saw mills.	No new or expansion of existing saw mills shall be permitted within the Eco-sensitive Zone.
8.	Setting up of brick kilns.	Prohibited (except as otherwise provided) as per applicable laws.
9.	Use of polythene bags.	Prohibited (except as otherwise provided) as per applicable laws.
10.	Commercial use of firewood.	Prohibited (except as otherwise provided) as per applicable laws.
11.	New wood based industry.	Prohibited (except as otherwise provided) as per applicable laws.
B. Regulated Activities		
12.	Commercial establishment of hotels and resorts.	No new commercial hotels and resorts shall be permitted within one kilometre of the boundary of the Protected Area or upto the extent of Eco-sensitive Zone, whichever is nearer, except for small temporary structures for eco-tourism activities: Provided that, beyond one kilometre from the boundary of the Protected Area or upto the extent of Eco-sensitive Zone, whichever is nearer, all new tourist activities or expansion of existing activities shall be in conformity with the Tourism Master Plan and guidelines as applicable.
13.	Construction activities.	(a) No new commercial construction of any kind shall be permitted within one kilometre from the boundary of the Protected Area or upto extent of the Eco-sensitive Zone, whichever is nearer: Provided that, local people shall be permitted to undertake construction in their land for their use including the activities listed in sub- paragraph (1) of paragraph 3 as per building byelaws to meet their residential needs of the local residents such as: (i) Widening and strengthening of existing roads and construction of new roads; (ii) Construction and renovation of infrastructure and civic amenities; (iii) Small scale industries not causing pollution termed as per Classification done by Central Pollution Control Board of February 2016; (iv) Cottage industries including village industries; convenience stores and local amenities supporting eco-tourism including home stays; and (v) Promoted activities listed in this Notification. (b) The construction activity related to small scale industries not causing pollution shall be regulated and kept at the minimum, with the prior permission from the competent authority as per applicable rules and regulations, if any. (c) Beyond one kilometre it shall be regulated as per the Zonal Master Plan.
14.	Small scale non polluting industries.	Non polluting industries as per classification of industries issued by the Central Pollution Control Board in February 2016 and non-hazardous, small-scale and service industry, agriculture, floriculture, horticulture or agro-based industry producing products from indigenous materials from the Eco-sensitive Zone shall be permitted by the competent Authority.
15.	Commercial goat and sheep farming.	Regulated under applicable laws.
16.	Felling of trees.	(a) There shall be no felling of trees on the forest or Government or revenue or private lands without prior permission of the competent authority in the State Government. (b) The felling of trees shall be regulated in accordance with the provisions of the concerned Central or State Acts and the rules made thereunder.
17.	Collection of Forest Produce or Non-Timber Forest Produce (NTFP).	Regulated under applicable laws.
18.	Migratory graziers.	Regulated under applicable laws.
19.	Erection of electrical and	Regulated under applicable law (underground cabling may be

	communication towers and laying of cables and other infrastructures.	promoted).
20.	Infrastructure including civic amenities.	Shall be done with mitigation measures, as per applicable laws, rules and regulations and available guidelines.
21.	Widening and strengthening of existing roads and construction of new roads.	Shall be done with mitigation measures, as per applicable laws, rules and regulations and available guidelines.
22.	Under taking other activities related to tourism like over flying the Eco-sensitive Zone by hot air balloon, helicopter, drones, Microlites, etc.	Regulated under applicable law.
23.	Protection of hill slopes and river banks.	Regulated under applicable laws.
24.	Movement of vehicular traffic at night.	Regulated for commercial purpose under applicable laws.
25.	Ongoing agriculture and horticulture practices by local communities along with dairies, dairy farming, aquaculture and fisheries.	Permitted under applicable laws for use of locals.
26.	Discharge of treated waste water/effluents in natural water bodies or land area.	The discharge of treated waste water/effluents shall be avoided to enter into the water bodies and efforts shall be made for recycle and reuse of treated waste water, and the discharge of treated waste water/effluent shall be regulated as per applicable laws.
27.	Commercial extraction of surface and ground water.	Regulated under applicable law.
28.	Open well, bore well, etc. for agriculture or other usage.	Regulated under applicable laws and the activity shall be monitored by the concerned authority.
29.	Solid waste management/bio-medical waste management.	Regulated under applicable laws.
30.	Introduction of exotic species.	Regulated under applicable laws.
31.	Eco-tourism.	Regulated under applicable laws.
32.	Commercial sign boards and hoardings.	Regulated under applicable laws.
C. Promoted Activities		
33.	Rain water harvesting.	Shall be actively promoted.
34.	Organic farming.	Shall be actively promoted.
35.	Adoption of green technology for all activities.	Shall be actively promoted.
36.	Cottage industries including village artisans, etc.	Shall be actively promoted.
37.	Use of renewable energy and fuels.	Bio gas, solar light, etc. to be actively promoted.
38.	Agro-forestry.	Shall be actively promoted.
39.	Use of eco-friendly transport.	Shall be actively promoted.
40.	Skill development.	Shall be actively promoted.
41.	Restoration of degraded land/ forests/ habitat.	Shall be actively promoted.
42.	Environmental awareness.	Shall be actively promoted.

5. Monitoring Committee.- In exercise of the powers conferred by sub-section (3) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby constitutes a Monitoring Committee for a period of three years, for effective monitoring of the Eco-sensitive Zone, which shall comprise of the following, namely:-

- | | | |
|----|--|------------|
| 1. | Divisional Commissioner, Rewa | —Chairman; |
| 2. | Divisional Commissioner, Shahdol | —Member; |
| 3. | District Collector, Singrauli | —Member; |
| 4. | District Collector, Shahdol | —Member; |
| 5. | District Collector, Sidhi | —Member; |
| 6. | Superintending Engineer Public Works Department, Shahdol | —Member; |

- | | | |
|-----|---|---------------------|
| 7. | Superintending Engineer Public Health Department, Shahdol | —Member; |
| 8. | Chief Executive Officer of District Panchayat, Singrauli | —Member; |
| 9. | Chief Executive Officer of District Panchayat, Shahdol | —Member; |
| 10. | Chief Executive Officer of District Panchayat, Sidhi | —Member; |
| 11. | Representative of the Town and Country Planning Department of the State Government | —Member; |
| 12. | Representative of the State Pollution Control Board | —Member; |
| 13. | One representative of Non Governmental Organisation working in the field of environment to be nominated by the Government of Madhya Pradesh for a term of three years in each case | — Member; |
| 14. | One expert in the area of ecology and environment from a reputed institution of University in the State to be nominated by the Government of Madhya Pradesh for a term of three year in each case | — Member; |
| 15. | Member, State Biodiversity Board | — Member; |
| 16. | Field Director, Sanjay Dubri Tiger Reserve, | — Member Secretary. |

6. Terms of reference.- (1) The tenure of the Monitoring Committee shall be for a period of three years.

- (2) The Monitoring Committee shall monitor the compliance of the provisions of this notification.
 - (3) The activities that are covered in the Schedule to the notification of the Government of India in the erstwhile Ministry of Environment and Forests number S.O. 1533 (E), dated the 14th September, 2006, and are falling in the Eco-sensitive Zone, except for the prohibited activities as specified in the Table under paragraph 4 thereof, shall be scrutinised by the Monitoring Committee based on the actual site-specific conditions and referred to the Central Government in the Ministry of Environment, Forests and Climate Change for prior environmental clearances under the provisions of the said notification.
 - (4) The activities that are not covered in the Schedule to the notification of the Government of India in the erstwhile Ministry of Environment and Forests number S.O. 1533 (E), dated the 14th September, 2006 and are falling in the Eco-sensitive Zone, except for the prohibited activities as specified in the Table under paragraph 4 thereof, shall be scrutinised by the Monitoring Committee based on the actual site-specific conditions and referred to the concerned Regulatory Authorities.
 - (5) The Member Secretary of the Monitoring Committee or the concerned Collector(s) or the concerned park Deputy Conservator of Forests shall be competent to file complaints under section 19 of the Environment (Protection) Act, 1986 against any person who contravenes the provisions of this notification.
 - (6) The Monitoring Committee may invite representatives or experts from concerned Departments, representatives from Industry Associations or concerned stakeholders to assist in its deliberations depending on the requirements on issue to issue basis.
 - (7) The Monitoring Committee shall submit the annual action taken report of its activities as on 31st March of every year by 30th June of that year to the Chief Wildlife Warden of the State as per pro forma appended at **Annexure IV**.
 - (8) The Central Government in the Ministry of Environment, Forest and Climate Change may give such directions, as it deems fit, to the Monitoring Committee for effective discharge of its functions.
7. The Central Government and State Government may specify additional measures, if any, for giving effect to provisions of this notification.
8. The provisions of this notification shall be subject to the orders, if any, passed, or to be passed, by the Hon'ble Supreme Court of India or the High Court or the National Green Tribunal.

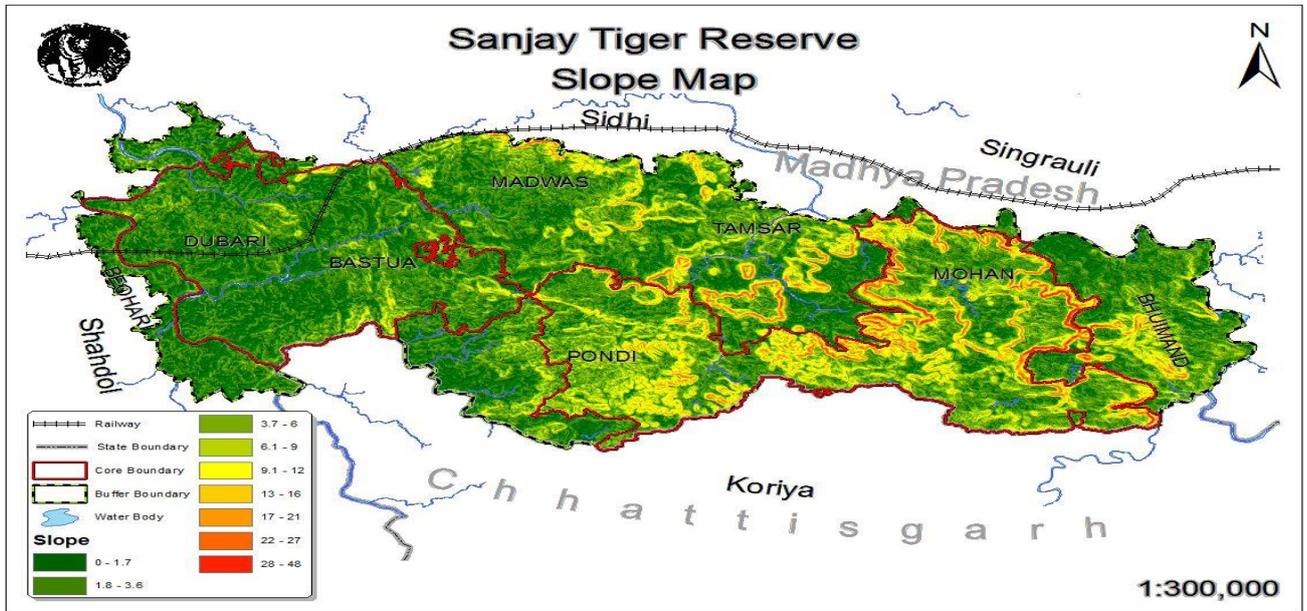
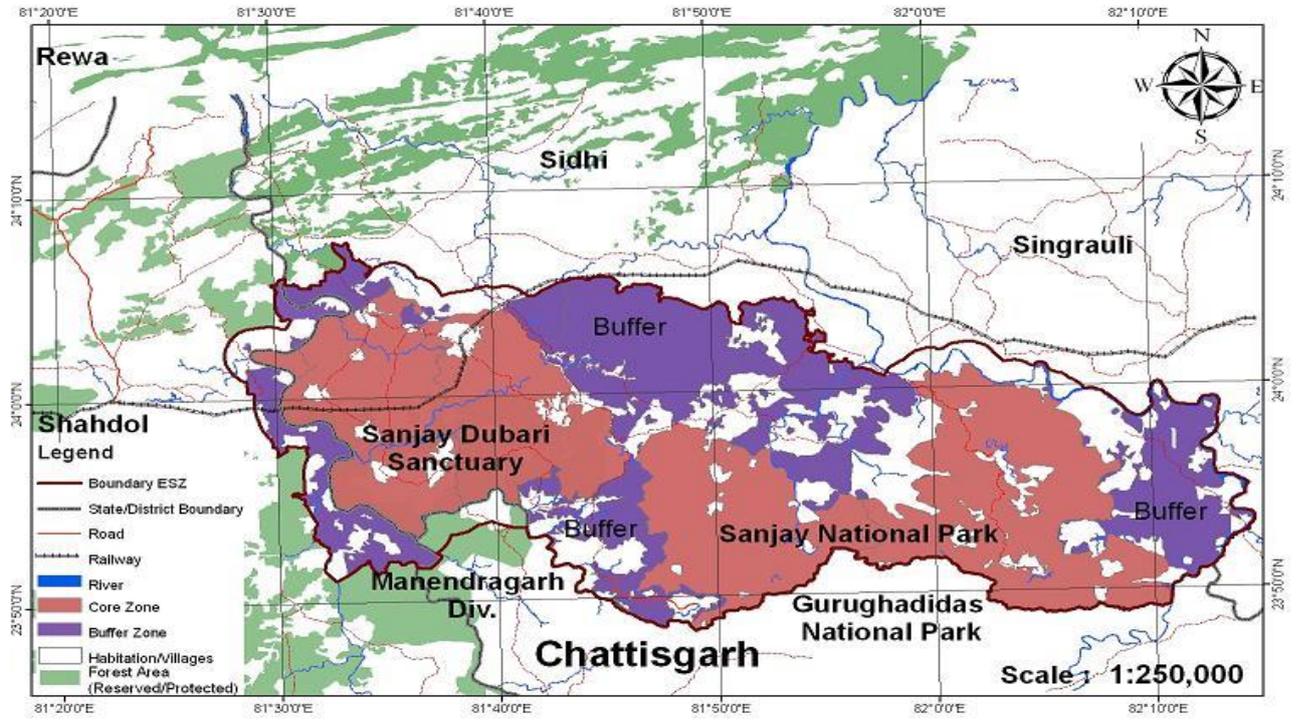
[F.No. 25/122/2015-ESZ]

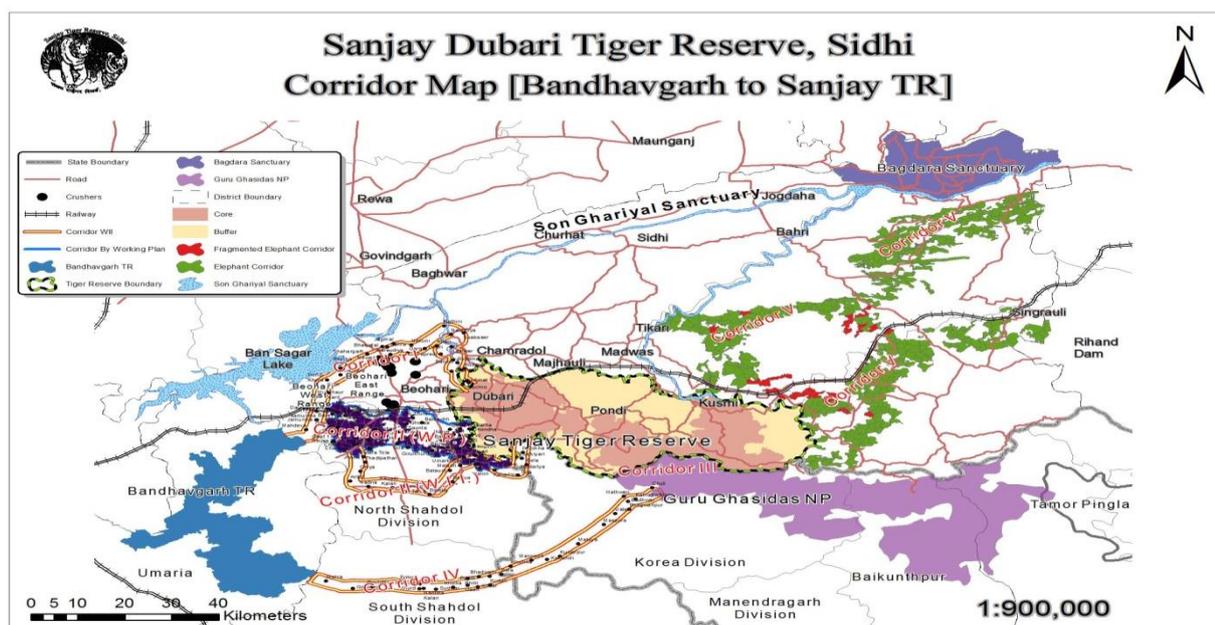
LALIT KAPUR, Scientist 'G'

ANNEXURE-I

MAP OF ECO-SENSITIVE ZONE WITH LATITUDES AND LONGITUDES

Eco Sensitive Zone of Sanjay Tiger Reserve, Sidhi M.P.





Sanjay Tiger Reserve Global Positioning System Co-ordinates Eco-sensitive Zone Boundary for the most prominent locations

Point Name	Latitude	Longitude
E1	23° 51' 4.984" N	82° 10' 35.933" E
E2	23° 53' 25.401" N	82° 14' 37.832" E
N1	24° 5' 35.843" N	81° 35' 27.404" E
N2	24° 7' 39.568" N	81° 32' 45.529" E
S1	23° 48' 33.513" N	81° 47' 29.256" E
S2	23° 48' 23.213" N	81° 48' 58.713" E
W1	24° 2' 9.668" N	81° 28' 50.959" E
W2	24° 2' 7.881" N	81° 27' 39.454" E

Annexure-II

**List of villages in the Eco-sensitive Zone
List of villages with Co-ordinates falling within the Eco-sensitive Zone**

S.No.	State	District	Division	Revenue	Lattitude (DD)	Longitude(DD)	Area (hectare)
1	Madhya Pradesh	Shahdol	North Shahdol	Buchro	24.06114528	81.52151722	1794.853
2	Madhya Pradesh	Shahdol	North Shahdol	Kudara	23.91503278	81.52030056	693.176
3	Madhya Pradesh	Shahdol	North Shahdol	Koilari	23.96599944	81.50953639	1938.728
4	Madhya Pradesh	Shahdol	North Shahdol	Jamuri	23.88525167	81.55605833	1915.454
5	Madhya Pradesh	Shahdol	North Shahdol	Belha	23.91849667	81.53654583	493.147
6	Madhya Pradesh	Shahdol	North Shahdol	Mithauli	23.88924972	81.53362889	289.247
7	Madhya Pradesh	Shahdol	North Shahdol	Kuthuli	23.88027861	81.5836125	843.066
8	Madhya Pradesh	Shahdol	North Shahdol	Khargari	23.86470222	81.60479889	1579.521
9	Madhya Pradesh	Shahdol	North Shahdol	Dhonda	23.986195	81.48775389	1299.505
10	Madhya Pradesh	Shahdol	North Shahdol	Palaha	23.91116083	81.52471694	71.81
11	Madhya Pradesh	Shahdol	North Shahdol	Pipari	23.87020083	81.54230167	180.02
12	Madhya Pradesh	Shahdol	North Shahdol	Bansa	24.1077325	81.50593056	298.25
13	Madhya Pradesh	Shahdol	North Shahdol	Khadda	23.98067361	81.49064639	507.46
14	Madhya Pradesh	Shahdol	North Shahdol	Sarwahi	24.04489333	81.4979525	341.96
North Shahdol Total							12246.197
15	Madhya Pradesh	Sidhi	SanjayTR	Barkadol	24.07353472	81.57295167	249.23
16	Madhya Pradesh	Sidhi	SanjayTR	Bastua	24.00224861	81.73506556	1185.39
17	Madhya Pradesh	Sidhi	SanjayTR	Goliphari	23.89886111	81.90297222	201.47

18	Madhya Pradesh	Sidhi	SanjayTR	Kudariya	24.03320583	81.70979139	330.09
19	Madhya Pradesh	Sidhi	SanjayTR	Piprahi	24.03804111	81.69738222	735.06
20	Madhya Pradesh	Sidhi	SanjayTR	Ponri	23.96293028	81.77484833	1133.9
Sanjay Tiger Reserve Total							3835.14
21	Madhya Pradesh	Sidhi	Sidhi	Amgaon	23.98001278	81.81507694	1170.41
22	Madhya Pradesh	Sidhi	Sidhi	Amradandi	23.88909472	82.23856444	34.19
23	Madhya Pradesh	Sidhi	Sidhi	Amrola	23.8721775	82.15683694	445.81
24	Madhya Pradesh	Sidhi	Sidhi	Barwahi	23.97058417	81.99451361	401.7
25	Madhya Pradesh	Sidhi	Sidhi	Belgaon	23.89326444	82.13598806	129.02
26	Madhya Pradesh	Sidhi	Sidhi	Beltal	23.86788861	82.12681472	186.45
27	Madhya Pradesh	Sidhi	Sidhi	Bendo	23.93543889	82.20335972	279.47
28	Madhya Pradesh	Sidhi	Sidhi	Bhagwar	23.96700167	81.97676056	305.71
29	Madhya Pradesh	Sidhi	Sidhi	Bhamraha	23.98142556	82.21455861	28.47
30	Madhya Pradesh	Sidhi	Sidhi	Bhanwarkoh	24.00096389	82.08172139	274.98
31	Madhya Pradesh	Sidhi	Sidhi	Bhuimar	23.96820139	82.14283833	296.77
32	Madhya Pradesh	Sidhi	Sidhi	Butu	23.9521775	82.12300222	155.53
33	Madhya Pradesh	Sidhi	Sidhi	Changohar	23.99762806	81.94620389	484
34	Madhya Pradesh	Sidhi	Sidhi	Dadari	23.87652583	81.7395025	365.37
35	Madhya Pradesh	Sidhi	Sidhi	Devri	23.98053194	82.12240667	334.47
36	Madhya Pradesh	Sidhi	Sidhi	Dharmadwari	23.98299861	81.90544861	261.55
37	Madhya Pradesh	Sidhi	Sidhi	Dhopkhar	24.00870861	81.8666625	802.89
38	Madhya Pradesh	Sidhi	Sidhi	Dighara	23.91131361	82.20341917	121.95
39	Madhya Pradesh	Sidhi	Sidhi	Duhkuria	23.97576639	81.79257778	181.57
40	Madhya Pradesh	Sidhi	Sidhi	Duwari	23.98738222	81.935005	661.71
41	Madhya Pradesh	Sidhi	Sidhi	Gadwahi	23.92972028	82.1595175	109.74
42	Madhya Pradesh	Sidhi	Sidhi	Gaibata	23.97576639	82.12901861	350.74
43	Madhya Pradesh	Sidhi	Sidhi	Ganjar	23.91202861	81.90361278	407.97
44	Madhya Pradesh	Sidhi	Sidhi	Ghatitola	23.96373361	82.12050028	487.07
45	Madhya Pradesh	Sidhi	Sidhi	Ghorbandha	23.912505	82.22956972	352.97
46	Madhya Pradesh	Sidhi	Sidhi	Haiki	23.91390833	81.73669833	222.66
47	Madhya Pradesh	Sidhi	Sidhi	Hardi	23.86622056	81.73098417	502.8
48	Madhya Pradesh	Sidhi	Sidhi	Harrai	23.87557278	82.10423833	256.8
49	Madhya Pradesh	Sidhi	Sidhi	Harraiya	23.98899056	81.92303194	199.52
50	Madhya Pradesh	Sidhi	Sidhi	Jawartola	23.88057667	82.118475	125.51
51	Madhya Pradesh	Sidhi	Sidhi	Juri	23.92209556	81.9677675	1124.38
52	Madhya Pradesh	Sidhi	Sidhi	Kamach	23.97124778	81.8414825	372.56
53	Madhya Pradesh	Sidhi	Sidhi	Karail	23.9556325	82.15230972	143.73
54	Madhya Pradesh	Sidhi	Sidhi	Karaunti	23.97266139	81.85252639	673.6
55	Madhya Pradesh	Sidhi	Sidhi	Karsoti	24.01776194	82.01816222	308.24
56	Madhya Pradesh	Sidhi	Sidhi	Kathautiya	23.96230417	82.15028444	106.97
57	Madhya Pradesh	Sidhi	Sidhi	Keshkhera	23.96111278	82.2084825	27.96
58	Madhya Pradesh	Sidhi	Sidhi	Keslar	23.91899806	82.1436725	366.22
59	Madhya Pradesh	Sidhi	Sidhi	Khairi	23.9094075	81.723955	300.08
60	Madhya Pradesh	Sidhi	Sidhi	Khamariya	23.92513361	82.1546925	86.16
61	Madhya Pradesh	Sidhi	Sidhi	Khamchaura	24.08943722	81.5959825	376.67
62	Madhya Pradesh	Sidhi	Sidhi	Khokhara	24.04509028	81.87283472	474.31
63	Madhya Pradesh	Sidhi	Sidhi	Korar	23.97004806	81.96913778	693.72
64	Madhya Pradesh	Sidhi	Sidhi	Kota	23.85174556	81.74325528	443.45
65	Madhya Pradesh	Sidhi	Sidhi	Kotma	23.93948944	81.95603278	340.15
66	Madhya Pradesh	Sidhi	Sidhi	Kundaur	23.83059889	81.82379139	638.98
67	Madhya Pradesh	Sidhi	Sidhi	Kurchu	23.84269111	82.18137917	484.16
68	Madhya Pradesh	Sidhi	Sidhi	Kusmi	23.97671944	82.00190028	612.19
69	Madhya Pradesh	Sidhi	Sidhi	Kuthar	24.06795167	81.6293825	670.02
70	Madhya Pradesh	Sidhi	Sidhi	Ladgat	23.95688333	81.87877278	145.55
71	Madhya Pradesh	Sidhi	Sidhi	Lurghuti I	23.87122444	81.75701556	474.49
72	Madhya Pradesh	Sidhi	Sidhi	Lurghuti II	23.8672	81.758765	388.7
73	Madhya Pradesh	Sidhi	Sidhi	Macheri	23.94449306	82.15975583	58.71
74	Madhya Pradesh	Sidhi	Sidhi	Machharkata	23.96957139	82.16922722	150.7
75	Madhya Pradesh	Sidhi	Sidhi	Majhauri	24.08972806	81.62238444	314.465
76	Madhya Pradesh	Sidhi	Sidhi	Manwari	23.92989889	82.00547417	78.02
77	Madhya Pradesh	Sidhi	Sidhi	Matkhaniya	24.03199889	81.73068639	1338
78	Madhya Pradesh	Sidhi	Sidhi	Merana	23.95593028	81.89366472	1104.37
79	Madhya Pradesh	Sidhi	Sidhi	Merki	24.02124889	81.75791556	135.16
80	Madhya Pradesh	Sidhi	Sidhi	Nangpokhar	23.87831306	81.71096917	110.39
81	Madhya Pradesh	Sidhi	Sidhi	Naurhia	23.90944672	81.91290528	288.84
82	Madhya Pradesh	Sidhi	Sidhi	Naurhiadewarth	23.93448583	81.98450639	374.34

83	Madhya Pradesh	Sidhi	Sidhi	Niganni	23.98491667	81.79493111	122.29
84	Madhya Pradesh	Sidhi	Sidhi	Piparaha	23.96760556	81.92243611	735.06
85	Madhya Pradesh	Sidhi	Sidhi	Pori	24.10202722	81.57896917	381.08
86	Madhya Pradesh	Sidhi	Sidhi	Purehdol	23.87807472	82.12645722	187
87	Madhya Pradesh	Sidhi	Sidhi	Rohal	23.92960111	81.94656139	456.92
88	Madhya Pradesh	Sidhi	Sidhi	Sajadol	23.99050833	81.87231694	242.06
89	Madhya Pradesh	Sidhi	Sidhi	Saraiha	24.08342917	81.65758083	397.51
90	Madhya Pradesh	Sidhi	Sidhi	Sarsai	23.83685361	81.78316583	48.06
91	Madhya Pradesh	Sidhi	Sidhi	Semra	23.95604944	82.13694111	286.59
92	Madhya Pradesh	Sidhi	Sidhi	Songarh	23.99040639	82.11777111	387.55
93	Madhya Pradesh	Sidhi	Sidhi	Tal	23.83697278	81.74397	234.31
94	Madhya Pradesh	Sidhi	Sidhi	Trichuli	23.95443972	81.87023694	88.39
Sidhi Total							26709.905
95	Madhya Pradesh	Singrauli	Singrauli	Bharsera	24.01014278	82.06061778	650
96	Madhya Pradesh	Singrauli	Singrauli	Jhara	23.99975	82.04935194	500
97	Madhya Pradesh	Singrauli	Singrauli	Parasi	24.03537222	82.03630611	120
98	Madhya Pradesh	Singrauli	Singrauli	Banjari	24.01913556	82.0026675	810
Singrauli Total							2080
99	Chhattisgarh	Manendragarh	Manendragarh	Barwahi	23.90590639	81.65047917	257.78
100	Chhattisgarh	Manendragarh	Manendragarh	Marisarai	23.8406425	81.67514167	361.76
101	Chhattisgarh	Manendragarh	Manendragarh	Barchha	23.86398889	81.64316556	77.23
Manendragarh Total							696.77
Grand Total (hectare)							45568.012
Total Area in Square kilometre							455.68012

Annexure-III

ABSTRACT AREA OF ECO SENSITIVE ZONE

S.N.	State	District	Forest Division	Legal Status (Area (hectare))			
				Reserved Forest	Protected Forest	Revenue	Total Area
1	Madhya Pradesh	Sidhi	STR	48.570	0.000	3835.140	3883.710
2	Madhya Pradesh	Shahdol	North Shahdol	11614.750	521.600	12246.197	24382.547
3	Madhya Pradesh	Sidhi	Sidhi	32992.870	11185.362	26709.905	70888.137
4	Madhya Pradesh	Singrauli	Singrauli	814.000	0.000	2080.000	2894.000
5	Chhattisgarh	Manendragarh	Manendragarh	1736.327	842.857	696.770	3275.954
				47206.517	12549.819	45568.012	105324.348
Total Area In (hectare)							105324.348
Total Area in Square kilometre							1053.24348

Annexure IV

Proforma of Action Taken Report: - Eco-sensitive Zone Monitoring Committee.-

1. Number and date of meetings.
2. Minutes of the meetings: Mention main noteworthy points. Attached minutes of the meeting on separate Annexure.
3. Status of preparation of Zonal Master Plan including Tourism Master Plan.
4. Summary of cases dealt for rectification of error apparent on face of land record. Details may be attached as Annexure
5. Summary of cases scrutinised for activities covered under Environment Impact Assessment Notification, 2006: Details may be attached as separate Annexure.
6. Summary of case scrutinised for activities not covered under Environment Impact Assessment Notification, 2006: Details may be attached as separate Annexure.
7. Summary of complaints lodged under section 19 of Environment (Protection) Act, 1986.
8. Any other matter of importance.

ANNEXURE-R5 295

F.No. 22-43/2018-IA.III
Government of India
Ministry of Environment, Forest and Climate Change
(IA Division)

Indira Paryavaran Bhawan
JorBagh Road, Aliganj,
New Delhi – 110003

Dated: 8th August, 2019

OFFICE MEMORANDUM

Subject: Procedure for consideration of developmental projects located within 10 km of National Park/Wildlife Sanctuary seeking environmental clearance under the provisions of the Environmental Impact Assessment (EIA) Notification, 2006 - regarding.

The Hon'ble Supreme Court vide its Order dated 4.12.2006 in Writ Petition No. 460 of 2004 – Goa Foundation Vs. Union of India, has inter-alia directed that Ministry of Environment and Forests "(MoEF) would also refer to the Standing Committee of the National Board for Wildlife, under section 5(b) & 5(c) (ii) of the Wildlife Protection Act, 1972, the cases where environmental clearances has already been granted where activities are within 10km. zone" of the boundaries of the Sanctuaries and National Parks."

2. In this regard, the erstwhile MoEF vide Circular No. L-11011/7/2004-IAII (I)(Part) dated 27.02.2007 and Office Memorandum No. J-11013/41/2006-IA.II(I) dated 02.12.2009 delineated a procedure for consideration of developmental projects located within 10 km of National Park/Wildlife Sanctuary for grant of environmental clearance under EIA Notification, 2006. As per the stipulated procedure, prior clearance from Standing Committee of the National Board for Wildlife (SCNBWL) would be required for the developmental projects located within 10km of the National Park/Wildlife Sanctuary.

3. Over a period of time, Ministry has notified number of Eco-Sensitive Zones (ESZs) around Protected Areas (PAs). Many of developmental activities are prohibited/regulated in these ESZs *inter-alia* including mining operations to be carried out in accordance with the order of the Hon'ble Supreme Court dated 4.08.2006 in the matter of T.N. Godavarman Thirumulpad Vs. UOI in

W.P.(C) No. 202 of 1995 and dated 21.4.2014 in the matter of Goa Foundation Vs. UOI in W.P.(C) No. 435 of 2012 as per the notifications issued for their constitution.

4. In light of the aforesaid Orders passed by the Hon'ble Supreme Court, the issues related to the prior clearance from SCNBWL for the notified ESZs and the remaining areas have been examined in detail. In this regard, it has been decided by the Competent Authority in the Ministry to adopt a following procedure for consideration of developmental projects located within 10 km of National Park/Wildlife Sanctuary seeking environmental clearance under the provisions of the EIA Notification, 2006, in supersession of the earlier O.M.s dated 27.2.2007 and 2.12.2009:

- i. Proposals involving developmental activity/project located within the notified Eco-Sensitive Zones (ESZ) shall be regulated and governed by the concerned ESZ notification. However, for the developmental project/activity located within the notified ESZ and covered under the schedule of the EIA Notification 2006, prior clearance from Standing Committee of the National Board for Wildlife (SCNBWL) is mandatory. In such cases, the project proponent shall submit the application simultaneously for grant of Terms of Reference as well as wildlife clearance.
- ii. Proposals involving developmental activity/project located outside the stipulated boundary limit of notified ESZ and located within 10 km of National Park/Wildlife Sanctuary, prior clearance from Standing Committee of the National Board for Wildlife (SCNBWL) may not be applicable. However, such proposals from environmental angle including impact of developmental activity/project on the wildlife habitat, if any, would be examined by the sector specific Expert Appraisal Committee and appropriate conservation measures in the form of recommendations shall be made. These recommendations shall be explicitly mentioned in the environmental clearance letter and shall be ensured by the member secretary concerned.
- iii. Proposals involving developmental activity/project located within 10 km of National Park/Wildlife Sanctuary wherein final ESZ notification is not notified (or) ESZ notification is in draft stage, prior clearance from Standing Committee of the National Board for Wildlife (SCNBWL) is mandatory. In such cases, the project proponent shall submit the application simultaneously for grant of Terms of Reference/environmental clearance as well as wildlife clearance.

- iv. Proposals involving mining of minerals within the ESZ (or) one kilometer from the boundaries of National Parks and Sanctuaries whichever is higher is prohibited in accordance with the order of the Hon'ble Supreme Court dated 4.08.2006 in the matter of T.N. Godavarman Thirumulpad Vs. UOI in W.P.(C) No. 202 of 1995 and dated 21.4.2014 in the matter of Goa Foundation Vs. UOI in W.P.(C) No. 435 of 2012.
5. This issues with the approval of the Competent Authority.



(Sharath Kumar Pallerla)
Director

To

1. Chairman, Central Pollution Control Board (CPCB).
2. Chairman of all the Expert Appraisal Committees
3. Chairperson/Member Secretaries of all the SEIAAs/SEACs
4. All the Officers of I.A. Division
5. Chairpersons/Member Secretaries of all SPCBs/UTPCCs

Copy for information to:

1. PS to Hon'ble Minister for Environment, Forest and Climate Change
2. PS to Hon'ble MoS (EF&CC)
3. PPS to Secretary(EF&CC)
4. PPS to SS(AKJ)
5. PPS to AS (RSP)
6. PPS to JS (GM)/ JS(RS)/JS(AKN)
7. Website, MoEF&CC
8. Guard file.

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ANNEXURE-R6**SULIYARI COAL MINE**

Capacity: 5.0 MTPA; Area: 1298 Ha
in Singrauli Coalfields (Main Basin)

Singrauli Forest Division,
Singrauli district, M.P.

**SITE SPECIFIC
WILDLIFE CONSERVATION PLAN**

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

- I Suliyari Coal Block is located in Singrauli Coalfield (Main Basin), village(s) Aamdand, Bajaudi, Belwar, Dongari, Dhirauli, Jhalari, Majhaulipath and Seerswah, Tehsil: Sarai, Singrauli district of Madhya Pradesh. The coal block is bounded between latitude 23°55'28"N to 23°58'15"N and longitudes 82°18'52"E to 82°20'58"E and is covered by Survey of India Toposheet no. 64 I/5.
- II The total area involved in this project is 1298 ha, out of which 259.399 ha is forest land. The block is located at about 75 km south-west the district headquarter, Singrauli; and at a distance of 45 km south-west of the tehsil headquarter, Waidhan town. Waidhan-Sidhi State Highway via Bargawan traverses 25 km north of the block and runs almost along the boundary of Moher Sub-Basin & Main Basin.
- III In the buffer zone (10 km radius of the project area) there are only one Reserve Forest and one Protected Forests as detailed below:-

Sr. No.	RF/PF	Direction	Distance (KM)
1.	Mohanban RF	All Directions	Within Mine lease also
2.	Langhadol PF	SW	9.1

- IV In the buffer zone (10 km radius of the project area) there are following water bodies are present as detailed below:-

9	Water bodies	1) Hurdul Nala -Within ML area 2) Amra Nala-2.3 km, SW 3) Sulkhia Nala-8.3 km, NW 4) Chiraha Nala-7.1 km, S	5) Biniao Nala-7.2 km, SSE 6) Nimji Nala- 8.1 km, SW 7) Gopad River-8.9 km, W
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Suliyari Coal Block is located in Singrauli Coalfield (Main Basin), Village Aamdand, Bajaudi, Belwar, Dongari, Dhirauli, Jhalari, Majhaulipath and Seerswah, Tehsil: Sarai, Singrauli district of Madhya Pradesh. Waidhan-Sidhi State Highway via Bargawan traverses 25 km north of the block and runs almost along the boundary of Moher Sub-Basin & Main Basin. A metalled road Parsona to Mara is



located further east of the block. Nearest railway station Bargwan is located at a distance of 25 km from the Suliyari Coal Mine on Chopan-Singrauli-Katni line of Central Railway. Renukoot, an important industrial township & railway station is located at a distance of 125 km from the mine on Chopan-Garhwa section of eastern railway. Renukoot township is well connected with Hawrah, Tatanagar, Delhi etc. by direct train. Nearest airport Varanasi is located at a distance of 294 km from the mine.

- V The block area has highly undulating and rugged topography. The northern and southern parts of the mine are occupied by hillocks with maximum elevation upto 500m AMSL. In general, the elevation of ground varies from 441.07 m AMSL as observed in borehole MS-2 to 499.23 m AMSL in borehole MS-37 located in the south-western and northern parts of the mine respectively. A few hillocks are also observed in the eastern part of the mine.
- VI As **per Socio-economic** status of this coal block, there are 7 villages (*Aamdand, Bajaudi, Belwar, Dongari, Jhalari, Majhaulipath, Sirswah*) within the core zone and total 42 villages in the study area. Summary of demographic pattern of the study area is given below:

Demographic profile of the study area

Item	Unit	* 2011	# 2018
No. of House Hold	No.	11373	13602
Population		53356	63814
Male	No. of people (%)	30768 (57.67%)	36799
Female		22588 (42.33%)	27015
Sex Ratio	(Female per 1000 males)	734	734
Schedule Castes	No. of people (%)	8331 (15.61%)	9964
Schedule Castes (Male)	No.	4735	5663
Schedule Castes (Female)		3596	4301
Schedule Tribes	No. of people (%)	22067 (41.36%)	26392
Schedule Tribes (Male)	No.	11349	13573
Schedule Tribes (Female)		10718	12819
Population density **	No. of people per sq. km	115	137
Literates	No. of people (%)	25982 (48.69%)	31074



Item	Unit	* 2011	# 2018
No. of House Hold	No.	11373	13602
Male		18258 (70.27%)	21837
Female		7724 (29.73%)	9238
Illiterates		27374 (51.31%)	32739
Male	No. of people (%)	12510 (45.70%)	14962
Female		14864 (54.30%)	17777

Source: * Census of India (MP) Series-24; Part-XII-B, 2011; ** (study area = 465.290 sq.km)
projected population of villages under the study area. The decadal growth rate of 28% has been considered.

VII According to the '**India State of Forest Report -2017**' (latest) the total forest area of the Singrauli district is 2,189 Km² which is 38.57 % of the geographical area. The forest area included, 398 Km² (39800 Ha) of very dense forest, 1014 Km² (101400 Ha) of medium dense forest and 777.0 Km² (77700 Ha) of open forest.

The present Working Plan of Singrauli forest division is valid from 2009-10 to 2018-19. According to revised Forest Types (Champion and Seth 1968) the study area has been classified as Dry Peninsular Sal Forest (5B/C1c), Northern Dry Mixed Deciduous Forest (5B/C2), and Dry Bamboo Brakes (5/E9). In this Working Circle Sal occurs either pure or in mixture with (*Shorea robusta*), Saja (*Terminalia tomentosa*), Dhaora (*Anogeissus latifolia*), Bija (*Pterocarpus marsupium*), Sena (*Lagerstroemia parviflora*), Salia (*Boswellia serrata*), Tinsa (*Ougeinia oojeinensis*), Sagaun (*Tectona grandis*), Kari (*Sacopetalum tomentosum*) etc.

VIII The **flora** existing in the core and buffer zone are Sal (*Shorea robusta*), Teak (*Tectona grandis*), Haldu (*Adina cordifolia*), Dhaora (*Anogeissus latifolia*), Kardhai (*Anogeissus pendula*), Saliha (*Boswellia serrata*), Char (*Buchnanian lanzan*), Dhobin (*Dalbergia paniculata*), Tendu (*Dyospyros melanoxylon*), Amla (*Emblica officinalis*), Lendia (*Lagerstoremia parviflora*), Gunja (*Lannea coromandelica*), Mahua (*Madhuca indica*), Bija (*Pterocarpus marsupium*), Kusum (*Schleichera oleosa*), Bhelwa (*Semecarpus anacardium*), Jamun (*Syzygium cumini*), Harra (*Terminalia chebula*), Bahara (*Terminalia belerica*), Saja (*Terminalia tomentosa*) etc. **Grasses** noticed are *Aristida* (*Aristida funiculata*),



Chloris (Chloris barbata), Digitaria (Digitaria radicata), Dimeria, Dactyloctenium (Dactyloctenium aegyptium), Setaria (Setaria glauca), Cenchrus (Cenchrus biflorus), Cyperus etc. **Weeds** noticed are *Ageratum conyzoides, Alysicarous and Euphorbia sps.*

Sal (*Shorea robusta*) is another important timber species in Madhya Pradesh. It is a large evergreen tree belonging to the family Dipterocarpaceae. Sal forests of Madhya Pradesh are ecologically very important as they mark the termination of the great Sal zone of the Central Indian peninsula. Sal forests are located in the eastern part of the state while teak forests are localized in the western part. In between, there is a transition belt of mixed miscellaneous forests.

Fauna noticed are –

mammals- Hare (*Lepus nigricollis*), Palm Squirrel (*Funambulus pennati*), Spotted deer (*Axix axix*), Bat (*Pteropus giganteus*), Mongoose (*Herpestes edwardi*), Red faced Monkey (*Macaca mulata*), Sloth Bear (*Melursus ursinus*), Barking Deer (*Muntiacus muntjak*), Wolf (*Canis lupus pallipes*), Black faced Langur (*Semnopithecus entellus*), Hyena (*Hyaena hyaena*), Fox (*Vulpes bengalensis*), Porcupine (*Hystrix indica*), Jackal (*Canis aureus*), Wild Boar (*Sus scrofa cristatus*).

Birds- Brown fish Owl (*Bubo zeylonensis*), Blue Rock Pigeon (*Columba livia*), Asian Koel (*Eudynamis scolopacea*), Rufous Wood Pecker (*Micropternus brachyurus*), Pied Kingfisher (*Ceryle rudis*), Painted Partridge (*Galloperdix lunulata*), Bengal Vulture (*Galloperdix lunulata*), Indian Great horned Owl (*Bubo bengalensis*), Common Parakeet (*Psittacula eupatria*), Grey Jungle Fowl (*Gallus sonneratti*), Jungle Myna (*Acridotheres tristis*), Indian Cuckoo (*Cuculus micropterus*), Indian Roller (*Coracias behghalensis*), Spotted Dove (*Streptopelia chinensis*), Bush Quail (*Perdicula asiatica*), Chestnut bellied Sand Grouse (*Pterocies exustus*), Peacock (*Pavo cristatus*), Cattle Egret (*Bubulus ibis*), Green Imperial Pigeon (*Ducula aenea*).

Reptiles- Indian Rock Python (*Python molurus*), Indian Chameleon (*Chameleon zeylanicus*), Garden Lizard (*Calotes versicolor*), Rat Snake (*Elephe radiata*), Indian Cobra (*Naja naja*) **Fishes-** *Catla catla* (Katla), *Cirrhinus mrigala* (Mrigal), *Tor tor* (Mahaseer), *Mastooembelus armatus* (Bam), *Labeo rohita* (Rohu), *Labeo bata*.



- IX The anticipated degradation due to this project are Air pollution, Noise pollution, Accidental death of wildlife (Rarely), Litter generation, Habitat degradation, forest fire, and Fragmentation of habitat etc. In view of these, mitigation measures like Improvement and Protection to Habitat, fire protection, awareness promotion, cattle immunization and incentive to villagers are provided in the core area of this project. Where as in the buffer area mitigation measures like Wildlife Habitat Improvement, Fire protection Measures, anti-depredation squad, Compassionate grant and creation of water hole have been proposed. The total cost of this plan is **Rs.31.05 Crores** including cost escalations of 20% over a Plan period of **25 years**. Out of this Rs. **4.05 Crores** is for Mining lease area and **Rs. 27.00 Crores** for the Impact area of 10 km radius from the periphery of the coal mine block (**Rs. 25.00 Crores for Sanjay Tiger Reserve and Rs. 2.00 Crore for Singrauli Forest Division**).
- X A monitoring committee will be formed with the Chairmanship of Conservator of forest Waidhan circle where DFO, Waidhan Division will be the Member Secretary and other members will be Range Officer, Forester and Forest Guard. Apart from this the village head of surrounding villages will participate in the half yearly meeting where progress and impact of the prescriptions of this plan will be discussed in detail. Any addition or modification to the prescriptions approved by Chief Wildlife Warden will be undertaken.
- MECON Limited wishes to place on record its deep appreciation for the trust reposed in MECON by APMDC and for the active interest and help extended by concerned APMDC officials. Cooperation extended to MECON by the officials of State Forest department is also acknowledged. MECON has engaged M/s Vardan Environet for technical assistance in carrying out the study including preparation of the report.



CHAPTER-1

**INTRODUCTION AND
METHODOLOGY**

1.0 INTRODUCTION AND METHODOLOGY

1.1 Introduction:

The mineral wealth of a nation is an important feature in its economic progress, and mining in India has a vital role in the development. Madhya Pradesh has a glorious heritage in the field of natural resources, mines and minerals. The state is geologically so endowed that it has become a veritable repository of minerals.

Electricity is the key factor for development of a nation. All sectors viz. industrial, agriculture and social require electric power for their growth and availability of electricity in the nation. Coal based power plants are probably the most economically viable and time tested solution towards the solution of this problem. These thermal power plants obviously need constant supply of coal. In fact, about 67% of the power plants in India are coal based.

Coal deposits in Madhya Pradesh

Important deposits of coal occur in Shahdol, Umaria, Singrauli, Betul, Chindwara and Narsingpur districts. Coal is the primary source of energy supply in India. About 55% of the current commercial energy use is met by coal. Rising demand for energy and coal as the primary energy source make it a significant resource in the country. Opening of Suliyari coal mine will have the following benefits:

- Increase supply of coal for India's power programme.
- Reduces power shortages hindering growth, foreign investment and productivity.
- Generate additional employment, both direct and indirect which will lead to economic growth of the industrial sector as well as country.
- Quality of life of local populace in villages shall improve due to company's community development programmes.



1.2 Lease Area:

The area of Singrauli coal fields is about 2202 sq. km. This coal field can be divided into two basins, viz. Moher Sub-basin (312 Sq. km), and Singrauli Main basin (1890 sq. km). Major part of the Moher Sub-basin lies in the Singrauli district of Madhya Pradesh and a small part lies in the Sonbhadra district of Uttar Pradesh. Singrauli main basin lies in the western part of the coalfield and largely unexplored.

There are nine coal blocks identified by Ministry of Coal, Government of India, New Delhi. They are Amelia (North), Amelia, Chatarsal, Mahan, Mara Mahan, **Suliyari**, Patpahari, Dongri Tal-I and Dongri Tal-II.

Suliyari Coal Block is located in Singrauli Coalfield (Main Basin), Village Aamdand, Bajaudi, Belwar, Dongari, Dhirauli, Jhalari, Majhaulipath and Seerswah, Tehsil: Sarai, Singrauli district of Madhya Pradesh. The coal block is bounded between latitudes 23°55'28"N to 23°58'15"N; longitudes 82°18'52"E to 82°20'58"E and is covered by the Survey of India Toposheet no. 64 I/5.

1.3 Location:

Total area of the block is 1298 ha. The block is located at about 75 km south-west the district headquarters, Singrauli; whereas it is located at a distance of 45 km south-west of the tehsil headquarter, Waidhan town. Waidhan-Sidhi State Highway via Bargawan traverses 25 km north of the block and runs almost along the boundary of Moher Sub-Basin & Main Basin. A metalled road Parsona to Mara is located further east of the block. An un-metalled weather road branching from the above road at Rajmelan leads to Sarai. The mine is connected by metalled road bifurcating from Raila.

Nearest railway station Gajra-Bahra is located at a distance of 12 km from the proposed Suliyari Coal block on Chopan-Singrauli-Katni line of central railway. Renukoot, an important industrial township & railway station is located at a



Wildlife Conservation Plan for Suliyari Coal Mine in Singrauli Forest Division, Singrauli district, M.P. of M/s APMDC

distance of 125 km from the mine on Chopan-Garhwa section of eastern railway. Nearest airport Varanasi is located at a distance of 294 km from the mine.

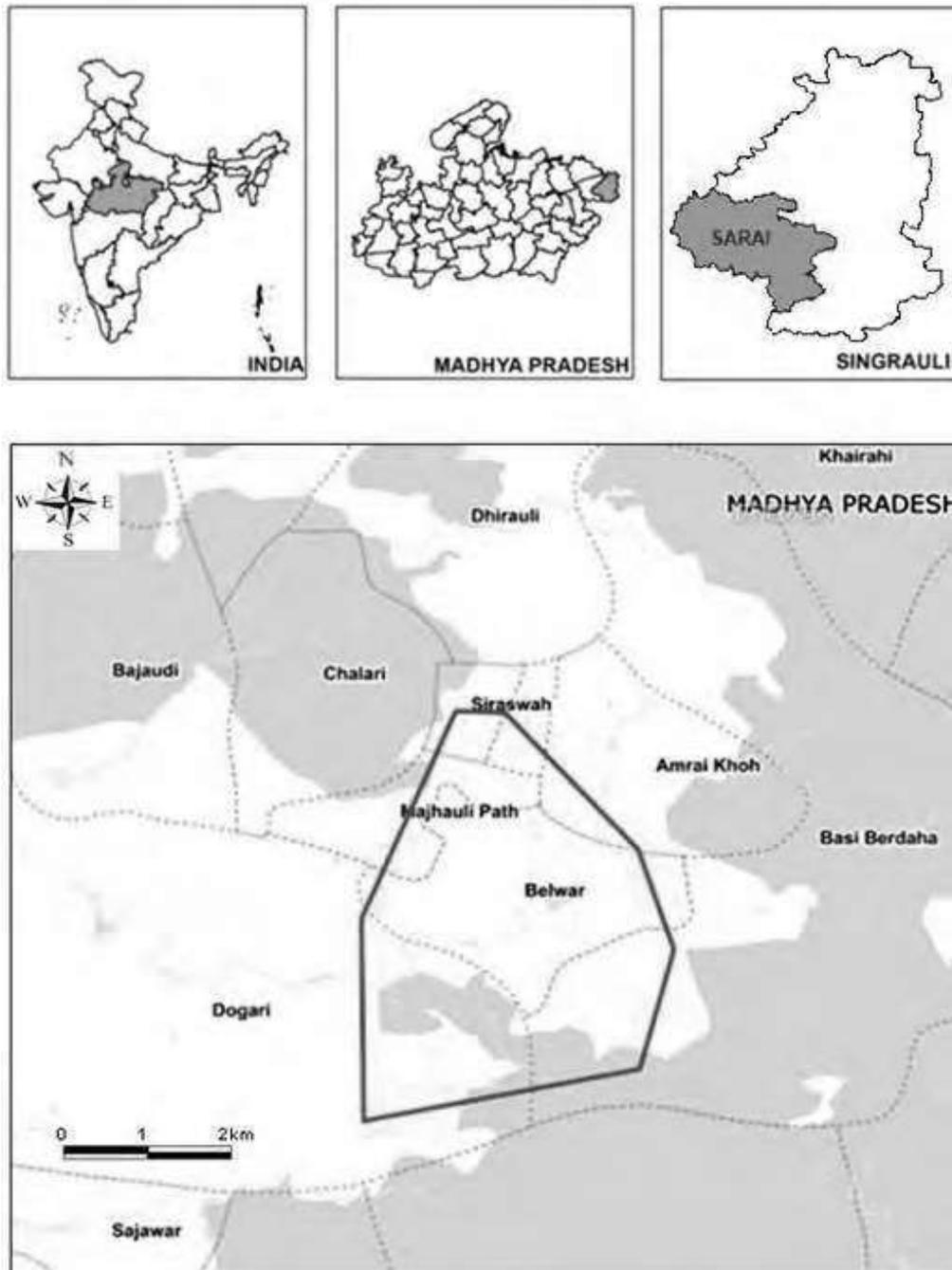


Figure-1.1: Location Map of Suliyari Coal Block



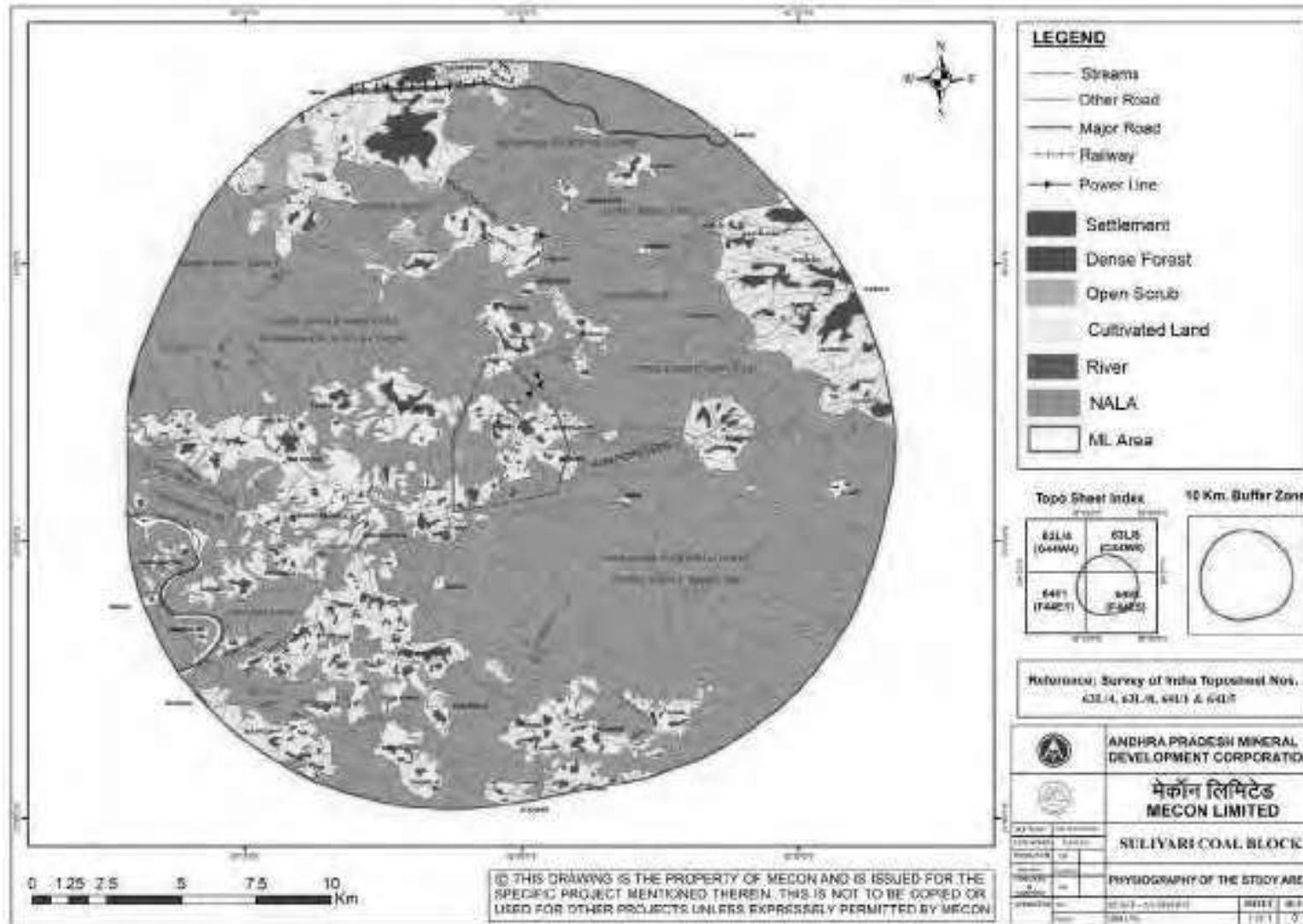


Figure-1.2: 10 km Study area around Suliyari Coal Block



1.4 Forest Jurisdiction:

The administrative jurisdiction of proposed Suliyari coal mine comes under Singrauli Forest Division. Out of the lease hold area of 1298 ha only 259.239 ha is forest land.

Table-1.1: Lease Hold Area

Type of Land	Area (ha)
Forest Land	259.239
Non-Forest Land	1038.761
Total	1298.00

1.5 Land Use Pattern:

The project area comprises of total 1298 ha, out of which, 259.239 ha land is forest land, 592.251 ha tenant land and 446.51 ha area is Govt. land. The existing land utilization in the project area is given in **Table 1.2** and geological represented in **Figure 1.3**.

Table-1.2: Land Use Pattern of Suliyari Coal Block

Sr. No.	Land Type	Area (Ha)
1	Forest Land	
A	Protected Forest	226.349
B	Revenue Forest	32.890
	Total Forest Land	259.239
2	Non Forest Land	
A	Tenant Land	592.251
B	Govt. Land	446.510
	Total Non Forest Land	1038.761
	Grand Total	1298.000



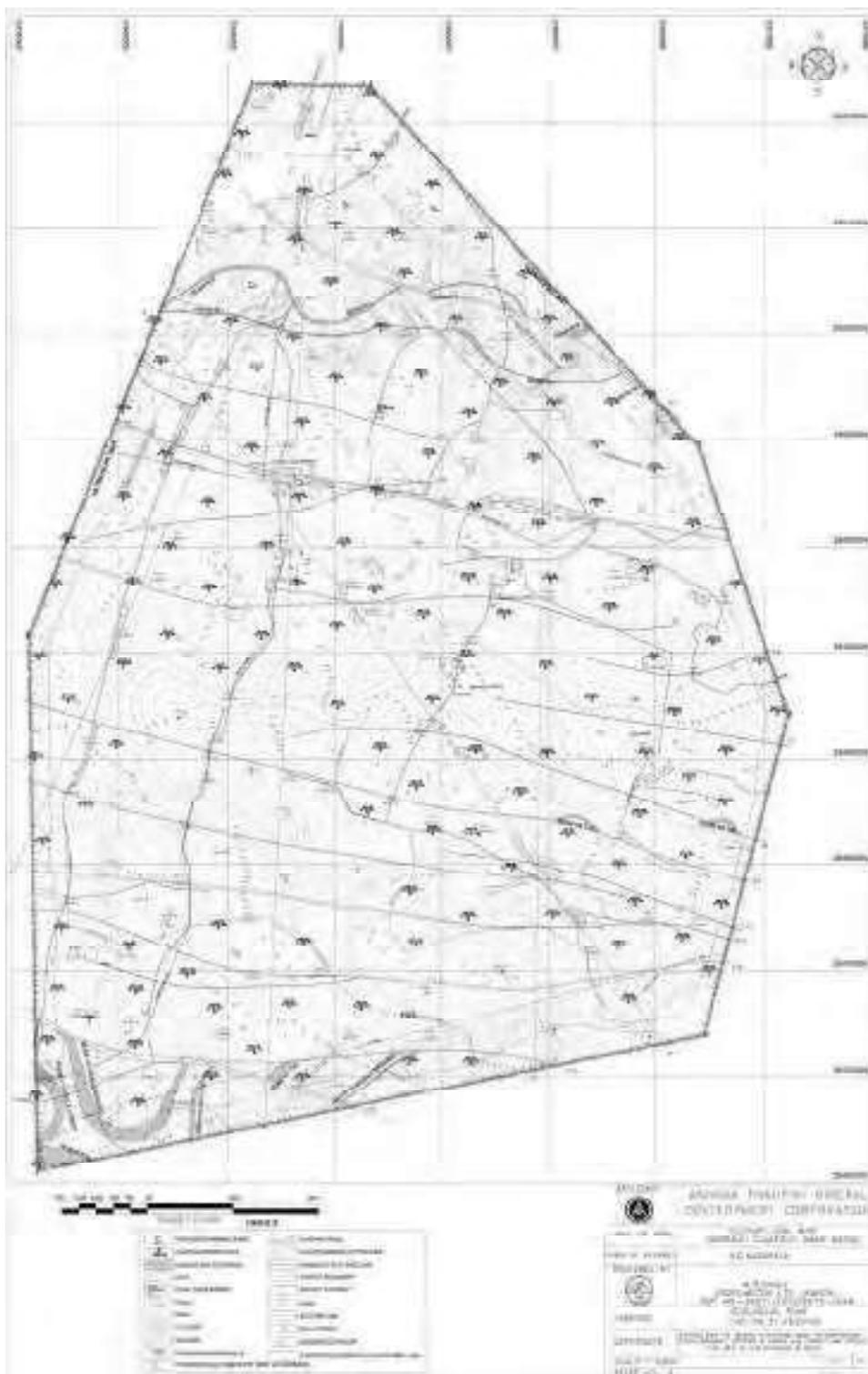


Figure-1.3 Existing Geological Plan of the project area



The existing land use plan for Suliyari Coal block is presented in **Table: 1.3:**

Table-1.3: Land Requirement inside the coal block area

Activity	Land Requirement, ha.				
	Upto 5 th Year	Upto 10 th Year	Upto 15 th Year	Upto 20 th Year	Conceptual Stage
Excavation Area	448.145	568.104	843.080	1116.376	1171.896
• Backfilled	212.716	450.045	712.843	938.574	998.048
• Void	235.429	118.059	130.237	177.802	173.848
External Dump	146.590	56.210	0.000	0.000	0.000
Top Soil Storage	21.690	21.690	0.000	0.000	0.000
Plantation	2.900	2.900	2.900	2.900	0.000
Roads*	23.510	23.150	21.170	19.530	18.630
Infrastructure [#]	28.550	28.550	28.550	28.550	0.697
Safety Zone/ Rationalisation area	78.864	78.864	78.864	78.864	78.864
Water Reservoir near pit/Water body	0.000	0.000	0.000	0.000	0.000
Road diversion	4.439	4.439	4.439	4.439	4.439
Diversion/ below River/Nala/canal	0.000	23.474	23.474	23.474	23.474
Total Land Requirement	754.685	807.378	1002.474	1274.130	1298.000
Undisturbed Area	543.315	490.622	295.526	23.870	0.000

Source: Mining Plan

* Progressively some area shall come under excavation;

27.85 ha shall come under excavation after 20th year

1.6 Status of Forest Diversion Proposal and Environmental Clearance:

DGPS Survey of forest area has been completed and M/s APMDC has submitted an online application for diversion of 259.399 ha of forest land vide proposal no. FP/MP/MIN/28619/2017 dated 21/08/2017 in Ministry of Environment Forest & Climate Change (MoEF&CC) of Suliyari Coal Mine vide letter no. APMDC/Coal/Suliyari/2017-18/756 dated 17.08.2017.

The Terms of Reference for the EIA/EMP study for this project as approved by Ministry of Environment, Forest & Climate Change (MoEF&CC),



Government of India vide (J-11015/35/2018-IA.II(M) dated 03-07-2018) is enclosed as **Annexure-I**. The ToR (point no. xvii) specifies that

"if the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished."

The present report includes a study on habitat utilization by endangered fauna in the study area (comprising of 10 km zone around the mine lease from the lease periphery) and measures for conservation and management of wildlife.

1.7 Demographic Pattern:

There are 42 villages in the study area including 9 villages (*Aamdand, Amraikoh, Bajaudi, Belwar, Dhirauli, Dongari, Jhalari, Majhaulipath and Sirswah*) within the core zone. Summary of demographic pattern of the study area is given in **Table 1.4**. Occupational Structure of the study is given in **Table 1.5**.

Table-1.4: Demographic profile of the study area

Item	Unit	* 2011	# 2018
No. of House Hold	No.	11373	13602
Population		53356	63814
Male	No. of people (%)	30768 (57.67%)	36799
Female		22588 (42.33%)	27015
Sex Ratio	(Female per 1000 males)	734	734
Schedule Castes	No. of people (%)	8331 (15.61%)	9964
Schedule Castes (Male)	No.	4735	5663
Schedule Castes (Female)		3596	4301
Schedule Tribes	No. of people (%)	22067 (41.36%)	26392
Schedule Tribes (Male)	No.	11349	13573
Schedule Tribes (Female)		10718	12819
Population density **	No. of people	115	137



Item	Unit	* 2011	# 2018
No. of House Hold	No.	11373	13602
	per sq. km		
Literates		25982 (48.69%)	31074
Male	No. of people (%)	18258 (70.27%)	21837
Female		7724 (29.73%)	908
Illiterates		27374 (51.31%)	32739
Male	No. of people (%)	12510 (45.70%)	14962
Female		14864 (54.30%)	17777

*Source: * Census of India (MP) Series-24; Part-XII-B, 2011; ** (study area = 465.290 sq.km)
projected population of villages under the study area. The decadal growth rate of 28% has been considered.*



Table-1.5: Details of village-wise demographic pattern

Sr. No.	Village	Total No. of Households	Total Population	Total Male	Total Female	Population SC	Population ST	Population Literate	Male Literate	Female Literate	Working Population	Main-worker Population	Cultivator Population	Agriculture Worker	Household Industry	Other Population	Marginal Population	Non-Working Population
1.	Dhaudar	1754	8910	8211	699	1324	640	6532	6206	326	8023	7165	82	45	10	7028	858	887
2.	Khanua Nawa	629	2687	1340	324	117	2028	1135	661	474	1373	1268	427	801	2	38	105	1314
3.	Khanua Khas	173	849	433	416	129	465	353	207	146	453	452	238	201	0	13	1	396
4.	Bhalaya Tola	214	1098	583	515	00	382	553	361	192	573	166	153	8	1	4	407	525
5.	Budher	40	165	82	83	00	93	71	42	29	72	72	64	7	0	1	0	93
6.	Semua	110	463	231	232	14	147	191	120	71	63	14	3	0	0	11	49	400
7.	Bandhaura	347	1642	833	809	737	369	775	488	287	573	337	105	45	7	180	236	1069
8.	Khairahi	402	1840	948	892	350	1148	770	501	269	798	31	1	2	0	28	767	1042
9.	Karsualal	569	2477	1248	1229	483	313	1374	792	582	758	610	219	230	4	157	148	1719
10.	Nagwa	1126	4501	2370	2131	1227	1869	2164	1388	776	1778	234	60	40	2	132	1544	2723
11.	Dhuni	198	950	500	450	313	224	422	263	159	282	233	117	107	2	7	49	668
12.	Churwahi	124	602	293	309	77	82	312	187	125	329	19	3	3	0	13	310	273
13.	Malga	377	1530	795	735	66	437	850	527	323	556	497	350	100	4	43	59	974
14.	Betariya	549	2583	1315	1268	1258	399	1180	730	450	1228	863	525	315	0	23	365	1355
15.	Padari Khariwar Tola	87	376	186	190	35	274	199	119	80	225	158	129	25	0	4	67	151
16.	Nadau	247	1155	602	553	179	430	496	316	180	513	341	262	10	0	69	172	642
17.	Amrai khoh	25	111	63	48	00	30	48	31	17	45	45	40	4	0	1	0	66
18.	Aamdand	35	163	91	72	00	00	76	48	28	79	78	64	12	0	2	1	84
19.	Majhauuli path	128	673	349	324	21	214	321	194	127	319	291	284	3	0	4	28	354
20.	Basi Berdaha	218	1049	518	531	0	936	333	215	118	553	28	19	0	4	5	525	496
21.	Belwar	86	385	192	193	1	60	180	108	72	165	164	115	33	3	13	1	220
22.	Dogari	541	2752	1389	1363	334	1436	1171	760	411	1372	1290	220	1038	1	31	82	1380
23.	Siraswah	15	82	41	41	6	39	50	25	25	34	34	31	3	0	0	0	48



Wildlife Conservation Plan for Suliyari Coal Mine in Singrauli Forest Division, Singrauli district, M.P. of M/s APMDC

Sr. No.	Village	Total No. of Households	Total Population	Total Male	Total Female	Population SC	Population ST	Population Literate	Male Literate	Female Literate	Working Population	Main-worker Population	Cultivator Population	Agriculture Worker	Household Industry	Other Population	Marginal Population	Non-Working Population
24.	Chalari	422	1852	940	912	244	751	877	541	336	792	565	389	130	0	46	227	1060
25.	Gorwani	148	623	336	287	23	540	212	139	73	231	210	11	196	0	3	21	392
26.	Dhirauli	236	1186	609	577	24	801	333	218	115	601	437	146	254	2	35	164	585
27.	Pondi Dol	165	780	388	392	5	400	293	182	111	439	437	58	375	0	4	2	341
28.	Phatpani	141	741	358	383	300	208	306	175	131	361	255	125	129	0	1	106	380
29.	Bajaudi	322	1645	856	789	173	636	834	518	316	849	565	423	124	0	18	284	796
30.	Ladbai	72	419	207	212	4	387	169	99	70	211	105	98	3	0	4	106	208
31.	Digwah	217	1051	544	507	122	918	471	302	169	524	245	235	0	0	10	279	527
32.	Bhaisa Buda	298	1452	710	742	231	908	532	318	214	743	728	522	203	0	3	15	709
33.	Jalpani	59	293	144	149	12	281	118	60	58	167	166	166	0	0	0	1	126
34.	Langhadol	417	1922	952	970	314	1436	667	402	265	1001	671	501	157	0	13	330	921
35.	Sajawar	196	896	445	451	80	598	286	176	110	380	362	104	253	0	5	18	516
36.	Sigrawal	121	617	314	303	58	501	252	165	87	340	0	0	0	0	0	340	277
37.	Odgadi	152	820	369	451	45	734	303	177	126	243	228	215	3	3	7	15	577
38.	Rauhal	266	1363	674	689	25	460	573	366	207	742	409	12	384	6	7	333	621
39.	Kamai	147	653	309	344	0	493	200	131	69	332	211	183	20	0	8	121	321
40.	Pondi path	338	1688	860	828	127	1363	635	416	219	1014	499	442	32	5	20	515	674
	Total	11373	53356	30768	21565	8331	22067	25982	18258	7724	28120	19984	6699	5263	51	7971	8532	25236



1.8 Cropping Pattern Adopted by Villagers:

Two seasonal crops mainly Kharif (summer crop) and Rabi (winter crop) are well developed in this region. The crops grown are Paddy, Jawar, Maize and Kodo. Besides pulses like Arhar, Mung, Mustard and Til are also grown. The main Rabi crop is also paddy which is cultivated with a short rotation and this type of crop is grown only where irrigation facilities are available during winter. In addition Alsi, Mustard, etc. are also grown during Rabi. A very significant matter is use of fertilizers and pesticides in this region are very much limited as most of the agricultural practitioners are traditional and support use of green manure.

1.9 Extent of Biotic Pressure of the villagers on the study area:

At present agriculture is not imposing any biotic pressure on the natural ecosystem particularly of this region. The population growth is a common phenomenon all over which is not restricted to only the study area. The population growth has its impact on the natural ecosystem, common to everywhere. The energy consumption by the villagers for cooking food items entirely depends on adjoining forest areas i.e. collection of fuel wood.

1.10 Number of Families depending upon the NTFP Collection:

A majority of families in the impact area belong to SC and ST, who are involved in collection of NTFP. The main NTFP (non-timber forest produce) product is *mouha* (*Madhuca indica*) flower. Apart from mouha they also collect Amla (*Embllica officinalis*), Baheda (*Terminalia bellirica*), Harra (*Terminalia chebula*) and Aam (*Mangifera indica*) fruits. Honey and *Jhuna (raal)* (resin from Sal tree) collection is infrequent in the study area. Tendu leaf collection is also practised here. However, during our survey we did not found any family entirely dependent on NTFP collection. The left over family members of the main work force (old age people, women and children) are mostly engaged in NTFP collection. All family members' joins for collection of NTFP during the lean period when no other engagement for earning their lively hood is available. Apart from NTFP, fire wood (locally called



Jhati) collection from forest is a traditional and common practice in the study area. Villagers cut the tree for small timber and firewood for their own consumption. They collect their fencing materials and materials required for agricultural tools from the surrounding forests. On an average per standard family (Father+ mother+ one child) consumes 10 kg of firewood per day.

1.11 Method of NTFP Collection:

Handpicking from the ground is the main system of collection of mohua. For collecting from the ground villagers clean the forest floor by igniting fire, which destroy the ground vegetation, as well as restrict the regeneration of tree species. Repeated use of this method adversely impact herbivore population. Due to the impact of this cleaning process of underground forest growth, the ground becomes completely barren at places to check the rainwater flow, resulting in to soil erosion.

1.12 Topography:

The block area has highly undulating and rugged topography. The northern and southern parts of the mine are occupied by hillocks with maximum elevation upto 500m AMSL. In general, the elevation of ground varies from 441.07 m AMSL as observed in borehole MS-2 to 499.23 m AMSL in borehole MS-37 located in the south-western and northern parts of the mine respectively. A few hillocks are also observed in the eastern part of the mine.

1.13 Natural Drainage Lines:

The Singrauli Coalfield is located in the drainage area of Son & Rihand Rivers. Suliyari Coal Mine has dendritic to sub-dendritic drainage pattern. The drainage of the mine is mainly controlled by westerly flowing Hurdul nala which traverses the mine in the north-eastern part and passes through the mine. Many small seasonal nallas drain into Hurdul Nala. In the north of the block, Mahan river flows outside the mine towards north. As per the topographical survey, reduced levels (RLs) on banks of Hurdul nala varies from 471.30m to 432.30m.



1.14 Climate:

This lease area exists in a tropical region where hot summer and cool winter is experienced. During summer (March to June), the temperature rises up to 42.4° C and during winter (October to February) it cools down to 7.7° C (being the preponderance of Coal mine area). The average annual rainfall is 1200 to 1500 mm which continues from mid June and lasts up to September.

1.15 Details of the Linear Infrastructures:

The Waidhan-Sidhi State Highway via Bargawan traverses 25 km north of the block and runs almost along the boundary of Moher Sub-Basin & Main Basin. A metalled road Parsona to Mara is located further east of the block. Nearest railway station Gajra-Bahra is located at a distance of 12 km from the Suliyari Coal Mine on Chopan-Singrauli-Katni line of Central Railway. Renukoot, an important industrial township & railway station is located at a distance of 125 km from the mine on Chopan-Garhwa section of eastern railway. Renukoot township is well connected with Hawrah, Tatanagar, Delhi etc. by direct train. Nearest airport Varanasi is located at a distance of 294 km from the mine.

1.16 Nearest Water Bodies:

Nearest Water bodies in the 10 km radius of the proposed coal mine are given in **Table-1.6:**

Table-1.6: Water bodies in 10 km radius of Proposed mine

Hurdul Nala -Within ML area	Biniao Nala-7.2 km, SSE
Amra Nala-2.3 km, SW	Nimji Nala- 8.1 km, SW
Sulkhia Nala-8.3 km, NW	Gopad River-8.9 km, W
Chhiraha Nala-7.1 km, S	

1.17 Description of Flora and Fauna:

A change in the composition of biotic communities is reflected by a change in the distribution pattern of natural species of flora and fauna existing in the ecosystem. The sensitivity of animal and plant species to the changes occurring in their



existing ecosystem can, therefore, be used for monitoring of Impact Assessment studies of any project.

Biological communities are the indicator environmental condition and resource of its distribution and survival. Biotic component comprises of both plants (Flora) and animal (Fauna) communities, which interact not only within and between them but also with the Abiotic components, viz. physical and chemical components of the environment. The changes in biotic community are studied in the pattern of distribution, abundance and diversity.

1.17.1. Core Zone:

1.17.1.1. Flora:

The core zone, Suliyari Coal Block, have been allotted to M/s APMDC under the allotment of Coal Mines of State Government Companies of States other than Coal bearing host states for sale of Coal under the provisions of the Coal Mines (Special Provisions) Act 2015.

The lease is located in Singrauli Coalfields (Main Basin), Village: Aamdand, Bajaudi, Belwar, Dongari, Dhirauli, Jhalari, Majhaulipath and Seerswah, Tehsil: Sarai, Singrauli district of Madhya Pradesh. The coal block is bounded between longitudes 82°18'52"E to 82°20'58"E latitude 23°55'28"N to 23°58'15"N and is covered by the Survey of India Toposheet no. 64 I/5. The details of floral diversity of Suliyari coal block (core zone) is given in **Table-1.7**.

Table-1.7: Floral Diversity within Core Zone

SN.	Scientific Name	Local Name	Family	Habit
TREES				
1.	<i>Acacia catechu</i> (L. f.) Willd	Khair	Fabaceae	Tree
2.	<i>Acacia leucophloea</i> (Roxb.) Willd.	Reunjha	Fabaceae	Tree
3.	<i>Acacia nilotica</i> (L.) Willd. ex Delile subsp. <i>indica</i> (Benth.) Brenan	Babul	Fabaceae	Tree
4.	<i>Aegle marmelos</i> (L.) Correa	Bel	Rutaceae	Tree
5.	<i>Ailanthus excelsa</i> Roxb.	Maharukh	Simaroubaceae	Tree
6.	<i>Alangium salvifolium</i> (L. f.) Wang	Ankol	Cornaceae	Tree
7.	<i>Albizia lebbbeck</i> (L.) Benth.	Kala Siris	Fabaceae	Tree
8.	<i>Artocarpus heterophyllus</i> Lam.	Kathal	Moraceae	Tree
9.	<i>Azadirachta indica</i> A. Juss.	Neem	Rutaceae	Tree



SN.	Scientific Name	Local Name	Family	Habit
10.	<i>Bauhinia malabarica</i> Roxb.	Aasta	Caesalpiniaceae	Tree
11.	<i>Bauhinia purpurea</i> L.	Kachnar	Caesalpiniaceae	Tree
12.	<i>Bauhinia racemosa</i> Lam.	Kathmahula	Caesalpiniaceae	Tree
13.	<i>Bombax ceiba</i> L.	Semal	Malvaceae	Tree
14.	<i>Boswellia serrata</i> Roxb. ex Colebr.	Salai	Burseraceae	Tree
15.	<i>Buchanania lanzan</i> Spreng.	Chironji	Anacardiaceae	Tree
16.	<i>Butea monosperma</i> (Lam.) Taub.	Palash	Fabaceae	Tree
17.	<i>Careya arborea</i> Roxb.	kumbhi	Lecythidaceae	Tree
18.	<i>Cassia fistula</i> L.	Amaltas	Caesalpiniaceae	Tree
19.	<i>Cassine glauca</i> (Rottb.) Kuntze	Jamrashi	Celastraceae	Tree
20.	<i>Catunaregam nilotica</i> (Stapf) Tirvengadam	Kharhar	Rubiaceae	Tree
21.	<i>Cordia dichotoma</i> G. Forster	Lasora	Boraginaceae	Tree
22.	<i>Corymbia citriodora</i> (Hook.) K.D.Hill & L.A.S.Johnson	Safeda	Myrtaceae	Tree
23.	<i>Dalbergia latifolia</i> Roxb.	Shisham	Fabaceae	Tree
24.	<i>Dillenia indica</i> L.	Bhavya	Dilleniaceae	Tree
25.	<i>Diospyros melanoxylon</i> Roxb.	Tendu	Ebenaceae	Tree
26.	<i>Diospyros montana</i> Roxb.	Patvan	Ebenaceae	Tree
27.	<i>Dodonaea angustifolia</i> L. f.	Khareta	Sapindaceae	Tree
28.	<i>Erythrina suberosa</i> Roxb.	Haduwa	Fabaceae	Tree
29.	<i>Ficus benghalensis</i> L.	Bargad	Moraceae	Tree
30.	<i>Ficus hispida</i> L. f.	Kathmur	Maoraceae	Tree
31.	<i>Ficus racemosa</i> L.	Gular	Moraceae	Tree
32.	<i>Ficus religiosa</i> L.	Papal	Moraceae	Tree
33.	<i>Ficus virens</i> Dryander	Pakar	Moraceae	Tree
34.	<i>Flacourtia indica</i> (Burm. f.) Merr.	Kaakai	Salicaceae	Tree
35.	<i>Gardenia gummiifera</i> L. f.	Kaapar	Rubiaceae	Tree
36.	<i>Gardenia latifolia</i> Ait.	Papra	Rubiaceae	Tree
37.	<i>Garuga pinnata</i> Roxb.	Kharpat	Burseraceae	Tree
38.	<i>Gmelina arborea</i> Roxb.	Khamer	Verbenaceae	Tree
39.	<i>Grewia tiliifolia</i> Vahl	Dhankat	Tiliaceae	Tree
40.	<i>Haldina cordifolia</i> (Roxb.) Ridsd.	Haldu	Rubiaceae	Tree
41.	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G. Don	Kutki	Apocynaceae	Tree
42.	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Chilbil	Ulmaceae	Tree
43.	<i>Kydia calycina</i> Roxb.	Barunga	Malvaceae	Tree
44.	<i>Lagerstroemia parviflora</i> Roxb.	Sendha	Lythraceae	Tree
45.	<i>Lannea coromandelica</i> (Houtt.) Merr.	Gunja	Anacardiaceae	Tree
46.	<i>Madhuca longifolia</i> (J. Koenig) Macbr. var. <i>latifolia</i> (Roxb.) Chevalier	Mahua	Sapotaceae	Tree
47.	<i>Mallotus philippensis</i> (Lam.) Muell. Arg.	Sindoor	Euphorbiaceae	Tree
48.	<i>Mangifera indica</i> L.	Aam	Anacardiaceae	Tree
49.	<i>Manilkara hexandra</i> (Roxb.) Dubard	Khirmi	Sapotaceae	Tree
50.	<i>Melia azedarach</i> L.	Bakain	Meliaceae	Tree
51.	<i>Mitragyna parvifolia</i> (Roxb.) Korth.	Kaima	Rubiaceae	Tree
52.	<i>Moringa oleifera</i> Lam.	Sainjna	Moringaceae	Small Tree
53.	<i>Morus alba</i> L.	Sehtut	Moraceae	Small



SN.	Scientific Name	Local Name	Family	Habit
				Tree
54.	<i>Phoenix sylvestris</i> (L.) Roxb.	Khajur	Arecaceae	Tree
55.	<i>Phyllanthus emblica</i> L.	Aonla	Euphorbiaceae	Tree
56.	<i>Polyalthia longifolia</i> Sonn.	Ashok	Annonaceae	Small Tree
57.	<i>Pongamia pinnata</i> (L.) Pierre	Karanj	Fabaceae	Tree
58.	<i>Pterocarpus marsupium</i> Roxb.	Bijasal	Fabaceae	Tree
59.	<i>Salix tetrasperma</i> Roxb.	Bansa	Salicaceae	Tree
60.	<i>Schleichera oleosa</i> (Lour.) Oken.	Kusum	Sapindaceae	Tree
61.	<i>Semecarpus anacardium</i> L. f.	Bhilma	Anacardiaceae	Tree
62.	<i>Shorea robusta</i> Gaertn. f.	Sal	Dipterocarpaceae	Tree
63.	<i>Sterculia urens</i> Roxb.	Kullu	Sterculiaceae	Tree
64.	<i>Sterculia villosa</i> Roxb. ex Sm.	Udaal	Sterculiaceae	Tree
65.	<i>Strychnos nux-vomica</i> L.	Kochila	Loganiaceae	Tree
66.	<i>Syzygium cumini</i> (L.) Skeels	Jamun	Myrtaceae	Tree
67.	<i>Tamarindus indica</i> L.	Imli	Caesalpiniaceae	Tree
68.	<i>Tectona grandis</i> L. f.	Sagaun	Verbenaceae	Tree
69.	<i>Terminalia alata</i> Heyne ex Roth	Sanja	Combretaceae	Tree
70.	<i>Terminalia arjuna</i> (Roxb.ex DC.) Wight & Arn.	Arjun	Combretaceae	Tree
71.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bahera	Combretaceae	Tree
72.	<i>Terminalia catappa</i> L.	Badam	Combretaceae	
73.	<i>Terminalia chebula</i> Retz.	Harra	Combretaceae	Tree
74.	<i>Wrightia tinctoria</i> R. Br.	Dudhi	Apocynaceae	Tree
SHRUBS				
1.	<i>Abelmoschus manihot</i> (L.) Medik.	Jangali Bhindi	Malvaceae	Shrub
2.	<i>Abutilon indicum</i> (L.) Sw.	Kanghi	Malvaceae	Shrub
3.	<i>Adhatoda zeylanica</i> Medik.	Adua	Acanthaceae	Shrub
4.	<i>Alangium salvifolium</i> (L. f.) Wang	Ankola	Cornaceae	Shrub
5.	<i>Annona squamosa</i> L.	Sitaphal	Annonaceae	Shrub
6.	<i>Calotropis gigantea</i> (L.) R. Br.	Safed Aak	Asclepiadaceae	Shrub
7.	<i>Calotropis procera</i> (Aiton) R. Br.	Gulabi Aak	Asclepiadaceae	Shrub
8.	<i>Carica papaya</i> L.	Papita	Caricaceae	Shrub
9.	<i>Carissa opaca</i> Stapf ex Haines	Karaunda	Apocynaceae	Shrub
10.	<i>Carissa spinarum</i> L.	Jangali Karaunda	Apocynaceae	Shrub
11.	<i>Cassia occidentalis</i> L.	Kasaundhi	Caesalpiniaceae	Shrub
12.	<i>Catunaregam nilotica</i> (Stapf) Tirvengadam	Kharhar	Rubiaceae	Shrub
13.	<i>Citrus limon</i> (L.) Osbeck	Neebu	Rutaceae	Shrub
14.	<i>Clerodendrum multiflorum</i> (Burm. f.) Kuntze	Bharangi	Verbenaceae	Shrub
15.	<i>Combretum nanum</i> Buch.- Ham. ex D. Don	Bilaura, Medila	Combretaceae	Shrub
16.	<i>Euphorbia nivulia</i>	Sehund	Euphorbiaceae	Shrub
17.	<i>Flemingia chappar</i> Buch. Ham. ex Benth.	Galphula	Fabaceae	Shrub
18.	<i>Flemingia nana</i> Roxb.	Gursankari	Tiliaceae	Shrub
19.	<i>Flemingia paniculata</i> Wall. ex Benth.	Ramdant	Fabaceae	Shrub
20.	<i>Helicteres isora</i> L.	Marodfali	Sterculiaceae	Shrub



SN.	Scientific Name	Local Name	Family	Habit
21.	<i>Hibiscus rosa-sinensis</i> L.	Gudhal	Malvaceae	Shrub
22.	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G. Don	Kutki, Kurriya	Apocynaceae	Shrub
23.	<i>Indigofera tinctoria</i> L.	Neel	Fabaceae	Shrub
24.	<i>Ixora pavetta</i> Andrews	Khujja	Rubiaceae	Shrub
25.	<i>Jatropha curcas</i> L.	Ratanjyot	Euphorbiaceae	Shrub
26.	<i>Lawsonia inermis</i> L.	Maheri, Mehndi	Lythraceae	Shrub
27.	<i>Murraya paniculata</i> (L.) Jacq.	Aathil	Rutaceae	Shrub
28.	<i>Nyctanthes arbor-tristis</i> L.	Harsingar	Oleaceae	Shrub
29.	<i>Phoenix acaulis</i> Buch.- Ham. ex Roxb.	Bhui Khajur	Arecaceae	Shrub
30.	<i>Phyllanthus reticulatus</i> Poir.	Panjoli	Euphorbiaceae	Shrub
31.	<i>Ricinus communis</i> L.	Rendi	Euphorbiaceae	Shrub
32.	<i>Thespesia lampas</i> (Cav.) Dalz. & Gibs.	Chaumukhia,	Malvaceae	Shrub
33.	<i>Vitex negundo</i> L.	Nirgundi	Verbenaceae	Shrub
34.	<i>Woodfordia fruticosa</i> (L.) Kurz	Dhavai	Lythraceae	Shrub
35.	<i>Ziziphus mauritiana</i> Lam.	Ber	Rhamnaceae	Shrub
36.	<i>Ziziphus oenoplia</i> (L.) Mill.	Barari	Rhamnaceae	Shrub
HERBS				
1.	<i>Achyranthes aspera</i> L.	Apamarg	Amaranthaceae	Herb
2.	<i>Acorus calamus</i> L.	Buch	Araceae	Herb
3.	<i>Aerva lanata</i> (L.) Juss. ex Schult.	Gorakhganja	Amaranthaceae	Herb
4.	<i>Ageratum conyzoides</i> L.	Agreatum	Asteraceae	Herb
5.	<i>Allium leptophyllum</i> L.	Van Lehsun	Liliaceae	Herb
6.	<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	Gudari sag	Amaranthaceae	Herb
7.	<i>Alysicarpus monilifer</i> (L.) DC.	Alisicarpus	Fabaceae	Herb
8.	<i>Andrographis paniculata</i> (Burm. f.) Wall. ex Nees	Kalmegh	Acanthaceae	Herb
9.	<i>Anisomeles indica</i> (L.) Kuntze 4803	Jangali Tulsi	Lamiaceae	Herb
10.	<i>Argemone mexicana</i> L.	Swarnchhiri (Peeli)	Papaveraceae	Herb
11.	<i>Bacopa monnieri</i> (L.) Wettst.	Brahmi	Scrophulariaceae	Herb
12.	<i>Bacopa procumbens</i> (Mill.) Greenm.	Jal-Neem	Scrophulariaceae	Herb
13.	<i>Boerhavia diffusa</i> L.	Raktpunarwa	Nyctaginaceae	Herb
14.	<i>Bulbostylis barbata</i> (Rottb.) C.B. Clarke		Cyperaceae	Sedges
15.	<i>Cassia tora</i> L.	Chakramard (Choukad)	Caesalpinaceae	Herb
16.	<i>Catharanthus roseus</i> (L.) G. Don	Sadabahar	Apocynaceae	Herb
17.	<i>Centella asiatica</i> (L.) Urban	Mandukparni	Apiaceae	Herb
18.	<i>Chlorophytum tuberosum</i> (Roxb.) Baker	Safed Musli	Liliaceae	Herb
19.	<i>Cleome gynandra</i> L.	Hurhur	Capparaceae	Herb
20.	<i>Commelina benghalensis</i> L.	Kanchara	Commelinaceae	Herb
21.	<i>Commelina diffusa</i> Burm. f.	Kanshura	Commelinaceae	Herb
22.	<i>Convolvulus prostratus</i> Forssk.	Shankpushpi	Convolvulaceae	Herb
23.	<i>Crotalaria prostrata</i> Rottler ex Willd.	Kartik Jhumka	Fabaceae	Herb
24.	<i>Curcuma angustifolia</i> Roxb.	Tikhur	Zingiberaceae	Herb
25.	<i>Curculigo orchioides</i> Gaertn.	Kali Musli	Hypoxidaceae	Herb
26.	<i>Curcuma aromatica</i> Salisb.	Van Haldi	Zingiberaceae	Herb
27.	<i>Cyperus rotundus</i> L.	Motha	Cyperaceae	Sedges
28.	<i>Dentella repens</i> (L.) J. R. & G. Foret.	Parpat	Rubiaceae	herb



SN.	Scientific Name	Local Name	Family	Habit
29.	<i>Desmodium triflorum</i> (L.) DC.	Desmodium	Fabaceae	Herb
30.	<i>Eclipta prostrata</i> (L.) L.	Bhringraj	Asteraceae	Herb
31.	<i>Elytraria acaulis</i> (L. f.) Lindau	Sahasramuniya	Acanthaceae	herb
32.	<i>Euphorbia hirta</i> L.	Doodhi	Euphorbiaceae	Herb
33.	<i>Evolvulus alsinoides</i> (L.) L.	Sakhpushpi	Convolvulaceae	Herb
34.	<i>Fimbristylis dipsacea</i> (Rottb.) C.B. Clarke	NA	Cyperaceae	Sedges
35.	<i>Fimbristylis falcata</i> (Vahl) Kunth	Hathi Paw	Cyperaceae	Sedges
36.	<i>Fumaria indica</i> (Hassk.) Pugsley	Pitpapa	Papaveraceae	Herb
37.	<i>Heliotropium indicum</i> L.	Hastimundi	Boraginaceae	Herb
38.	<i>Ipomoea eriocarpa</i> R.Br.	Besharam	Convolvulaceae	Herb
39.	<i>Justicia quinqueangularis</i> Koenig ex Roxb.	Justicia	Acanthaceae	Herb
40.	<i>Leucas aspera</i> (Willd.) Linke	Bhondaki	Lamiaceae	Herb
41.	<i>Melilotus indica</i> (L.) All.	Van Maithi	Fabaceae	herb
42.	<i>Ocimum basilicum</i> L.	Ban Tulsi	Lamiaceae	Herb
43.	<i>Oxalis corniculata</i> L.	Teenpati (Chingeri)	Oxalidaceae	Herb
44.	<i>Oxalis corniculata</i> L.	Teen Patti	Oxalidaceae	Herb
45.	<i>Oxalis richardiana</i> Babu	Teenpatti	Oxalidaceae	Herb
46.	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Bhuin Anwla	Euphorbiaceae	Herb
47.	<i>Physalis minima</i> L.	Chirponta	Solanaceae	Herb
48.	<i>Polygonum barbatum</i> L. subsp. <i>barbatum</i>	Polygonum	Polygonaceae	Herb
49.	<i>Polygonum glabrum</i> Willd.	Polygonum		Herb
50.	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Sarpandha	Apocynaceae	Herb
51.	<i>Rungia pectinata</i> (L.) Nees	Rungia	Acanthaceae	Herb
52.	<i>Sida acuta</i> Burm. f.	Mahabala	Malvaceae	Herb
53.	<i>Sida cordifolia</i> L.	Kharenti	Malvaceae	Herb
54.	<i>Sida rhombifolia</i> L.	Atibala	Malvaceae	Herb
55.	<i>Solanum nigrum</i> L.	makoya	Solanaceae	Herb
56.	<i>Solanum virginianum</i> L.	Katai, Bhatkataiya	Solanaceae	Herb
57.	<i>Tridax procumbens</i> L.	Khal Muriya	Asteraceae	Herb
58.	<i>Triumfetta pentandra</i> A. Rich.	Chipki	Tiliaceae	Herb
59.	<i>Triumfetta rhomboidea</i> Jacq.	Chipki	Tiliaceae	Herb
60.	<i>Xanthium strumarium</i> L. Syn. <i>Xanthium indicum</i> Koen.	Gokharu	Asteraceae	Herb
GRASSES				
1.	<i>Aristida adscensionis</i> L.	Aristida	Poaceae	Grasses
2.	<i>Bambusa bambos</i> (L) Voss	Bamboo	Poaceae	Grasses
3.	<i>Bothriochloa pertusa</i> (L.) A. Camus	Bothriochloa	Poaceae	Grasses
4.	<i>Cenchrus ciliaris</i> L.	Cenchrus	Poaceae	Grasses
5.	<i>Chrysopogon serrulatus</i> Trin.	Chrysopogon	Poaceae	Grasses
6.	<i>Cynodon dactylon</i> (L.) Pers.	Doob	Poaceae	Grasses
7.	<i>Dichanthium annulatum</i> (Forssk.) Stapf	Dichanthium	Poaceae	Grasses
8.	<i>Digitaria stricta</i> Roth ex Roem. & Schult.	Digitaria	Poaceae	Grasses
9.	<i>Eragrostis amabilis</i> (L.) Wight & Arn. Syn. <i>Eragrostis tenella</i> (L.) P. Beauv. ex	Eragrostis	Poaceae	Grasses



SN.	Scientific Name	Local Name	Family	Habit
	<i>Roem. & Schult.</i>			
10.	<i>Heteropogon contortus</i> (L.) P. Beauv.	hetropogan	Poaceae	Grasses
11.	<i>Imperata cylindrica</i> (L.) P. Beauv.	Imperata	Poaceae	Grasses
12.	<i>Oryza minuta</i> J.Presl	Jangali Dhan	Poaceae	Grasses
13.	<i>Saccharum spontaneum</i> L.	Kans	Poaceae	Grasses
14.	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Bans	Poaceae	Grasses
CLIMBERS				
1.	<i>Abrus precatorius</i> L.	Kali Ghughchi	Fabaceae	Climber
2.	<i>Asparagus racemosus</i> Willd.	Shatawar	Liliaceae	Climber
3.	<i>Butea superba</i> Roxb.	Palas Bel	Fabaceae	Climber
4.	<i>Cissus quadrangularis</i> L.	Hadjoood	Vitaceae	Climber
5.	<i>Coccinia grandis</i> (L.) Voigt.	Kundururu	Cucurbitaceae	Climber
6.	<i>Combretum roxburghii</i> Spreng.	Bilora, Medila	Combretaceae	Climber
7.	<i>Cryptolepis buchanani</i> Roem. & Schult.	Nagbel	Asclepiadaceae	Climber
8.	<i>Gymnema sylvestre</i> (Retz.) R. Br. ex Schult.	Gudmar	Asclepiadaceae	Climber
9.	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook. f. & Thoms.	Giloya	Menispermaceae	Climber
EPIPHYTES				
1.	<i>Cuscuta reflexa</i> Roxb.	Amarbel	Convolvulaceae	Epiphyte
2.	<i>Vanda tessellata</i> (Roxb.) Hook. ex G. Don	Vanda	Orchidaceae	Epiphyte

(Source: Primary Survey Data)

1.17.1.2. Fauna:

The Fauna of a particular region indicates environmental conditions and the well being of the population residing in the region. Faunal studies help to understand the well being of the natural systems and indicate functioning of ecosystem. It helps to monitor pollution levels, biological richness or heritage quality, habitat change quantifying threatened species. The faunal components such as Arthropods, Molluscs, Pisces, Birds and Mammals are very sensitive to any change in the ecosystem, therefore are very good indicators of the health of an ecosystem. The details of faunal diversity of Suliyari coal block (Core Zone) is given in Table-1.8.

Table-1.8: Faunal Diversity within Core Zone

Sl. No.	Common Name	Scientific Name	Schedule as per WPA, 1972	Conservation Status as per IUCN
Mammals				
1	Spotted Deer	<i>Axis axis</i>	III	LC #
2	Bandicoot Rat	<i>Bandicota bengalensis</i>	V	LC #



Sl. No.	Common Name	Scientific Name	Schedule as per WPA, 1972	Conservation Status as per IUCN
3	Jackal	<i>Canis aureus</i>	II	LC #
4	Indian Wolf	<i>Canis lupus callipes</i>	I	LC #
5	Short Nosed Fruit Bat	<i>Cynopterus sphinx</i>	V	LC #
6	Wild Cat	<i>Felis chaus</i>	II	LC #
7	Five striped Palm squirrel	<i>Funambulus pennanti</i>	IV	LC #
8	Mongoose	<i>Herpestres edwardsii</i>	IV	LC #
9	Striped Hyena	<i>Hyaena hyaena</i>	III	NT #
10	Indian Porcupine	<i>Hystrix indica</i>	IV	LC #
11	Hare	<i>Lepus nigricollis</i>	IV	LC #
12	Rhesus Macaque	<i>Macaca mulatta</i>	II	LC #
13	Indian Pangolin	<i>Manis crassicaudata</i>	I	EN #
14	Honey Badger	<i>Mellivora capensis</i>	I	LC #
15	Sloth Bear	<i>Melursus ursinus</i>	I	Vu #
16	Barking Deer	<i>Muntiacus muntjak</i>	III	LC #
17	Indian Field Mouse	<i>Mus booduga</i>	V	LC #
18	Leopard	<i>Panthera pardus</i>	I	Vu #
19	Hedgehog	<i>Paraechinus micropus</i>	IV	LC #
20	Indian Pipistrelle	<i>Pipistrellus mimus</i>	IV	LC #
21	Flying Fox	<i>Pteropus giganteus</i>	V	LC #
22	Common house Rat	<i>Rattus rattus</i>	V	LC #
23	Hanuman Langur	<i>Semnopithecus entellus</i>	II	LC #
24	Musk Shrew	<i>Suncus murinus</i>	-	LC #
25	Wild Pig	<i>Sus scrofa</i>	III	LC #
26	Four-horned antelope	<i>Tetracerus quadricornis</i>	I	Vu #
27	Common Fox	<i>Vulpes bengalensis</i>	II	LC #
28	Indian Civet	<i>Viverricula indica</i>	II	LC #
29	Barking Deer	<i>Muntiacus muntjak</i>	III	LC #
Birds				
1	Shikra	<i>Accipter badius</i>	IV	LC #
2	Jungle Mynah	<i>Acridotheres fuscus</i>	IV	LC #
3	Common Mynah	<i>Acridotheres tristis</i>	IV	LC #
4	Common Iora	<i>Aegithina tiphia</i>	IV	LC #
5	Common Kingfisher	<i>Alcedo atthis</i>	IV	LC #
6	Quaker Babbler	<i>Alcippe poioicephala</i>	IV	LC #
7	Rufous-tailed Finch-lark	<i>Ammomanes phoenicurus</i>	IV	LC #
8	Open Billed Stork	<i>Anastomus oscitans</i>	IV	LC #
9	House swift	<i>Apus affinis</i>	IV	LC #
10	Tawny Eagle	<i>Aquila rapax</i>	I	VU #
11	Pond Heron	<i>Ardeola grayii</i>	IV	LC #



Sl. No.	Common Name	Scientific Name	Schedule as per WPA, 1972	Conservation Status as per IUCN
12	Ashy Swallow Shrike	<i>Artamus fuscus</i>	-	LC #
13	Eagle Owl	<i>Bubo bubo</i>	IV	LC #
14	Cattle Egret	<i>Bubulcus ibis</i>	IV	LC #
15	Common Indian Nightjar	<i>Caprimulgus asiaticus</i>	IV	LC #
16	Crow Pheasant	<i>Centropus sinensis</i>	IV	LC #
17	Crow Pheasant	<i>Centropus sinensis</i>	IV	LC #
18	Golden-fronted Leaf-bird	<i>Chloropsis aurifrons</i>	IV	LC #
19	Gold-mantled Leafbird	<i>Chloropsis chochinensis</i>	IV	LC #
20	Pied Crested Cuckoo	<i>Clamator jacobius</i>	IV	LC #
21	Blue Rock Pigeon	<i>Columba livia</i>	IV	LC #
22	White Rumped Shama	<i>Copsychus malabaricus</i>	IV	LC #
23	Magpie Robin	<i>Copsychus saularis</i>	IV	LC #
24	Indian Roller	<i>Coracias benghalensis</i>	IV	LC #
25	Large Cuckoo-shrike	<i>Coracina novaehollandiae</i>	-	LC #
26	Jungle Crow	<i>Corvus marorrhynchos</i>	IV	LC #
27	Common Crow	<i>Corvus splendens</i>	V	LC #
28	Common Quail	<i>Coturnix coturnix</i>	IV	LC #
29	Brain-fever bird	<i>Cuculus varius</i>	IV	LC #
30	Indian Tree Pie	<i>Dendrocitta vagabunda</i>	IV	LC #
31	Tickell's Flower Pecker	<i>Dicaeum erythrarhynchos</i>	IV	LC #
32	Fire-breasted Flower Pecker	<i>Dicaeum ignipectus</i>	IV	LC #
33	Drongo	<i>Dicrurus adsimilis</i>	IV	LC #
34	White-bellied Drongo	<i>Dicrurus caerulescens</i>	IV	LC #
35	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	IV	LC #
36	Lesser Golden Backed Woodpecker	<i>Dinopium benghalense</i>	IV	LC #
37	Black Winged Kite	<i>Elanus caeruleus</i>	IV	LC #
38	Ashy-crowned Finch-lark	<i>Eremopterix grisea</i>	IV	LC #
39	Red Munia	<i>Estrilda amandava</i>	IV	LC #
40	Koel	<i>Eudynamis scolopacea</i>	IV	LC #
41	Lesser Kestrel	<i>Falco naumanni</i>	IV	LC #
42	Common Kestrel	<i>Falco tinnunculus</i>	IV	LC #
43	Black Partridge	<i>Francolinus francolinus</i>	IV	LC #
44	Painted Partridge	<i>Francolinus pictus</i>	IV	LC #
45	Grey Partridge	<i>Francolinus pondicerianus</i>	IV	LC #
46	Red Spurfowl	<i>Galloperdix spadicea</i>	IV	LC #
47	Red Jungle Fowl	<i>Gallus gallus</i>	IV	LC #
48	Jungle Owlet	<i>Glaucidium radiatum</i>	IV	LC #
49	White Rumped Vulture	<i>Gyps bengalensis</i>	I	CR #
50	White Breasted Kingfisher	<i>Halcyon smyrnensis</i>	IV	LC #



Sl. No.	Common Name	Scientific Name	Schedule as per WPA, 1972	Conservation Status as per IUCN
51	Heartspotted Woodpecker	<i>Hemicircus canente</i>	IV	LC #
52	Indian Cliff Swallow	<i>Hirundo fluvicola</i>	-	LC #
53	Wire-tailed Swallow	<i>Hirundo smithii</i>	-	LC #
54	Rufous Backed Shrike	<i>Lanius schach</i>	-	LC #
55	Black-headed Munia	<i>Lonchura malacca</i>	IV	LC #
56	Coppersmith Barbet	<i>Megalaima haemacephala</i>	IV	LC #
57	Crested Bunting	<i>Melophus lathami</i>	IV	LC #
58	Small Green Bee-eater	<i>Merops orientalis</i>	IV	LC #
59	Blue tailed Bee-eater	<i>Merops philippinus</i>	IV	LC #
60	Blue cheeked Bee-eater	<i>Merops superciliosus</i>	IV	LC #
61	Pariah Kite	<i>Milvus migrans</i>	IV	LC #
62	Blacknaped Flycatcher	<i>Monarcha azurea</i>	IV	LC #
63	Blue headed Rock Thrush	<i>Monticola cinclorhynchus</i>	IV	LC #
64	Pied Wagtail	<i>Motacilla alba</i>	-	LC #
65	Grey Wagtail	<i>Motacilla cinerea</i>	-	LC #
66	Yellow Wagtail	<i>Motacilla flava</i>	-	LC #
67	Large Pied Wagtail	<i>Motacilla maderaspatensis</i>	-	LC #
68	Tickell's Blue Flycatcher	<i>Muscicapa tickelliae</i>	IV	LC #
69	Purple Sunbird	<i>Nectarinia asiatica</i>	IV	LC #
70	Crested Hawk Eagle	<i>Nisaetus cirrhatus</i>	I	LC #
71	Golden Oriole	<i>Oriolus oriolus</i>	IV	LC #
72	Black Headed Oriole	<i>Oriolus xanthornus</i>	IV	LC #
73	Tailor Bird	<i>Orthotomus sutorius</i>	IV	LC #
74	Grey Tit	<i>Parus major</i>	IV	LC #
75	Yellow-cheeked Tit	<i>Parus xanthogenys</i>	IV	LC #
76	House Sparrow	<i>Passer domesticus</i>	IV	LC #
77	Pea-fowl	<i>Pavo cristatus</i>	I	LC #
78	Jungle Bush Quail	<i>Perdica asiatica</i>	IV	LC #
79	Small Minivet	<i>Pericrocotus cinnamomeus</i>	IV	LC #
80	Scarlet Minivet	<i>Pericrocotus flammmeus</i>	IV	LC #
81	Black Redstart	<i>Phoenicurus ochruros</i>	IV	LC #
82	Yellow-fronted Pied Woodpecker	<i>Picooides maharattensis</i>	IV	LC #
83	Indian Pitta	<i>Pitta brachyura</i>	IV	LC #
84	Weaver Bird	<i>Ploceus philippinus</i>	IV	LC #
85	Slaty-headed Scimitar Babbler	<i>Pomatorhinus horsfieldi schisticeps</i>	IV	LC #
86	Ashy Wren-warbler	<i>Prinia socialis</i>	IV	LC #
87	Blossom headed Parakeet	<i>Psittacula cyanocephala</i>	IV	LC #
88	Large Indian Parakeet	<i>Psittacula eupatria</i>	IV	NT #



Sl. No.	Common Name	Scientific Name	Schedule as per WPA, 1972	Conservation Status as per IUCN
89	Rose Ringed Parakeet	<i>Psittacula krameri</i>	IV	LC #
90	Red Vent Bulbul	<i>Pycnonotus cafer</i>	IV	LC #
91	Red Whiskered Bulbul	<i>Pycnonotus jocosus</i>	IV	LC #
92	White-throated Fantail Flycatcher	<i>Rhipidura albicollis</i>	IV	LC #
93	White-browed Fantail Flycatcher	<i>Rhipidura aureola</i>	IV	LC #
94	Pied Bush-chat	<i>Saxicola caprata</i>	IV	LC #
95	Collared Bush-chat	<i>Saxicola torquata</i>	IV	LC #
96	Indian Robin	<i>Saxicoloides fulicata</i>	IV	LC #
97	Chestnut-bellied Nuthatch	<i>Sitta castanea</i>	-	LC #
98	Velvet-fronted Nuthatch	<i>Sitta frontalis</i>	-	LC #
99	Crested Serpent Eagle	<i>Spilornis cheela</i>	-	LC #
100	Spotted Dove	<i>Streptopelia chinensis</i>	IV	LC #
101	Indian Ring Dove	<i>Streptopelia decaocto</i>	IV	LC #
102	Red Turtle Dove	<i>Streptopelia tranquebarica</i>	IV	LC #
103	Pied Mynah	<i>Sturnus contra</i>	IV	LC #
104	Grey-Headed Mynah	<i>Sturnus malabaricus</i>	IV	LC #
105	Black-headed Mynah	<i>Sturnus pagodarum</i>	IV	LC #
106	Rosy Pastor	<i>Sturnus roseus</i>	IV	LC #
107	Paradise Flycatcher	<i>Terpsiphone paradisi</i>	IV	LC #
108	Black Headed Ibis	<i>Threskiornis melanocephalus</i>	IV	NT#
109	Indian Grey Hornbill	<i>Tokus birostris</i>	-	LC #
110	Yellow-footed Green Pigeon	<i>Treron phoenicoptera</i>	IV	LC #
111	Jungle Babbler	<i>Turdoides striatus</i>	IV	LC #
112	Hoopoe	<i>Upupa epops</i>	IV	LC #
113	Red Wattled Lapwing	<i>Vannellus indicus</i>	IV	LC #
114	Red Wattled Lapwing	<i>Vannellus indicus</i>	IV	LC #
Reptiles				
1	Green Vine Snake	<i>Ahaetulla nasuta</i>	IV	LC #
2	Garden Lizard	<i>Calotes versicolor</i>	-	-
3	Russel's Viper	<i>Daboia russelii</i>	IV	LC #
4	Geckos	<i>Hemidactylus sps.</i>	IV	-
5	Common Skink	<i>Mabuya carinata</i>	-	LC #
6	Indian Cobra	<i>Naja naja</i>	IV	LC #
7	Yellow Rat Snake	<i>Ptyas mucosa</i>	II	-
8	Indian Python	<i>Python morulus</i>	I	Vu #
9	Bengal Monitor Lizard	<i>Varanus bengalensis</i>	I	LC #
Fishes				
1	Chela	<i>Chela sp.</i>	NA	NA



Sl. No.	Common Name	Scientific Name	Schedule as per WPA, 1972	Conservation Status as per IUCN
2	Magur	<i>Clarias batrachus</i>	NA	NA
3	Punti	<i>Barbus sp.</i>	NA	NA
4	Snakehead	<i>Ophiocephalus punctatus</i>	NA	NA
Butterflies				
1.	Common Emigrant	<i>Catopsilia pomona</i>	NA	NA
2.	Stripped Tiger	<i>Danaus genutia</i>	NA	NA
3.	Common crow	<i>Euploea core</i>	NA	NA
4.	Common Grass Yellow	<i>Eurema hecabe</i>	NA	NA
5.	White orange tip	<i>Ixias marianne</i>	NA	NA
# LC – Least Concern; NT – Near Threatened; Vu – Vulnerable; EN – Endangered; CR – Critically Endangered				

1.17.2. Buffer Zone:

1.17.2.1. Flora:

The northern and southern parts of the mine are occupied by hillocks with maximum elevation upto 500m AMSL. The study area best represents as moist region. The vegetation is fairly dense and occurs on crystalline rocks and yellow loam soils. Soil and topography vary together. It can be helpful to differentiate three subtypes of topography; hilltops and plateaus, lower hill slopes and valley bottom. There is light shrub and weed growth under the forest canopy. The vegetation mainly consists of tall tress of *Shorea robusta*, *Tectona grandis*, *Terminalia tomentosa*, *Madhuca indica*. The vegetation can be described as moist peninsular Sal forest.

The total species of plants are indicating the floristic richness of the area. However, these species are not uniform in their distribution. The most dominant genera were *Shorea*, *Tectona*, *Bahuinia*, *Cassia*, *Ficus*, *Euphorbia* followed by *Acacia*, *Anogessus*, *Lagerstromia*, *Bamboo*, *Jatropha* and *Madhuca*.

There is predominance of herbs and trees followed by shrubs, climbers, epiphytes, grasses and sedges. The common climbers are *Butea superba*, *Combretum decandrum*, and *Bauhinia vahli*. Only two Gymnosperms were noticed which are



cultivated in gardens. The Pteridophytes represented reasonably good number along with Bryophytes. They are very much sensitive to humidity and moisture. List of plant species as reported according to the Working Plans of **Suliyari Forest Division** has been studied out of which the main associates of Sal as observed in the field are furnished below in **Table No. 1.9**.

Table-1.9: Floral Diversity within buffer zone of Proposed coal mine

SN.	Scientific Name	Local Name	Family	Habit
TREES				
1.	<i>Acacia catechu</i> (L. f.) Willd	Khair	Fabaceae	Tree
2.	<i>Acacia leucophloea</i> (Roxb.) Willd.	Reunjha	Fabaceae	Tree
3.	<i>Acacia nilotica</i> (L.) Willd. ex Delile subsp. <i>indica</i> (Benth.) Brenan	Babul	Fabaceae	Tree
4.	<i>Aegle marmelos</i> (L.) Correa	Bel	Rutaceae	Tree
5.	<i>Ailanthus excelsa</i> Roxb.	Maharukh	Simaroubaceae	Tree
6.	<i>Alangium salvifolium</i> (L. f.) Wang	Ankol	Cornaceae	Tree
7.	<i>Albizia lebeck</i> (L.) Benth.	Kala Siris	Fabaceae	Tree
8.	<i>Albizia odoratissima</i> (L. f.) Benth.	Chichwa	Fabaceae	Tree
9.	<i>Albizia procera</i> (Roxb.) Benth.	Safed Siris	Fabaceae	Tree
10.	<i>Anogeissus latifolia</i> (Roxb.ex DC.) Wall. ex Bedd.	Dhawda	Combretaceae	Tree
11.	<i>Artocarpus heterophyllus</i> Lam.	Kathal	Moraceae	Tree
12.	<i>Azadirachta indica</i> A. Juss.	Neem	Rutaceae	Tree
13.	<i>Bauhinia malabarica</i> Roxb.	Aasta	Caesalpiniaceae	Tree
14.	<i>Bauhinia purpurea</i> L.	Kachnar	Caesalpiniaceae	Tree
15.	<i>Bauhinia racemosa</i> Lam.	Kathmahula	Caesalpiniaceae	Tree
16.	<i>Bombax ceiba</i> L.	Semal	Malvaceae	Tree
17.	<i>Boswellia serrata</i> Roxb. ex Colebr.	Salai	Burseraceae	Tree
18.	<i>Bridelia retusa</i> (L.) Spreng.	Kasai	Euphorbiaceae	Tree
19.	<i>Buchanania lanzan</i> Spreng.	Chironji	Anacardiaceae	Tree
20.	<i>Butea monosperma</i> (Lam.) Taub.	Palash	Fabaceae	Tree
21.	<i>Careya arborea</i> Roxb.	kumbhi	Lecythidaceae	Tree
22.	<i>Cassia fistula</i> L.	Amaltas	Caesalpiniaceae	Tree
23.	<i>Cassine glauca</i> (Rottb.) Kuntze	Jamrashi	Celastraceae	Tree
24.	<i>Catunaregam nilotica</i> (Stapf) Tirvengadum	Kharhar	Rubiaceae	Tree
25.	<i>Chloroxylon swietenia</i> DC	Bhirra	Rutaceae	Tree
26.	<i>Cordia dichotoma</i> G. Forster	Lasora	Boraginaceae	Tree
27.	<i>Cordia obliqua</i> Willd.	Lasora	Boraginaceae	Tree
28.	<i>Corymbia citriodora</i> (Hook.) K.D.Hill & L.A.S.Johnson	Safeda	Myrtaceae	Tree
29.	<i>Dalbergia latifolia</i> Roxb.	Shisham	Fabaceae	Tree
30.	<i>Dillenia indica</i> L.	Bhavya	Dilleniaceae	Tree
31.	<i>Dillenia pentagyna</i> Roxb	Karkat	Dilleniaceae	Tree
32.	<i>Diospyros melanoxylon</i> Roxb.	Tendu	Ebenaceae	Tree
33.	<i>Diospyros montana</i> Roxb.	Patvan	Ebenaceae	Tree
34.	<i>Dodonaea angustifolia</i> L. f.	Khareta	Sapindaceae	Tree
35.	<i>Ehretia laevis</i> Roxb.	Charmor	Boraginaceae	Tree



SN.	Scientific Name	Local Name	Family	Habit
36.	<i>Erythrina suberosa</i> Roxb.	Haduwa	Fabaceae	Tree
37.	<i>Ficus benghalensis</i> L.	Bargad	Moraceae	Tree
38.	<i>Ficus hispida</i> L. f.	Kathmur	Maoraceae	Tree
39.	<i>Ficus mollis</i> Vahl	Baril	Moraceae	Tree
40.	<i>Ficus racemosa</i> L.	Gular	Moraceae	Tree
41.	<i>Ficus religiosa</i> L.	Papal	Moraceae	Tree
42.	<i>Ficus tinctoria</i> G. Forster subsp. <i>gibbosa</i> (Blume) Corner	Paakar	Moraceae	Tree
43.	<i>Ficus virens</i> Dryander	Pakar	Moraceae	Tree
44.	<i>Flacourtia indica</i> (Burm. f.) Merr.	Kaakai	Salicaceae	Tree
45.	<i>Gardenia gummifera</i> L. f.	Kaapar	Rubiaceae	Tree
46.	<i>Gardenia latifolia</i> Ait.	Papra	Rubiaceae	Tree
47.	<i>Garuga pinnata</i> Roxb.	Kharpal	Burseraceae	Tree
48.	<i>Gmelina arborea</i> Roxb.	Khamer	Verbenaceae	Tree
49.	<i>Grewia tiliifolia</i> Vahl	Dhankat	Tiliaceae	Tree
50.	<i>Haldina cordifolia</i> (Roxb.) Ridsd.	Haldu	Rubiaceae	Tree
51.	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G. Don	Kutki	Apocynaceae	Tree
52.	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Chilbil	Ulmaceae	Tree
53.	<i>Kydia calycina</i> Roxb.	Barunga	Malvaceae	Tree
54.	<i>Lagerstroemia parviflora</i> Roxb.	Sendha	Lythraceae	Tree
55.	<i>Lannea coromandelica</i> (Houtt.) Merr.	Gunja	Anacardiaceae	Tree
56.	<i>Litsea glutinosa</i> (Lour.) Robinson	Maida	Lauraceae	Tree
57.	<i>Madhuca longifolia</i> (J. Koenig) Macbr. var. <i>latifolia</i> (Roxb.) Chevalier	Mahua	Sapotaceae	Tree
58.	<i>Mallotus philippensis</i> (Lam.) Muell. Arg.	Sindoor	Euphorbiaceae	Tree
59.	<i>Mangifera indica</i> L.	Aam	Anacardiaceae	Tree
60.	<i>Manilkara hexandra</i> (Roxb.) Dubard	Khirmi	Sapotaceae	Tree
61.	<i>Melia azedarach</i> L.	Bakain	Meliaceae	Tree
62.	<i>Milusa tomentosa</i> (Roxb.) Sinclair	Kaari	Annonaceae	Tree
63.	<i>Mitragyna parvifolia</i> (Roxb.) Korth.	Kaima	Rubiaceae	Tree
64.	<i>Moringa oleifera</i> Lam.	Sainjna	Moringaceae	Small Tree
65.	<i>Morus alba</i> L.	Sehtut	Moraceae	Small Tree
66.	<i>Oroxylum indicum</i> (L.) Venten.	Sonpatha	Bignoniaceae	Tree
67.	<i>Ougeinia oojeinensis</i> (Roxb.) Hochr.	Tinsa	Fabaceae	Tree
68.	<i>Phoenix sylvestris</i> (L.) Roxb.	Khajur	Arecaceae	Tree
69.	<i>Phyllanthus emblica</i> L.	Aaonla	Euphorbiaceae	Tree
70.	<i>Polyalthia longifolia</i> Sonn.	Ashok	Annonaceae	Small Tree
71.	<i>Pongamia pinnata</i> (L.) Pierre	Karanj	Fabaceae	Tree
72.	<i>Pterocarpus marsupium</i> Roxb.	Bijasal	Fabaceae	Tree
73.	<i>Salix tetrasperma</i> Roxb.	Bansa	Salicaceae	Tree
74.	<i>Schleichera oleosa</i> (Lour.) Oken.	Kusum	Sapindaceae	Tree
75.	<i>Schrebera swietenoides</i> Roxb.	Ghainta	Oleaceae	Tree
76.	<i>Semecarpus anacardium</i> L. f.	Bhilma	Anacardiaceae	Tree
77.	<i>Shorea robusta</i> Gaertn. f.	Sal	Dipterocarpaceae	Tree
78.	<i>Sterculia urens</i> Roxb.	Kullu	Sterculiaceae	Tree
79.	<i>Sterculia villosa</i> Roxb. ex Sm.	Udaal	Sterculiaceae	Tree
80.	<i>Stereospermum colais</i> (Dillwyn) Mabberley	Chota Padar	Binoniaceae	Tree
81.	<i>Strychnos nux-vomica</i> L.	Kochila	Loganiaceae	Tree



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82.	<i>Symplocos racemosa</i> Roxb.	Lodra	Symplocaceae	Tree
83.	<i>Syzygium cumini</i> (L.) Skeels	Jamun	Myrtaceae	Tree
84.	<i>Tamarindus indica</i> L.	Imli	Caesalpiaceae	Tree
85.	<i>Tectona grandis</i> L. f.	Sagaun	Verbenaceae	Tree
86.	<i>Terminalia alata</i> Heyne ex Roth	Sanja	Combretaceae	Tree
87.	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Arjun	Combretaceae	Tree
88.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bahera	Combretaceae	Tree
89.	<i>Terminalia catappa</i> L.	Badam	Combretaceae	
90.	<i>Terminalia chebula</i> Retz.	Harra	Combretaceae	Tree
91.	<i>Trema orientalis</i> (L.) Blume	Jibhi	Ulmaceae	Tree
92.	<i>Trema politoria</i> Planch.	Trema	Ulmaceae	Tree
93.	<i>Trewia polycarpa</i> Benth.	Surahi	Euphorbiaceae	Tree
94.	<i>Wrightia tinctoria</i> R. Br.	Dudhi	Apocynaceae	Tree
95.	<i>Ziziphus mauritiana</i> Lam.	Ber	Rhamnaceae	Small Tree
SHRUBS				
1.	<i>Abelmoschus manihot</i> (L.) Medik.	Jangali Bhindi	Malvaceae	Shrub
2.	<i>Abutilon indicum</i> (L.) Sw.	Kanghi	Malvaceae	Shrub
3.	<i>Acacia torta</i> (Roxb.) Craib	Kantar	Fabaceae	Shrub
4.	<i>Adhatoda zeylanica</i> Medik.	Adusa	Acanthaceae	Shrub
5.	<i>Alangium salvifolium</i> (L. f.) Wang	Ankola	Cornaceae	Shrub
6.	<i>Annona squamosa</i> L.	Sitaphal	Annonaceae	Shrub
7.	<i>Barleria prionitis</i> L.	Katsaraiya	Acanthaceae	Shrub
8.	<i>Boehmeria macrophylla</i> Hornem.	Sohkhara	Urticaceae	Sub-Shrub
9.	<i>Calotropis gigantea</i> (L.) R. Br.	Safed Aak	Asclepiadaceae	Shrub
10.	<i>Calotropis procera</i> (Aiton) R. Br.	Gulabi Aak	Asclepiadaceae	Shrub
11.	<i>Carica papaya</i> L.	Papita	Caricaceae	Shrub
12.	<i>Carissa opaca</i> Stapf ex Haines	Karaunda	Apocynaceae	Shrub
13.	<i>Carissa spinarum</i> L.	Jangali Karaunda	Apocynaceae	Shrub
14.	<i>Cassia occidentalis</i> L.	Kasaundhi	Caesalpiaceae	Shrub
15.	<i>Catunaregam nilotica</i> (Stapf) Tirvengadam	Kharhar	Rubiaceae	Shrub
16.	<i>Citrus limon</i> (L.) Osbeck	Neebu	Rutaceae	Shrub
17.	<i>Clerodendrum multiflorum</i> (Burm. f.) Kuntze	Bharangi	Verbenaceae	Shrub
18.	<i>Colebrookea oppositifolia</i> Sm	Ameda	Lamiaceae	Shrub
19.	<i>Combretum nanum</i> Buch.- Ham. ex D. Don	Bilaura, Medila	Combretaceae	Shrub
20.	<i>Euphorbia neriifolia</i> L.	Sehud	Euphorbiaceae	Shrub
21.	<i>Euphorbia nivulia</i> Buch.-Ham.	katthuar	Euphorbiaceae	Shrub
22.	<i>Flemingia chappar</i> Buch. Ham. ex Benth.	Galphula	Fabaceae	Shrub
23.	<i>Flemingia nana</i> Roxb.	Gursankari	Tiliaceae	Shrub
24.	<i>Flemingia paniculata</i> Wall. ex Benth.	Ramdant	Fabaceae	Shrub
25.	<i>Grewia helicterifolia</i> Wall. ex G. Don	Vansuli	Tiliaceae	Shrub
26.	<i>Grewia hirsuta</i> Vahl	Gursankari	Tiliaceae	Shrub
27.	<i>Helicteres isora</i> L.	Marodfali	Sterculiaceae	Shrub
28.	<i>Hibiscus rosa-sinensis</i> L.	Gudhal	Malvaceae	Shrub
29.	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G. Don	Kutki, Kurriya	Apocynaceae	Shrub
30.	<i>Indigofera tinctoria</i> L.	Neel	Fabaceae	Shrub



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31.	<i>Ixora pavetta</i> Andrews	Khujja	Rubiaceae	Shrub
32.	<i>Jasminum humile</i> L.	Pili Chameli	Oleaceae	Shrub
33.	<i>Jatropha curcas</i> L.	Ratanjyot	Euphorbiaceae	Shrub
34.	<i>Lawsonia inermis</i> L.	Mehndi	Lythraceae	Shrub
35.	<i>Leea macrophylla</i> Roxb. ex Hornem.	Hatfun	Leeaceae	Shrub
36.	<i>Murraya paniculata</i> (L.) Jacq.	Aathil	Rutaceae	Shrub
37.	<i>Nyctanthes arbor-tristis</i> L.	Harsingar	Oleaceae	Shrub
38.	<i>Ochna obtusata</i> DC.	Kanak Champa	Ochnaceae	Shrub
39.	<i>Phoenix acaulis</i> Buch.- Ham. ex Roxb.	Bhui Khajur	Arecaceae	Shrub
40.	<i>Phyllanthus reticulatus</i> Poir.	Panjoli	Euphorbiaceae	Shrub
41.	<i>Plumbago zeylanica</i> L.	Chitrak	Plumbaginaceae	Shrub
42.	<i>Premna barbata</i> Wall. ex Schauer	Aradi	Verbenaceae	Shrub
43.	<i>Ricinus communis</i> L.	Rendi	Euphorbiaceae	Shrub
44.	<i>Tamarix ericoides</i> Rottler ex Willd.	Jhau	Tamaricaceae	Shrub
45.	<i>Thespesia lampas</i> (Cav.) Dalz. & Gibs.	Chaumukhia,	Malvaceae	Shrub
46.	<i>Vitex negundo</i> L.	Nirgundi	Verbenaceae	Shrub
47.	<i>Woodfordia fruticosa</i> (L.) Kurz	Dhavai	Lythraceae	Shrub
48.	<i>Ziziphus mauritiana</i> Lam.	Ber	Rhamnaceae	Shrub
49.	<i>Ziziphus oenoplia</i> (L.) Mill.	Barari	Rhamnaceae	Shrub
HERBS				
1.	<i>Acalypha ciliata</i> Forssk.	Chipki	Asteraceae	Herb
2.	<i>Achyranthes aspera</i> L.	Apamarg	Amaranthaceae	Herb
3.	<i>Acorus calamus</i> L.	Buch	Araceae	Herb
4.	<i>Aerva lanata</i> (L.) Juss. ex Schult.	Gorakhganja	Amaranthaceae	Herb
5.	<i>Aerva sanguinolenta</i> (L.) Blume	Gorakh Ganja	Amaranthaceae	Herb
6.	<i>Ageratum conyzoides</i> L.	Agreatum	Asteraceae	Herb
7.	<i>Allium leptophyllum</i> L.	Van Lehsun	Liliaceae	Herb
8.	<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	Gudari sag	Amaranthaceae	Herb
9.	<i>Alysicarpus monilifer</i> (L.) DC.	Alisicarpus	Fabaceae	Herb
10.	<i>Ammannia baccifera</i> L.	Dadmari	Lythraceae	Herb
11.	<i>Andrographis paniculata</i> (Burm. f.) Wall. ex Nees	Kalmegh	Acanthaceae	Herb
12.	<i>Anisomeles indica</i> (L.) Kuntze 4803	Jangali Tulsi	Lamiaceae	Herb
13.	<i>Aponogeton crispum</i> Thunb.	<i>Aponogeton</i>	Aponogetonaceae	Herb
14.	<i>Argemone mexicana</i> L.	Swarnchhiri	Papaveraceae	Herb
15.	<i>Asphodelus tenuifolius</i> Cav.	Bokat	Linaceae	Herb
16.	<i>Atylosia scarabaeoides</i> (L.) Benth.	Lotar	Fabaceae	Herb
17.	<i>Bacopa monnieri</i> (L.) Wettst.	Brahmi	Scrophulariaceae	Herb
18.	<i>Bacopa procumbens</i> (Mill.) Greenm.	Jal-Neem	Scrophulariaceae	Herb
19.	<i>Barleria cristata</i> L.	Katsaraiya	Acanthaceae	Herb
20.	<i>Boerhavia diffusa</i> L.	Raktpunarwa	Nyctaginaceae	Herb
21.	<i>Bulbostylis barbata</i> (Rottb.) C.B. Clarke		Cyperaceae	Sedges
22.	<i>Cassia tora</i> L.	Chakramard (Choukad)	Caesalpiniaceae	Herb
23.	<i>Catharanthus roseus</i> (L.) G. Don	Sadabhar	Apocynaceae	Herb
24.	<i>Centella asiatica</i> (L.) Urban	Mandukparni	Apiaceae	Herb
25.	<i>Chlorophytum tuberosum</i> (Roxb.) Baker	Safed Musli	Liliaceae	Herb
26.	<i>Cleome gynandra</i> L.	Hurhur	Capparaceae	Herb
27.	<i>Cleome viscosa</i> L.	Hurhur	Capparaceae	Herb



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28.	<i>Commelina benghalensis</i> L.	Kanchara	Commelinaceae	Herb
29.	<i>Commelina diffusa</i> Burm. f.	Kanshura	Commelinaceae	Herb
30.	<i>Convolvulus prostratus</i> Forssk.	Shankhpushpi	Convolvulaceae	Herb
31.	<i>Crotalaria prostrata</i> Rottler ex Willd.	Kartik Jhumka	Fabaceae	Herb
32.	<i>Curcuma angustifolia</i> Roxb.	Tikhur	Zingiberaceae	Herb
33.	<i>Curculigo orchioides</i> Gaertn.	Kali Musli	Hypoxidaceae	Herb
34.	<i>Curcuma aromatica</i> Salisb.	Van Haldi	Zingiberaceae	Herb
35.	<i>Cyperus rotundus</i> L.	Motha	Cyperaceae	Sedges
36.	<i>Dentella repens</i> (L.) J. R. & G. Foret.	Parpat	Rubiaceae	herb
37.	<i>Desmodium heterocarpon</i> L.	Salparni	Fabaceae	Herb
38.	<i>Desmodium triflorum</i> (L.) DC.	Desmodium	Fabaceae	Herb
39.	<i>Dipteracanthus suffruticosus</i> (Roxb.) Voigt.	Chowlai	Acanthaceae	Herb
40.	<i>Echinops echinatus</i> Roxb.	Utkatara	Asteraceae	Herb
41.	<i>Eclipta prostrata</i> (L.) L.	Bhringraj	Asteraceae	Herb
42.	<i>Elytraria acaulis</i> (L. f.) Lindau	Sahasramuniya	Acanthaceae	herb
43.	<i>Euphorbia hirta</i> L.	Doodhi	Euphorbiaceae	Herb
44.	<i>Evolvulus alsinoides</i> (L.) L.	Sakhpushpi	Convolvulaceae	Herb
45.	<i>Fimbristylis dipsacea</i> (Rottb.) C.B. Clarke	NA	Cyperaceae	Sedges
46.	<i>Fimbristylis falcata</i> (Vahl) Kunth	Hathi Paw	Cyperaceae	Sedges
47.	<i>Fumaria indica</i> (Hassk.) Pugsley	Pitpapra	Papaveraceae	Herb
48.	<i>Heliotropium indicum</i> L.	Hastimundi	Boraginaceae	Herb
49.	<i>Hygrophila salicifolia</i> (Vahl)	Talamkhana	Acanthaceae	Herb
50.	<i>Ipomoea eriocarpa</i> R.Br.	Besharam	Convolvulaceae	Herb
51.	<i>Justicia quinqueangularis</i> Koenig ex Roxb.	Justicia	Acanthaceae	Herb
52.	<i>Leucas aspera</i> (Willd.) Linke	Bhondaki	Lamiaceae	Herb
53.	<i>Melilotus indica</i> (L.) All.	Van Maithi	Fabaceae	herb
54.	<i>Ocimum basilicum</i> L.	Ban Tulsi	Lamiaceae	Herb
55.	<i>Oxalis corniculata</i> L.	Teenpati (Chingeri)	Oxalidaceae	Herb
56.	<i>Oxalis corniculata</i> L.	Teen Patti	Oxalidaceae	Herb
57.	<i>Oxalis richardiana</i> Babu	Teenpatti	Oxalidaceae	Herb
58.	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Bhuin Anwla	Euphorbiaceae	Herb
59.	<i>Physalis minima</i> L.	Chirponta	Solanaceae	Herb
60.	<i>Polygonum barbatum</i> L. subsp. <i>barbatum</i>	Polygonum	Polygonaceae	Herb
61.	<i>Polygonum glabrum</i> Willd.	Polygonum	Polygonaceae	Herb
62.	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Sarpandha	Apocynaceae	Herb
63.	<i>Rungia pectinata</i> (L.) Nees	Rungia	Acanthaceae	Herb
64.	<i>Scleria levis</i> Retz.	Scleria	Cyperaceae	Sedges
65.	<i>Sesbania bispinosa</i> (Jacq.) W.F. Wight	Sirmili	Fabaceae	Herb
66.	<i>Sida acuta</i> Burm. f.	Mahabala	Malvaceae	Herb
67.	<i>Sida cordifolia</i> L.	Kharenti	Malvaceae	Herb
68.	<i>Sida rhombifolia</i> L.	Atibala	Malvaceae	Herb
69.	<i>Solanum nigrum</i> L.	makoya	Solanaceae	Herb
70.	<i>Solanum virginianum</i> L.	Bhatkataiya	Solanaceae	Herb
71.	<i>Tridax procumbens</i> L.	Khal Muriya	Asteraceae	Herb
72.	<i>Triumfetta pentandra</i> A. Rich.	Chipki	Tiliaceae	Herb
73.	<i>Triumfetta rhomboidea</i> Jacq.	Chipki	Tiliaceae	Herb
74.	<i>Xanthium strumarium</i> L. Syn. <i>Xanthium indicum</i> Koen.	Gokharu	Asteraceae	Herb



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GRASSES				
1.	<i>Apluda mutica</i> L.	Apluda	Poaceae	Grasses
2.	<i>Apocopis vaginata</i> Hack.	Apocopis	Poaceae	Grasses
3.	<i>Aristida adscensionis</i> L.	Aristida	Poaceae	Grasses
4.	<i>Bambusa bambos</i> (L.) Voss	Bamboo	Poaceae	Grasses
5.	<i>Bothriochloa glabra</i> (Roxb.) A. Camus	Bothriochloa	Poaceae	Grasses
6.	<i>Bothriochloa intermedia</i> (R. Br.) A. Camus	Bothriochloa	Poaceae	Grasses
7.	<i>Bothriochloa pertusa</i> (L.) A. Camus	Bothriochloa	Poaceae	Grasses
8.	<i>Brachiaria eruciformis</i> (Sm.) Griseb.	Brachiaria	Poaceae	Grasses
9.	<i>Brachiaria ramosa</i> (L.) Stapf	Brachiaria	Poaceae	Grasses
10.	<i>Brachiaria reptans</i> (L.) Gard. & Hubb.	Brachiaria	Poaceae	Grasses
11.	<i>Cenchrus ciliaris</i> L.	Cenchrus	Poaceae	Grasses
12.	<i>Chloris dolichostachya</i> Lag.	Chloris	Poaceae	Grasses
13.	<i>Chloris virgata</i> Sw.	Chloris	Poaceae	Grasses
14.	<i>Chrysopogon fulvus</i> (Spreng.) Chiov.	Chrysopogon	Poaceae	Grasses
15.	<i>Chrysopogon serrulatus</i> Trin.	Chrysopogon	Poaceae	Grasses
16.	<i>Cymbopogon martinii</i> (Roxb.) Wats.	Musail	Poaceae	Grasses
17.	<i>Cynodon dactylon</i> (L.) Pers.	Doob	Poaceae	Grasses
18.	<i>Dichanthium annulatum</i> (Forssk.) Stapf	Dichanthium	Poaceae	Grasses
19.	<i>Digitaria stricta</i> Roth ex Roem. & Schult.	Digitaria	Poaceae	Grasses
20.	<i>Eragrostis amabilis</i> (L.) Wight & Arn. Syn. <i>Eragrostis tenella</i> (L.) P. Beauv. ex Roem. & Schult.	Eragrostis	Poaceae	Grasses
21.	<i>Eragrostis atrovirens</i> (Desf.) Trin. & Steud.	Eragrostis	Poaceae	Grasses
22.	<i>Eragrostis cilianensis</i> (All.) Vignolo-Lutati	Eragrostis	Poaceae	Grasses
23.	<i>Eragrostis ciliaris</i> (L.) R. Br.	Eragrostis	Poaceae	Grasses
24.	<i>Heteropogon contortus</i> (L.) P. Beauv.	hetropogon	Poaceae	Grasses
25.	<i>Imperata cylindrica</i> (L.) P. Beauv.	Imperata	Poaceae	Grasses
26.	<i>Oplismenus compositus</i> (L.) P. Beauv.	Oplismenus	Poaceae	Grasses
27.	<i>Oropetium thomaeum</i> (L. f.) Trin.	Oplismenus	Poaceae	Grasses
28.	<i>Oryza minuta</i> J,Presl	Jangali Dhan	Poaceae	Grasses
29.	<i>Panicum psilopodium</i> Trin.	Panicum	Poaceae	Grasses
30.	<i>Panicum sumatrense</i> Roth ex Roem. & Schult.	Panicum	Poaceae	Grasses
31.	<i>Paspalidium flavidum</i> (Retz.) A. Camus	Paspalum	Poaceae	Grasses
32.	<i>Paspalidium punctatum</i> (Burm. f.) A. Camus	Paspalum	Poaceae	Grasses
33.	<i>Pennisetum pedicellatum</i> Trin	Pennisetum	Poaceae	Grasses
34.	<i>Pennisetum polystachyon</i> (L.) Schult	Pennisetum	Poaceae	Grasses
35.	<i>Perotis indica</i> (L.) Kuntze	Perotis	Poaceae	Grasses
36.	<i>Saccharum spontaneum</i> L.	Kans	Poaceae	Grasses
37.	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Bans	Poaceae	Grasses
CLIMBERS				
1.	<i>Abrus precatorius</i> L.	Kali Ghughchi	Fabaceae	Climber
2.	<i>Asparagus racemosus</i> Willd.	Shatawar	Liliaceae	Climber
3.	<i>Butea superba</i> Roxb.	Palas Bel	Fabaceae	Climber
4.	<i>Cissus quadrangularis</i> L.	Hadjood	Vitaceae	Climber
5.	<i>Coccinia grandis</i> (L.) Voigt.	Kunduru	Cucurbitaceae	Climber
6.	<i>Combretum roxburghii</i> Spreng.	Bilora, Medila	Combretaceae	Climber



SN.	Scientific Name	Local Name	Family	Habit
7.	<i>Cryptolepis buchani</i> Roem. & Schult.	Nagbel	Asclepiadaceae	Climber
8.	<i>Gymnema sylvestre</i> (Retz.) R. Br. ex Schult.	Gudmar	Asclepiadaceae	Climber
9.	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook. f. & Thoms.	Giloya	Menispermaceae	Climber
EPIPHYTES				
1.	<i>Cuscuta reflexa</i> Roxb.	Amarbel	Convolvulaceae	Epiphyte
2.	<i>Vanda tessellata</i> (Roxb.) Hook. ex G. Don	Vanda	Orchidaceae	Epiphyte

1.17.2.2. Fauna:

A linear transect of 1.0 km each has been chosen for sampling at each site. Each transect was trekked for 1.5 hr for the sampling of faunal diversity through following methods for different categories. For the sampling of butterflies, the standard '**Pollard Walk**' method was employed and all the species recorded.

For bird's sampling, '**Point Sampling**' along the fixed transect (Foot trails) was carried out. All the species of birds were observed and identified with the help of field guide book and photographs.

For the sampling of mammals, direct count on open width (20m) transect were used. In addition, information on recent sightings/records of mammals by the villagers/locals were also be collected. For carnivores, indirect sampling was carried out and the mammals were identified by foot marks, faeces and other marks/sign created by them. In case of reptiles mainly lizards were sampled by direct count on open width transects.

The study of fauna takes substantial amount of time to understand the specific faunal characteristic of area. The assessments of fauna were done by extensive field survey of the area. During survey, the presence of wildlife has been confirmed by direct field survey and by the oral information by local inhabitants and data procured from the concerned forest department has been made and given in below (**Table-1.10**).

Table-1.10: Faunal Diversity from Study Area

Sl. No.	Common Name	Scientific Name	Schedule of WPA, 1972	Conservation Status as per IUCN
Mammals				
1	Spotted Deer	<i>Axis axis</i>	III	LC #
2	Bandicoot Rat	<i>Bandicota bengalensis</i>	V	LC #



3	Nilgai	<i>Boselaphus tragocamelus</i>	III	LC #
4	Jackal	<i>Canis aureus</i>	II	LC #
5	Indian Wolf	<i>Canis lupus callipes</i>	I	LC #
6	Sambhar	<i>Cervus unicolor</i>	III	LC #
7	Dhole	<i>Cuon alpinus</i>	II	EN #
8	Short Nosed Fruit Bat	<i>Cynopterus sphinx</i>	V	LC #
9	Indian Elephant	<i>Elephas maximus</i>	I	EN #
11	Wild Cat	<i>Felis chaus</i>	II	LC #
12	Five striped Palm squirrel	<i>Funambulus pennanti</i>	IV	LC #
13	Chinkara	<i>Gazella bennettii</i>	I	LC #
14	Mongoose	<i>Herpestres edwardsii</i>	IV	LC #
15	Striped Hyena	<i>Hyaena hyaena</i>	III	NT #
16	Indian Porcupine	<i>Hystrix indica</i>	IV	LC #
17	Hare	<i>Lepus nigricollis</i>	IV	LC #
18	Otter / Odha	<i>Luthra luthra</i>	II	NT#
19	Rhesus Macaque	<i>Macaca mulatta</i>	II	LC #
20	Indian Pangolin	<i>Manis crassicaudata</i>	I	EN #
21	Honey Badger	<i>Mellivora capensis</i>	I	LC #
22	Sloth Bear	<i>Melursus ursinus</i>	I	Vu #
23	Barking Deer	<i>Muntiacus muntjak</i>	III	LC #
24	Indian Field Mouse	<i>Mus booduga</i>	V	LC #
25	Leopard	<i>Panthera pardus</i>	I	Vu #
27	Hedgehog	<i>Paraechinus micropus</i>	IV	LC #
28	Indian Pipistrelle	<i>Pipistrellus mimus</i>	IV	LC #
29	Flying Fox	<i>Pteropus giganteus</i>	V	LC #
30	Common house Rat	<i>Rattus rattus</i>	V	LC #
31	Hanuman Langur	<i>Semnopithecus entellus</i>	II	LC #
32	Musk Shrew	<i>Suncus murinus</i>	-	LC #
33	Wild Pig	<i>Sus scrofa</i>	III	LC #
34	Four-horned antelope	<i>Tetracerus quadricornis</i>	I	Vu #
35	Mouse Deer	<i>Tragulus meminna</i>	I	LC #
36	Indian Civet	<i>Viverricula indica</i>	II	LC#
37	Indian Fox	<i>Vulpes bengalensis</i>	II	LC #
		Birds		
1	Shikra	<i>Accipter badius</i>	IV	LC #
2	Jungle Mynah	<i>Acridotheres fuscus</i>	IV	LC #
3	Common Mynah	<i>Acridotheres tristis</i>	IV	LC #
4	Common Iora	<i>Aegithina tiphia</i>	IV	LC #
5	Common Kingfisher	<i>Alcedo atthis</i>	IV	LC #
6	Quaker Babbler	<i>Alcippe poioicephala</i>	IV	LC #
7	Rufous-tailed Finch-lark	<i>Ammomanes phoenicurus</i>	IV	LC #



8	Common Teal	<i>Anas crecca</i>	IV	LC #
9	Open Billed Stork	<i>Anastomus oscitans</i>	IV	LC #
10	Pied Hornbill	<i>Anthracoeres coronatus</i>	I	NT #
11	House swift	<i>Apus affinis</i>	IV	LC #
12	Tawny Eagle	<i>Aquila rapax</i>	I	VU #
13	Grey Heron	<i>Ardea cinerea</i>	IV	LC #
14	Pond Heron	<i>Ardeola grayii</i>	IV	LC #
15	Ashy Swallow Shrike	<i>Artamus fuscus</i>	-	LC #
16	Eagle Owl	<i>Bubo bubo</i>	IV	LC #
17	Cattle Egret	<i>Bubulcus ibis</i>	IV	LC #
18	Common Indian Nightjar	<i>Caprimulgus asiaticus</i>	IV	LC #
19	Crow Pheasant	<i>Centropus sinensis</i>	IV	LC #
20	Crow Pheasant	<i>Centropus sinensis</i>	IV	LC #
21	Whiskered Tern	<i>Chlidonias hybrida</i>	-	LC #
22	Golden-fronted Leaf-bird	<i>Chloropsis aurifrons</i>	IV	LC #
23	Gold-mantled Leafbird	<i>Chloropsis chochinensis</i>	IV	LC #
24	White Necked Stork	<i>Ciconia episcopus</i>	IV	VU #
25	White stork	<i>Ciconia episcopus</i>	I	LC #
26	Pied Crested Cuckoo	<i>Clamator jacobius</i>	IV	LC #
27	Blue Rock Pigeon	<i>Columba livia</i>	IV	LC #
28	White Rumped Shama	<i>Copsychus malabaricus</i>	IV	LC #
29	Magpie Robin	<i>Copsychus saularis</i>	IV	LC #
30	Magpie Robin	<i>Copsychus saularis</i>	IV	LC #
31	Indian Roller	<i>Coracias benghalensis</i>	IV	LC #
32	Large Cuckoo-shrike	<i>Coracina novaehollandiae</i>	-	LC #
33	Jungle Crow	<i>Corvus marorrhynchos</i>	IV	LC #
34	Common Crow	<i>Corvus splendens</i>	V	LC #
35	Common Quail	<i>Coturnix coturnix</i>	IV	LC #
36	Brain-fever bird	<i>Cuculus varius</i>	IV	LC #
37	Indian Tree Pie	<i>Dendrocitta vagabunda</i>	IV	LC #
38	Lesser Whistling Teal	<i>Dendrocygna javanica</i>	IV	LC #
39	Tickell's Flower Pecker	<i>Dicaeum erythrorhynchos</i>	IV	LC #
40	Fire-breasted Flower Pecker	<i>Dicaeum ignipectus</i>	IV	LC #
41	Drongo	<i>Dicrurus adsimilis</i>	IV	LC #
42	White-bellied Drongo	<i>Dicrurus caeruleus</i>	IV	LC #
43	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	IV	LC #
44	Lesser Golden Backed Woodpecker	<i>Dinopium benghalense</i>	IV	LC #
45	Little Egret	<i>Egretta garzetta</i>	IV	LC #
46	Black Winged Kite	<i>Elanus caeruleus</i>	IV	LC #



47	Ashy-crowned lark	Finch-	<i>Eremopterix grisea</i>	IV	LC #
48	Red Munia		<i>Estrilda amandava</i>	IV	LC #
49	Koel		<i>Eudynamis scolopacea</i>	IV	LC #
50	Lesser Kestrel		<i>Falco naumanni</i>	IV	LC #
51	Common Kestrel		<i>Falco tinnunculus</i>	IV	LC #
52	Black Partridge		<i>Francolinus francolinus</i>	IV	LC #
53	Painted Partridge		<i>Francolinus pictus</i>	IV	LC #
54	Grey Partridge		<i>Francolinus pondicerianus</i>	IV	LC #
55	Fantail Snipe		<i>Gallinago gallinago</i>	IV	LC #
56	Moorhen		<i>Gallinula chloropus</i>	IV	LC #
57	Red Spurrow		<i>Galloperdix spadicea</i>	IV	LC #
58	Red Jungle Fowl		<i>Gallus gallus</i>	IV	LC #
59	Jungle Owlet		<i>Glaucidium radiatum</i>	IV	LC #
60	White Rumped Vulture		<i>Gyps bengalensis</i>	I	CR #
61	White Kingfisher	Breasted	<i>Halcyon smyrnensis</i>	IV	LC #
62	Heartspotted Woodpecker		<i>Hemicircus canente</i>	IV	LC #
63	Black-winged Stilt		<i>Himantopus himantopus</i>	IV	LC #
64	Indian Cliff Swallow		<i>Hirundo fluvicola</i>	-	LC #
65	Wire-tailed Swallow		<i>Hirundo smithii</i>	-	LC #
66	Pheasant Tailed Jacana		<i>Hydrophasianus chirurgus</i>	IV	LC #
67	Rufous Backed Shrike		<i>Lanius schach</i>	-	LC #
68	Black-headed Munia		<i>Lonchura malacca</i>	IV	LC #
69	Coppersmith Barbet		<i>Megalaima haemacephala</i>	IV	LC #
70	Crested Bunting		<i>Melophus lathami</i>	IV	LC #
71	Small Green Bee-eater		<i>Merops orientalis</i>	IV	LC #
72	Blue tailed Bee-eater		<i>Merops philippinus</i>	IV	LC #
73	Blue cheeked Bee-eater		<i>Merops superciliosus</i>	IV	LC #
74	Bronze Winged Jacana		<i>Metopidius indicus</i>	IV	LC #
75	Pariah Kite		<i>Milvus migrans</i>	IV	LC #
76	Blacknaped Flycatcher		<i>Monarcha azurea</i>	IV	LC #
77	Blue headed Thrush	Rock	<i>Monticola cinclorhynchus</i>	IV	LC #
78	Pied Wagtail		<i>Motacilla alba</i>	-	LC #
79	Grey Wagtail		<i>Motacilla cinerea</i>	-	LC #
80	Yellow Wagtail		<i>Motacilla flava</i>	-	LC #
81	Large Pied Wagtail		<i>Motacilla maderaspatensis</i>	-	LC #
82	Tickell's Blue Flycatcher		<i>Muscicapa tickelliae</i>	IV	LC #
83	Purple Sunbird		<i>Nectarinia asiatica</i>	IV	LC #
84	White Vulture	Scavenger	<i>Neophron percnopterus</i>	I	EN #
85	Golden Oriole		<i>Oriolus oriolus</i>	IV	LC #



86	Black Headed Oriole	<i>Oriolus xanthornus</i>	IV	LC #
87	Tailor Bird	<i>Orthotomus sutorius</i>	IV	LC #
88	Grey Tit	<i>Parus major</i>	IV	LC #
89	Yellow-cheeked Tit	<i>Parus xanthogenys</i>	IV	LC #
90	House Sparrow	<i>Passer domesticus</i>	IV	LC #
91	Pea-fowl	<i>Pavo cristatus</i>	I	LC #
92	Jungle Bush Quail	<i>Perdica asiatica</i>	IV	LC #
93	Small Minivet	<i>Pericrocotus cinnamomeus</i>	IV	LC #
94	Scarlet Minivet	<i>Pericrocotus flammeus</i>	IV	LC #
95	Small Indian Cormorant	<i>Phalacrocorax niger</i>	IV	LC #
96	Black Redstart	<i>Phoenicurus ochruros</i>	IV	LC #
97	Yellow-fronted Pied Woodpecker	<i>Picoides maharattensis</i>	IV	LC #
98	Indian Pitta	<i>Pitta brachyura</i>	IV	LC #
99	Weaver Bird	<i>Ploceus philippinus</i>	IV	LC #
100	Eastern Golden Plover	<i>Pluvialis dominica</i>	IV	LC #
101	Slaty-headed Scimitar Babbler	<i>Pomatorhinus horsfieldi schisticeps</i>	IV	LC #
102	Purple Moorhen	<i>Porphyrio porphyrio</i>	IV	LC #
103	Ashy Wren-warbler	<i>Prinia socialis</i>	IV	LC #
104	Blossom headed Parakeet	<i>Psittacula cyanocephala</i>	IV	LC #
105	Large Indian Parakeet	<i>Psittacula eupatria</i>	IV	NT #
106	Rose Ringed Parakeet	<i>Psittacula krameri</i>	IV	LC #
107	Red Vent Bulbul	<i>Pycnonotus cafer</i>	IV	LC #
108	Red Whiskered Bulbul	<i>Pycnonotus jocosus</i>	IV	LC #
109	White-throated Fantail Flycatcher	<i>Rhipidura albicollis</i>	IV	LC #
110	White-browed Fantail Flycatcher	<i>Rhipidura aureola</i>	IV	LC #
111	Painted Snipe	<i>Rostratula benghalensis</i>	IV	LC #
112	Pied Bush-chat	<i>Saxicola caprata</i>	IV	LC #
113	Collared Bush-chat	<i>Saxicola torquata</i>	IV	LC #
114	Indian Robin	<i>Saxicoloides fulicata</i>	IV	LC #
115	Chestnut-bellied Nuthatch	<i>Sitta castanea</i>	-	LC #
116	Velvet-fronted Nuthatch	<i>Sitta frontalis</i>	-	LC #
117	Crested Serpent Eagle	<i>Spilornis cheela</i>	-	LC #
118	Crested Hawk Eagle	<i>Nisaetus cirrhatus</i>	I	LC #
119	Spotted Dove	<i>Streptopelia chinensis</i>	IV	LC #
120	Indian Ring Dove	<i>Streptopelia decaocto</i>	IV	LC #
121	Red Turtle Dove	<i>Streptopelia tranquebarica</i>	IV	LC #
122	Pied Mynah	<i>Sturnus contra</i>	IV	LC #
123	Grey-Headed Mynah	<i>Sturnus malabaricus</i>	IV	LC #



124	Black-headed Mynah	<i>Sturnus pagodarum</i>	IV	LC #
125	Rosy Pastor	<i>Sturnus roseus</i>	IV	LC #
126	Paradise Flycatcher	<i>Terpsiphone paradisi</i>	IV	LC #
127	Black Headed Ibis	<i>Threskiornis melanocephalus</i>	IV	NT#
128	Indian Grey Hornbill	<i>Tokus birostris</i>	-	LC #
129	King Vulture	<i>Sarcogyps calvus</i>	I	CR #
130	Yellow-footed Green Pigeon	<i>Treeron phoenicoptera</i>	IV	LC #
131	Redshank	<i>Tringa totanus</i>	IV	LC #
132	Jungle Babbler	<i>Turdoides striatus</i>	IV	LC #
133	Hoopoe	<i>Upupa epops</i>	IV	LC #
134	Red Wattled Lapwing	<i>Vannelus indicus</i>	IV	LC #
135	Red Wattled Lapwing	<i>Vannelus indicus</i>	IV	LC #
Reptiles				
1	Garden Lizard	<i>Calotes versicolor</i>	-	-
2	Mugger Crocodile	<i>Crocodylus palustris</i>	I	Vu #
3	Russel's Viper	<i>Daboia russelii</i>	IV	LC #
4	Geckos	<i>Hemidactylus sps.</i>	IV	-
5	Common Skink	<i>Mabuya carinata</i>	-	LC #
6	Indian Cobra	<i>Naja naja</i>	IV	LC #
7	Yellow Rat Snake	<i>Ptyas mucosa</i>	II	-
8	Indian Python	<i>Python morulus</i>	I	Vu #
9	Bengal Monitor Lizard	<i>Varanus bengalensis</i>	I	LC #
10	Russel's Viper	<i>Vipera russelii</i>	II	NA
11	Checkered Keelback	<i>Xenochrophis piscator</i>	IV	-
Fishes				
1.	Chelluah	<i>Aspidoparia morar</i>	NA	NA
2.	Barna Baril	<i>Barilius barna</i>	NA	NA
3.	Katla	<i>Catla catla</i>	NA	NA
4.	Chaguni	<i>Chagunius chagunio</i>	NA	NA
5.	Great Snakehead	<i>Channa marulius</i>	NA	NA
6.	Reba Carp	<i>Cirrhinus reba</i>	NA	NA
7.	Singi	<i>Clarias batrachus</i>	NA	NA
8.	Common Carp	<i>Cyprinus carpio</i>	NA	NA
9.	Calbasu	<i>Labeo calbasu</i>	NA	NA
10.	Kali, Boalla	<i>Labeo dyocheilus</i>	NA	NA
11.	Rohu	<i>Labeo rohita</i>	NA	NA
12.	Cat fish	<i>Mystus cavasius</i>	NA	NA
13.	Bronze Feather Back	<i>Notopterus notopterus</i>	NA	NA
14.	Swamp Barb	<i>Puntius chola</i>	NA	NA
15.	Hilsa	<i>Tenualosa ilisha</i>	NA	NA
Butterflies				



1.	Common Emigrant	<i>Catopsilia pomona</i>	NA	NA
2.	Common map	<i>Cyrestis thyodamas</i>	NA	NA
3.	Stripped Tiger	<i>Danaus genutia</i>	NA	NA
4.	Plain Tiger	<i>Danaus chrysippus</i>	NA	NA
5.	Stripped Tiger	<i>Danaus genutia</i>	NA	NA
6.	Common crow	<i>Euploea core</i>	NA	NA
7.	Common Grass Yellow	<i>Eurema hecabe</i>	NA	NA
8.	western blue sapphir	<i>Heliophorus sp.</i>	NA	NA
9.	Danaid Egg Fly	<i>Hypolimanas misippus</i>	NA	NA
10.	White orange tip	<i>Ixias marianne</i>	NA	NA
11.	Blue pancy	<i>Junonia orithya</i>	NA	NA
12.	Common evening Brown	<i>Melanitis leda</i>	NA	NA
13.	Common Bush Brown	<i>Mycalesis perseus</i>	NA	NA
14.	Lime butterfly	<i>Papilio demoleus</i>	NA	NA
# LC – Least Concern; NT – Near Threatened; Vu – Vulnerable; EN – Endangered; CR – Critically Endangered				

(Source: Primary Survey Data)

1.17.2.3. Details of Endemic, Threatened and Scheduled Species:

This plan lays special stress on schedule-I animals, which are listed in **Table-1.11**.

Table-1.11 List of Scheduled species from study area

Sr. No.	Scientific name	Common Name	Schedule
Mammals			
1.	<i>Melursus ursinus</i>	Sloth bear	Schedule-I
2.	<i>Elephas maximus indicus</i>	Elephant	Schedule-I
3.	<i>Manis crassicaudata</i>	Pangolin	Schedule-I
4.	<i>Canis lupus callipes</i>	Indian Wolf	Schedule-I
5.	<i>Mellivora capensis</i>	Honey Badger	Schedule-I
6.	<i>Panthera pardus</i>	Leopard	Schedule-I
7.	<i>Tetracerus quadricornis</i>	Four-horned antelope	Schedule-I
8.	<i>Gazella bennettii</i>	Chinkara	Schedule-I
9.	<i>Tragulus meminna</i>	Mouse Deer	Schedule-I
Reptiles			
10.	<i>Crocodylus palustris</i>	Mugger, Crocodile	Schedule-I
11.	<i>Varanus bengalensis</i>	Bengal Monitor Lizard	Schedule-I
12.	<i>Python molurus</i>	Python	Schedule-I
Birds			
13.	<i>Pavo cristatus</i>	Indian Peafowl	Schedule-I



14.	<i>Aquila rapax</i>	Tawny Eagle	Schedule-I
15.	<i>Gyps bengalensis</i>	White Rumped Vulture	Schedule-I
16.	<i>Nisaetus cirrhatus</i>	Crested Hawk Eagle	Schedule-I
17.	<i>Anthracoceros coronatus</i>	Pied Hornbill	Schedule-I
18.	<i>Ciconia episcopus</i>	White stork	Schedule-I
19.	<i>Neophron percnopterus</i>	White Scavenger Vulture	Schedule-I
20.	<i>Sarcogyps calvus</i>	King Vulture	Schedule-I

So far, according to our study and from the available literature, there is no endemic plant or animal species present in this area. As far as, threatened fauna is concerned all Schedule – I species is threatened. A brief note on facts on these animals is as follows:

1.17.3. Status of Schedule-I Fauna present in the study area:

1.17.3.1. Sloth Bear (*Melursus ursinus*):

The allotted coal block area has both degraded forest, protected forest as well as cultivated area. Bear is a nocturnal animal. Generally it remains within the forest area, but occasionally it intrudes within the village area. This is mainly due to the Mahua flower, because Mahua trees are most common around the village areas. Therefore approach of the bear near to the village area is more during the months of Mahua flowering: the Months of March and April. Approach of the animal near the village areas in other months is extremely rare. Their density is also very low. A good study on bear has been made in the central India by Bargali *et. al.*, (2004).

Habitat: Sloth bears, in the area, occupy a wide range of habitats including forests, scrublands, and grasslands where boulders and scattered shrubs and trees provide shelter. The most common shelter is a den, a cavern like structure generally in rocks.

Home Range: To date, there is no definitive research detailing the exact nature of the home range of the sloth bear. The size of the home range of an individual sloth bear will vary with the concentration of high energy food sources. Thus, the more concentrated the food sources, the smaller the range necessary to maintain an animal.

Habit: The sloth bear is more inclined to attack man unprovoked than almost any other animal. Sloth bears avoid areas where human disturbance is high, however, the bear raid peanut, maize, and fruit crops. Sloth bears like to escape from the heat of the day and



forage for food at night. They will start to become active as the sun starts to set. This is also the time when many insects such as termites are more active.

They are generally nocturnal, occasionally approaching near to the village area even during the day time. Locally they prefer isolated shelters below rocks and caverns to spend their day time hours. Occasionally, near to the village area, after consuming large amount of mahua (*Madhuca latifolia*) flower they remain sleeping below the tree late after sun rise.

Food: Sloth bears subsist primarily on termites, ants, and fruits. This is the only species of bear adapted specifically for myrmecophagy (ant and termite-eating). The ratio of insects to fruits in the diet varies seasonally and geographically. Most bears are opportunistic omnivores. As such, their activities are governed by the availability of food items and dietary components within their habitat. When trees are in fruit, usually during the monsoon season, sloth bears dine on mango, fig, ebony, and other fruits, and also on some flowers. However, ground dwelling ants and termites, dug out of their cement-hard nest mounds, are a year-round staple. They have special liking for the honey for which the animal can climb trees and knock down honeycombs, later collecting the sweet bounty on the forest floor. Beetles, grubs, ants, and other insects round out their diet. During food shortages, sloth bears will eat carrion. In March and April, they will eat the fallen petals of mahua trees and are partial to mangoes, sugar cane, and the pods of the Amaltas and the fruit of the jacktree. Sloth bears are extremely fond of honey. Sloth bears will also climb and shake fruit trees to obtain food. They will also eat leafy plants, sugar-rich fruits, nuts, root, tubers, berries, vegetables, honey, eggs and small vertebrates like rodents, will also eat virtually any carrion which they may discover. Seasonal availability and geographic location are the biggest factors determining the primary food sources of sloth bears.

Food items of bear are documented with the help of scat analysis and direct observation. However, percent occurrence of a particular food in scats may differ from actual consumption. It is possible that most easily digestible food may be observed less in the scat while less digested food may be more.



A study on the scat of bear, in the central India has revealed following to be present in the scat and hence forming the food item of the bear. Months of their local availability has been added with each of the food item.

- i. Black ant and their egg: Available all round the year but more during winter and summer season.
- ii. Red ant and their eggs: Available all round the year but more during winter and summer season.
- iii. Termite and their egg: Available all round the year.
- iv. Honey Bees: Available all round the year but more during late winter and summer season
- v. *Ficus benghalensis* (Bargad), *Ficus religiosa* (Pipal): Summer season
- vi. *Ficus virens*: Winter, Summer
- vii. *Ficus racemosa*: Winter summer
- viii. *Ficus glomerata* (Gular): Summer
- ix. *Ziziphus mauritiana* (Ber), *Ziziphus oenoplia* (beri) and *Ziziphus nummularia* (Jharberi): Winter
- x. *Aegle marmelos* (Bel): summer
- xi. *Briedelia squamosa* (Kasihi): Late winter to early summer
- xii. *Diospyros melanoxylon* (tendu): Summer
- xiii. *Buchanania lanzan* (Achar): Summer
- xiv. *Schleichera oleosa* (Kusum): Summer
- xv. *Syzygium cumini* (Jamun): Summer
- xvi. *Cassia fistula* (Amaltas) fruit: Rainy
- xvii. *Madhuca indica* (Mahua) (flower): March-April, *Madhuca indica* (fruit): June-July
- xviii. *Arachis hypogeal* (Groundnut): Late rainy season
- xix. *Zea mays* (Corn): rainy
- xx. Amarood (*Psidium guajava*): Winter
- xxi. Aam (*Mangifera indica*): Summer
- xxii. Kathal (*Artocarpus heterophyllus*): Summer
- xxiii. Bones, hair and animal tissue



Many of the non-timber forest produce, forming the food of the bear are collected like flowers and fruits of mahuwa (*Madhuca indica*) and fruits of bel (*Aegle marmelos*), char (*Buchanania lanzan*), jamun (*Syzygium cumini*), and tendu (*Diospyros melanoxylon*). Such collection may limit their availability for bears. *Ficus* spp are not used by local people, so are readily available to the bears. Thus *Ficus* spp play important roles by providing supply of food for most of the part of the year. This is particularly important during summer when there are no crops in fields to raid and fewer fruiting species, and bears find it difficult to dig for termite and ants.

Threats: Major threats to this species are habitat loss, poaching and conflict killings. Habitat loss is mainly due to overharvest of forest products, monoculture plantations (e.g., teak, eucalyptus), expansion of agricultural areas, human settlements, and roads. Poaching is mainly for the commercial trade in bear parts. Encounters resulting in conflicts between people and sloth bears occur mainly where the habitat has become severely degraded but still being used by both. The only natural threats to sloth bears are tigers (*Panthera tigris*) and possibly leopards (*P. pardus*). Dhole packs may also attack sloth bears. Asian elephants are reported not to tolerate sloth bears in their vicinity. The reason for this is unknown. Bear parts are valuable commodities in the trade for Asian medicines. Incentives for killing bears are therefore high. Although, bear is protected to varying degrees by national laws, however, they can be killed to protect life or property.

Conflicts: The sloth bear is more inclined to attack man unprovoked than almost any other animal. Major man-bear conflicts result during the mawha flowering season. Persons going early to collect the flower encounter the animal, frequently, sometimes the bear remain sleeping below the tree after consuming large amount of mahua flower and is one of the mjr causes of man-bear conflicts. Persons going to the forest for the collection of wood or other forest produce encounter the bear, inadvertently resulting in conflicts.

Conservation Status: *CITES APPENDIX: I: Indian Wildlife (Protection) Act (1972) (As amended up to 2002):* Scheduled I; Part I; *Indian Red Data Book (IUCN 1994):* Not Listed; *IUCN (1998)* (Proposed; Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed): Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003). According to Alfred et al considering the nature and degree of threats and trends



reported, it is strongly recommended to include sloth bear in one of the endangered categories of IUCN. They are particularly vulnerable to loss of habitat because of their reliance on lowland areas, which tend to be the places most readily used by people. Poaching and trade in sloth bears or their parts is also common in many parts of their range.

Conservation Measures:

- i. Education will help to reduce bear-human conflicts and enhance a conservation ethic among locals.
- ii. Habitat improvements (government or community-based reforestation) would be helpful in alleviating conflicts.
- iii. Planting of fruit trees more particularly the spp. of Ficus, because Ficus spp are not collected by man but form an important diet to the animal.
- iv. Promoting honey bee in the area will not only serve as food to the bear but will help also in warding off the elephant.
- v. Red ant (*Oecophylla smaragdina*) can be promoted easily to form colonies in the trees. This will serve as important source of insect diet and may compensate for the termite.
- vi. Artificial method to promote termite colonies should be developed.
- vii. Den like structures should be developed in the area if such structures are lacking or less in number in the area.
- viii. It is unfortunate that the conservation of Elephant and Bear go contradictory to each other.
- ix. Villagers should avoid growing crops of liking to bear like ground nut and corn etc. particularly near their den sites.
- x. Translocation of bears from isolated habitat patches to more suitable areas should be carried out.

1.17.3.2. Elephant (*Elephas Maximus indicus*):

Elephants have not been reported from the mining lease area as well as from the impact area. However, there are reports of the movement of elephants, far beyond the lease area in the district of Korba and Sarguja of Chhattisgarh State. The According to the ministry of Environment, Forest & Climate Change, there are 2,865 elephants in Odisha,



Jharkhand and Chattisgarh, of which Odisha has close to 70% (1,930 elephants) followed by Jharkhand (688 elephants), Chattisgarh (247 elephants) as of 2012. Jharkhand state is more famous for the residence as well as movement of elephants, but the boundary of the state is much farther away from the lease area. The movement of elephants also reported in the eastern part of the Renukoot Dam. But the dam is a huge barrier for the elephants to reach anywhere near to the presently Suliyari coal mine lease area. The movement of elephants in Singrauli Forest Division is shown in **Figure-1.4** and **Annexure-II**. A map showing "*Diverted wildlife corridor due to coal mines*" obtained from forest department, Singrauli Forest Division is enclosed as **Annexure-III**.





Figure-1.4: Movement of Elephants in Singrauli Forest Division



Habitat: Elephants are generalists, but use mainly scrub forest. They can be found in the jungle, but generally on the edge where open, grassy areas are accessible. They prefer areas that combine grass, low woody plants, and forest. Elephants rarely forage in one area for more than a few days in a row. In general, food, water and shade are the three basic resources that can be expected to influence the movement of the elephant (Sukumar *et al*, 2003). Their Home range ranges from 30-600 km².

Food: Elephants eat a wide variety of species of vegetation. They are herbivore, folivore and lignivore. More than 100-130 different species of plants may be eaten They prefer grasses, but they also consume bark, roots, leaves, wood, stems and leaves of trees, vines, shrubs, tubers, bamboo and barn, An average day's intake is 150-200kg of wet vegetation. The proportions of the different plant types in their diet vary depending upon the habitat and season. Annual diet has been found to be dominated by grass. Maximum straying distance covered by the raiding elephant has been recorded up to 5.5km.

Time activity budget of elephants: Generally they are active almost throughout the day during rainy and winter months, but during summer months they are active only in the morning and evening hours. They become active well before dawn and start their morning activities in the vicinity of the area where they spent night. Evening hour is the time for drinking and bathing especially during summers. In summer season percentage of movement is more due to lack of fodder species and shrinkage of natural water sources.

Food Plants: Following is a list of plants reported as food by different workers. However, only the names of plants, local to the area, have been taken and the local names have been changed. Part of the plant eaten may be different for the different species.

Table-1.12: List of Food Plants for Elephant

Sr. No.	Botanical Name	Local Name
1	<i>Acacia catechu</i>	Khair
2	<i>Acacia nilotica</i>	Babool
3	<i>Aegle marmelos</i>	Bel
4	<i>Albizia lebbek</i>	Kala siris
5	<i>Bambusa arundinacea</i>	Bans
6	<i>Albizia procera</i>	Safed siris
7	<i>Bauhinia variegata</i>	Kachnar



Sr. No.	Botanical Name	Local Name
8	<i>Bauhinia vahlii</i>	Mahul
9	<i>Bauhinia malabarica</i>	Khatua
10	<i>Bombax ceiba</i>	Semal
11	<i>Brachiaria sp.</i>	Ghas
12	<i>Bridelia retusa</i>	Kasai
13	<i>Careya arborea</i>	Kumhi
14	<i>Cordia myxa</i>	Lassora
15	<i>Cymbopogon flexuosus</i>	Ghas
16	<i>Cynodon dactylon</i>	Doob Grass
17	<i>Dalbergia sissoo</i>	Shisham
18	<i>Dendrocalamus strictus</i>	Bans / Bamboo
19	<i>Desmostachya bipinnata</i>	Urai/Khus
20	<i>Eleusine sp.</i>	Ghas
21	<i>Embllica officinalis</i>	Amla
22	<i>Eucalyptus spp</i>	Nilgiri
23	<i>Eulaliopsis binata</i>	Bagai Ghas
24	<i>Feronia elephantum</i>	Kaith
25	<i>Ficus bengalensis</i>	Bargad/Bar
26	<i>Ficus glomerata</i>	Dumar/Gular
27	<i>Ficus religiosa</i>	Pipal
28	<i>Ficus rumphii</i>	Duranga-hesa
29	<i>Ficus infectoria</i>	Pakar
30	<i>Flacourtia indica</i>	Kandai
31	<i>Garuga pinnata</i>	Kekad
32	<i>Grewia elastica</i>	Dhaman
33	<i>Helicteres isora</i>	Ainhi
34	<i>Holarrhena antidysenterica</i>	Korea
35	<i>Ipomoea spp.</i>	Karmata
36	<i>Imperata arundinacea</i>	Ulu
37	<i>Kydia calycina</i>	Baranga/Pula
38	<i>Lagerstroemia parviflora</i>	Senha/Sidha
39	<i>Limonia acidissima</i>	Kaith
40	<i>Mallotus philippinensis</i>	Sinduri/Rohini
41	<i>Mimosa pudica</i>	Lajwanti
42	<i>Mitragyna parvifolia</i>	Mudhi
43	<i>Musa paradisiaca</i>	Banana
44	<i>Neyraudia arundinacea</i>	Bichhloo
45	<i>Oryza sativa</i>	Dhan
46	<i>Ougeinia oojeinensis</i>	Tinsa
47	<i>Phoenix humilis</i>	Buta Chhind
48	<i>Pithecellobium dulce</i>	Jangal Jalebi
49	<i>Randia dumetorium</i>	Mainphal
50	<i>Saccharum munja</i>	Kandi-khar
51	<i>Saccharum officinarum</i>	Ganna



Sr. No.	Botanical Name	Local Name
52	<i>Saccharum spontaneum</i>	Kans
53	<i>Sansevieria sp.</i>	Sisal
54	<i>Schleichera oleosa</i>	Kosam/Kusum
55	<i>Shorea robusta</i>	Sarai/Sal
56	<i>Syzygium cumini</i>	Jamun
57	<i>Tamarindus indica</i>	Amlı / Imli
58	<i>Terminalia tomentosa</i>	Saja
59	<i>Tectona grandis</i>	Sagaun / Teak
60	<i>Tinospora cordifolia</i>	Giloe / Gurch
61	<i>Thysanolaena agrostis</i>	Hathi ghas / Pirlu
62	<i>Zizyphus mauritiana</i>	Bhander
63	<i>Zizyphus xylopyra</i>	Ghont

Threats: The pre-eminent threats to the Asian elephant today are habitat loss, degradation, agriculture and farming, grazing, mining, human interference, trade, pollution, hunting for ivory, insurgency, corridor loss, anthropogenic pressures on the habitat, man-elephant conflict, forest fires, illegal captures of live animals etc. Poisoning and disease are some other threats to the animal.

Elephant Corridor: There is no notified elephant corridor within the 15 km radius of project site. However, as reported by the Forest Divisions, elephants move from one important forest block to another within their habitat. Revenue forestlands, Demarcated Protected Forests (DPF), and village forest areas interlink these isolated forest blocks. They form the movement track for the elephants between the Reserve Forest blocks.

The central Indian elephant habitats are one of the most fragmented and degraded because of encroachment, shifting cultivation and mining activities.

Jungle Cat (*Felis chaus*):

Habitat: Jungle cats prefer habitats near water with dense vegetative cover but can be found in a variety of habitats including deserts (where they are found near oases or along riverbeds), grasslands, shrubby woodlands and dry deciduous forests, as well as cleared areas in moist forests. They are commonly found in tall grass, thick brush, riverside swamps, and reed beds. They also adapt well to cultivated land and can be found in many different types of agriculture and forest plantations. Jungle cats are known to occur at elevations of up to 2500 m, but are more common in lowlands.



Jungle cats are solitary in nature. Their habitat consists of other animals' abandoned burrows, tree holes, and humid coves under swamp rocks. Their natural enemies are crocodiles, bears, wolves and other larger felines such as tigers. When countered by a threat, the jungle cat will vocalize before engaging in attack, producing small roars, a behavior uncommon for domestic cats.

Food Habits: Jungle cats are diurnal and mostly hunt for rodents, frogs and birds. They can sometimes hunt for fish while diving, but mostly swim in order to lose track of their scent. Jungle cats primarily prey on animals that weigh less than 1 kg and commonly consume rodents, lizards, snakes, frogs, birds, hare, fish, insects, livestock, and even fruit during the winter. Rodents are its primary prey item, however, which provides up to 70% of its daily energy intake. Although they specialize on small prey, jungle cats have been known to kill wild pigs (*Sus scrofa*) and chital fawns (*Axis axis*).

Reproduction: Jungle cats breed twice a year and produce litters of 3 to 6 kittens. Breeding season varies regionally and gestation lasts between 63 and 66 days. Kittens are quite large at birth (136 g) and gain weight at a rate of about 22 g per day. Kittens nurse until they are about 90 days old, but begin to eat solid food around day 49. They are not completely weaned until 15 weeks old. Jungle cats are independent by 8 to 9 months of age and reach sexual maturity at 11 to 18 months of age.

Threats: The biggest threat to Jungle Cat is habitat loss particularly industrialisation and urbanisation of low intensity agricultural areas and scrubland in the Indian subcontinent.

Conservation Status: CITES APPENDIX: II; Indian wildlife (Protection) Act (1972) (As amended up to 2002); Scheduled-1; Part-1.

1.17.3.3. Indian Pangolin (*Manis crassicaudata*):

Manis Crassicaudata are insectivorous mammals understood to occur in various types of tropical forests as well as open land, grasslands and degraded habitats, including in close proximity to villages. It is a medium-sized mammal, with a streamline elongated body and tail covered with large overlapping scales rather than fur. Indian Pangolin is widely distributed in India, except the arid region, high Himalayas and the North-East. It can be found at elevation up to 2500m. The species also occurs in Bangladesh, Pakistan, Nepal and Sri Lanka.



Habitat: *Manis crassicaudata* occupy a variety of habitats. They have been found in tropical rainforests, subtropical thorn forests, plains and the lower slopes of mountains. The Indian pangolin is solitary, mostly nocturnal, and terrestrial.

Ecology and Behavior: These pangolins dig their own burrows in the ground, at depths of 1.5–6 m; these are frequently under large rocks and the entrance is often hidden with soil. When in danger, they roll up into balls, with their large tails pressed tightly against face and belly to help protect them. Longevity of this animal in captivity can exceed 19 years.

These pangolins are not often observed in the wild due to their solitary, secretive, and nocturnal nature. A loud emission of a hissing sound has been reported when they are frightened or angry.

Food: The Indian pangolin is almost entirely insectivorous and more specifically a myrmecophage (ant/termite specialist). Its diet includes beetles, cockroaches, termites, and possibly worms, but mainly ants and termites. It feeds on the eggs, larvae, and adults of its prey, but eggs are the preferred choice. The Indian pangolin is nocturnal and uses its well-developed sense of smell to locate ant nests or termite mounds and other food sources. Pangolins tear apart and dig into mounds by using the three centre claws on their forefeet, throwing loose soil backwards with their hind feet. When feeding, the rostral part of the pangolin's tongue is quickly inserted and withdrawn to capture prey. This movement is also used for drinking.

Conservation Status: The species is therefore listed as endangered in the IUCN Red List of Threatened Species; under the Schedule I of the Wildlife (Protection) Act 1972 of India and included in Appendix II of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

1.17.3.4. Leopard (*Panthera pardus*):

Habitat: Indian leopard has high capability to adopt any type of habitat where it can get sufficient food and covers. Leopards avoid overlapping their territory or the home range with the tigers. Therefore they try to occupy the fringe areas of the forests, as well as dare more to enter the human inhabited areas.



Behavior: leopards are highly territorial. Leopards are not only the widest ranging of all Big Cats but are actually one of the most adaptable and are found in a variety of different habitats. The Leopard can be found inhabiting numerous different areas providing that there is a good source of cover and an ample supply of food including tropical rainforests, tree-lined savannah, barren deserts and mountain highlands.

Food Habits: The diet of these big cats is surprisingly varied which includes: wildebeest, impalas, reed-bucks, Thomson's gazelles, jackals, monkeys, fish and storks. However, at times they seem to show a preference for canines, even attempting to snatch dogs right from the feet of their masters. They can also eat fish and domestic stock such as goats and cows. They will even eat carrion.

Status: The species has been assigned almost all the categories of IUCN Red List Categories including: Near threatened, Threatened, Endangered, Critically endangered to Vulnerable, by different workers and agencies. However these categories have been assigned mostly on regional basis. On global basis the species has been assigned Lower Risk Status. The species has been included in Shedule I in The Wildlife (Protection) Act, 1972 of our country.

Conservation Status: *CITES APPENDIX: I; Indian wildlife (Protection) Act (1972) (As amended up to 2002); Sheduled-1; Part-1; Indian Red Data Book (IUCN, 1994); Vulnerable; (IUCN 1998) (Proposed); Vulnerable (National) and Data Deficient (Global).*

Man-leopard Conflicts: Major conflicts arise when leopards start preying on livestock. These conflicts have increased in recent years due to population growth among humans. The conflict becomes more severe when some leopards become man-eaters. They can prey on children and even enter homes at night to attack humans.

Threats: The Indian leopard (*Panthera pardus fusca*) is facing the crisis of adaptation. The species could soon qualify for Vulnerable under criterion A4 (30% decline over a period of 30 years = three generations, including both past and future). Despite being the most widespread cat, the Indian leopard faces several types of threat. The animal shares its habitat with other animals, which include tigers, bears, wolves, Asian elephants, hyenas, and wild dogs. These animals may kill leopard cubs if given a chance. Apart from its natural enemies, the leopard's main threat is people. For years, it has been threatened,



due to loss of habitat and poaching. A rapidly increasing threat to Leopards is the poisoning of carcasses targeting carnivores as a form of retaliation as well as a means of predator control. An estimated 50% of the population lives outside Protected Areas and so it is vulnerable to habitat destruction.

Conservation: Capture and translocation to protected areas has been practiced more as a means of conservation. However, investigations have shown that the animal is highly territorial. Shifting causes inter and intra specific fighting to establish a territory in the translocated area. They are so much particular about their territory that they may make all the efforts to reach back to their original territory. However, Leopards are somewhat tolerant of habitat conversion, and may persist close to large human populations provided they have suitable cover and prey. The MoEF&CC has issued guidelines:

Guidelines for Dealing with Man-leopard Conflict, Press Note, Ministry of Environment and Forests, Govt. of India, moef.nic.in/downloads/public-informat. Accessed on, 01-08- 2011.

The guidelines suggest a three pronged strategy to deal with man-leopard conflict as a means to their conservation:

- i. Awareness generation among local communities, media and officials of various departments.
- ii. Establish trained teams at two levels; the primary response team and the emergency response team, and
- iii. Use of latest technology and scientific know-how to improve efficacy of capture, handling, care and translocation of the animal.

1.17.3.5. Indian wolf (*Canis lupus pallipes*):

The Indian wolf (*Canis lupus pallipes*) is a subspecies of grey wolf that ranges from Israel to the Indian Subcontinent. It is intermediate in size between the Tibetan and Arabian wolf, and lacks the former's luxuriant winter coat. The Indian wolf is similar in structure to the European wolf, but is smaller, more slightly built, and has shorter fur with little to no under fur.

Habitat: Its habits are similar to those of other grey wolf subspecies, though the Indian wolf generally lives in smaller packs rarely exceeding 6-8 individuals, and are relatively less vocal, having rarely been known to howl. It tends to breed from mid-October to late



December, and whelp in holes or ravines. It typically preys on antelopes, rodents, and hares.

Ecology and Behavior: The Indian wolf, although somewhat gregarious, is not known to associate in large packs. It is also rather a silent animal, but sometimes, it barks like a pariah dog. It is rarely, if ever, heard to howl. Indian wolves prey on all mammals or birds they can kill, but especially on sheep, goats, and antelopes. They course and run down hares and foxes, and occasionally attack cattle. They not infrequently kill dogs.

Food: Wolves are carnivores (meat eaters) but they will eat other foods as well. Their diet ranges from big game, such as elk and moose, to earthworms, berries and grasshoppers. To avoid using too much energy catching their food, wolves prey on weaker members of a herd, such as old, young or sick animals. In summer, when the herds migrate, wolves eat mice, birds and even fish. Wolves eat their food very quickly, probably to protect it from being stolen, and to decrease the chance of attack from other predators. They eat the best parts first, and come back later for the remainder, as they can't afford to be wasteful. They will hide food in the snow, or icy soil, which helps to preserve it, and protect it from scavengers. Wolves can eat every 5-6 hours when there is plenty of food available, or they can fast and live on scraps for 2 weeks when there is less food around.

Threats: Despite the highest level of protection accorded to the wolves in India, hunting remains rampant and is a major cause of concern. Killing of adult wolves and pups by local shepherders is common throughout the range of the wolf. Conflict with humans for livestock depredation, depletion of prey species (like blackbuck, hare) due to livestock, exaggerated public fear regarding their danger, and fragmented habitats that are too small for populations with long-term viability are threatening their survival today.

Conservation Status: The Indian Wolf (*Canis lupus*), is an endangered species in Schedule I of Indian wildlife according to the Wild Life (Protection) Act, 1972. IUCN Red List, Least Concern species (IUCN 3.1). It is also in appendix 1 of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).



1.17.3.6. Honey Badger (*Mellivora capensis*):

The honey badger (*Mellivora capensis*), also called ratel, and are an interesting animal as there are many myths surrounding its nature and behaviour. It is well known as a fearless creature that can be quite aggressive when threatened.

Species Identification: Honey badgers stand around 250mm tall at their shoulders and weigh approximately 12kg. Their fur is coarse, with a strip of gray or brown hair running laterally down their dorsal side running from the base of the skull to the base of the tail. They have a stocky build, with short legs and long claws. Honey badgers are primarily terrestrial, but possess the ability to climb. They can run quick and for extended periods of time when chasing prey.

Breeding: Reproduction is considered asynchronous with an estimated gestation period of 50-70 days. Most commonly only one cub was produced, rarely two. Cubs stay in the den until three months of age, and then they begin foraging with their mother. Cubs are almost completely hairless until 3-5 weeks. They do not become independent until 12-16 months old. Parental care is provided by the female while the male completes his involvement after copulation.

Habitat: Honey badger habitat is described as open woodlands, desert, high mountains and coastal shrubs. In Assam, India badgers have been observed to inhabit scrub jungle and tall elephant grass. Honey badgers are burrowing mustelids; because of this they need specific habitat to create their burrows. In India, honey badger burrows are found on the banks of streams, rock cavities, and thick brush and in the spaces naturally formed by tree roots.

Diet: Their diet consists of scorpions, *Hottentotta rugiscutis*, *Heterometrus swammerdami*, *Hottentotta tamulus*, and *Lychas tricarinatus*; small rodents: lesser bandicoot rat (*Bandicota bengalensis*), Indian bush rat (*Golunda ellioti*), soft-furred rat (*Millardia meltada*), little Indian field mouse (*Mus booduga*), house mouse (*Mus musculus*), Sahyadris forest rat (*Rattus satarae*), Nilgiri long-tailed tree mouse (*Vandeleuria nilagirica*), jungle palm squirrel (*Funambulus tristriatus*), Malabar spiny dormouse (*Platacanthomys lasiurus*), Etruscan shrew (*Suncus etruscus*), and the Asian house shrew (*Suncus murinus*); and herpetofauna, Brook's gecko (*Hemidactylus brookii*),



bark gecko (*Hemidactylus leschenaultia*), brahminy skink (*Mabuya carinata*), Indian rat snake (*Ptyas mucosa*), and the banded racer (*Argyrogena fasciolatus*).

Conservation Status: The Indian Wildlife (Protection) Act of 1972 (No. 53 of 1972), gives the honey badger an extremely high level of protection in India as a Schedule 1 organism.

1.17.3.7. Four Horned Antelope (*Tetracerus quadricornis*):

The four horned antelope (*Tetracerus quadricornis*) also known as "Chausingha or Chauka" is endemic to the Indian subcontinent. According to IUCN redlist this is vulnerable species with decreasing population trend. The Four-horned Antelope has a wide distribution, occurring in scattered populations from the Himalayan foothills to peninsular India.

Four horned antelope is non-migratory, probably a sedentary and territorial species occupying restricted home ranges. It is generally a solitary but sometimes can be seen in a small group of three to five animals. It is elusive and difficult to observe in wild. It has peculiar anti-predatory behaviour where it prefers to hide than run, making it obscure. It is herbivorous with a ruminal digestive system.

Habitat: The four-horned antelope inhabits areas with significant cover from grasses or heavy undergrowth, and close to water bodies. It generally keeps away from human-inhabited areas. Though they are habitat generalists, four-horned antelopes mostly occur in open, dry, deciduous forests in hilly terrain.

Conservation Status: The four-horned antelope is threatened by the loss of its natural habitat due to agricultural expansion and mining activities in forest areas. Moreover, the unusual four-horned skull and the horns have been a popular target for trophy hunters. In India, the species is protected under Schedule I the Wildlife Protection Act of 1972 and the Nepalese population is listed in CITES Appendix III. The four-horned antelope is classified as Vulnerable by the International Union for the Conservation of Nature and Natural Resources (IUCN).



1.17.3.8. Chinkara (*Gazella bennettii*):

Indian gazelle or Chinkara (*Gazella bennettii*), a globally threatened ungulate, once widely distributed antelope in India, now facing threat due to increasing human population, mechanised agriculture, mining activities and hunting by locals.

Habitat: Chinkara live in arid plains and hills, deserts, dry scrub and light forests. They inhabit more than 80 protected areas in India. Indian gazelles can thrive in a variety of habitats. They have been observed in dry deciduous forests, open woodlands, and dry areas such as sand dunes, semi-arid deserts, and arid valleys that have an annual rainfall of 150 to 750 mm. Indian gazelles are facultative drinkers and can withstand relatively long intervals between visits to water points by conserving metabolic water and taking advantage of water found in vegetation.

FOOD HABITS: Indian gazelles are better adapted to browsing than grazing, but they can consume legumes and grasses in large quantities. Their diet typically consists of grasses, various leaves, crops and fruits such as pumpkins and melons. A majority of their metabolic water intake comes from the vegetation they consume. The brush and trees that make up their diet are found in mountain ranges and deciduous forests, while grasses and other herbaceous plants are found in valleys and agricultural fields.

CONSERVATION STATUS: *Gazella bennettii* is considered a species of least concern by the International Union for Conservation of Nature (IUCN). Indian gazelles were considered threatened in the 1950's due to habitat loss and anthropogenic activities such as hunting and poaching. Agricultural practices along with the general increase in human population has led to extirpation in certain areas.

In 1994 the species was considered vulnerable, and in 1996 *Gazella bennettii* was considered a species of lower risk. The species has since recovered and is now considered a species of least concern by the IUCN.

Gazella bennettii was considered a Schedule 1 species under the Wildlife (Protection) Act of India in 1972. Indian law fully protects Indian gazelles, reserving 80% of India as protected land, 5% of Pakistan and 9% of Iran.



1.17.3.9. Mouse Deer (*Tragulus meminna*):

The Indian spotted chevrotain (*Tragulus meminna*) is a species of even-toed ungulate in the family Tragulidae found in India and possibly Nepal. It has a body length of 23 in (57.5 cm), with a tail length of 1 in (2.5 cm); it weighs around 7 lb (3 kg). It lives in rainforests and is nocturnal.

Habitat: Mouse-deer (tragulids) in general occupy a range of habitats from evergreen forests to plantations. They are an ancient group of frugivorous ungulates, small-bodied and active both day and night. *Moschiola meminna* are only active at night, and are often found in evergreen, semi-evergreen and deciduous forests, as well as in grassland and commercial plantations.

Food Habits: *T. meminna* are primarily frugivores, consuming easily digestible items which provide relatively high protein and less fibrous materials. Indian chevrotains usually browse the understory vegetation and eat mainly fallen fruits. Other food items include young leaves, shrubs, shoots, and sometimes animal materials found on the forest floor.

T. meminna are ruminants with a three-chambered simple stomach. The selection of a very digestible diet allows rapid fermentation and swift passage through the gut, which in turn aids in rapid and efficient digestion.

Conservation Status: *Tragulus meminna* populations are listed as 'Least Concern' by IUCN. The main threat for the species is from hunting by local communities, Industrial/Mining Activities and forest fire as they are sensitive to habitat loss, alteration and degradation.

1.17.3.10. Bengal Monitor Lizard (*Varanus bengalensis*):

Habit: They are often found in agricultural areas. Bengal monitors shelter in burrows that they dig or crevices in rocks and abandoned termite mounds. It is mostly diurnal in habit.

Habitat: It is found in a wide range of habitats, *viz.* forest, river banks, by the side of nullah, and agricultural land. It occupies burrows, dense vegetation, hollows of trees, rock cracks and crevices.

Behavior: Mainly ground dweller, but is a very good climber as well. Bengal Monitors are usually solitary and usually found on the ground although the young are often seen on



trees. They shelter and spend nights in burrows or crevices in rocks, make use also of abandoned termite mounds. In the night their body temperature drops below ambient. In the morning they raise their body temperatures by basking before commencing activity and for this reason they are rarely active early in the morning and most active in the afternoons when temperatures are highest.

Food: Their normal prey consists of beetles, grubs, orthopterans, scorpions, crabs, snails, ants and other invertebrates. Vertebrate prey is comparatively rare and includes frogs, fish, other lizards, snakes birds and their eggs and rodents. They sometimes capture roosting bats.

Threat: Monitor lizards are hunted for skin and their body fat. Its eggs are considered a delicacy and the entire animal is also eaten. Unani, the Greco-Arabian system of medicine, recommends the use of various body parts of monitors to cure numerous ailments. The population of the Common Indian Monitor, *Varanus bengalensis* has alarmingly dwindled throughout the Indian sub-continent mainly due to excessive exploitation of the adults for their commercially valuable skins, as food and in traditional medicines. Habitat loss due to large-scale deforestation, urbanization, dams and hydroelectricity projects and other biotic factors are also responsible for the population decline of the species.

Conservation Status: Status: Not Listed (IUCN 2000); Endangered (ESA). Schedule I Indian Wildlife (Conservation) Act, 1972.

1.17.3.11. Indian Python (*Python molurus*):

Habitat: It is a non-poisonous, lethargic and slow moving snake, exhibiting little if any timidity and rarely rousing itself seriously to escape, even when attacked. Diurnal and/or nocturnal habit depends upon the degree of disturbance from man in their environment. The snake hibernates in cold season, in any convenient retreat. There are very few records of attack on human beings are also there in the area.

Food: Feeds on mammals, birds and reptiles, but prefers mammals. Stomach content has shown frogs, toads, monitor lizard, wild duck, peafowl, poultry, rat, hare, porcupine, langur, jackal, mousedeer, and hogdeer, chital, sambar fawn, barking deer, chinkara and leopard. Thus has a very wide range of food items.



Threats: It is killed for flesh and skin. However, in the presently applied lease area it is not eaten. Killing for skin is also not reported in the area. However, it is killed only because it is a snake.

Conservation: The snake, although occurs in the area but is rare. Reports of its conflicts with human being are extremely rare. Public awareness is the most important method for its conservation.

Conservation Status: This species is classified as Lower Risk/Near Threatened (LR/NT) on the IUCN Red List of Threatened Species (v2.3, 1994). This means that it has been evaluated, but does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. However, it is considered Near Threatened (NT), meaning that it does not qualify for Conservation Dependent, but is close to qualifying for Vulnerable. Year assessed: 1996.

1.17.3.12. Mugger Crocodile (*Crocodylus palustris*):

The Mugger is a medium-sized crocodile (maximum length 4-5 m), and has the broadest snout of any living member of the genus *Crocodylus*. It is principally restricted to the Indian subcontinent where it may be found in a number of freshwater habitat types including rivers, lakes and marshes. In India, *C. palustris* has adapted well to reservoirs, irrigation canals and man-made ponds. The Mugger can even be found in coastal saltwater lagoons and estuaries. In some areas of northern India and Nepal, Mugger tend to occupy habitat that is marginal for Gharial (*Gavialis gangeticus*), but will sometimes compete for basking and nesting banks where they are sympatric. When found together with Gharial, Mugger will bask on midstream rocks or muddy banks.

Habitat: This species is not only found in freshwater lakes, ponds, and marshes, but it has adapted well to reservoirs, irrigation canals, human-made ponds, and even recently in coastal saltwater lagoons. The mugger likes relatively shallow water, no deeper than 5m, and avoids fast-flowing rivers. The mugger is also known to bury itself into mud to escape the searing heat of India during the dry season.

Behavior: All crocodiles, including the mugger, are highly social. This social behavior includes communication, gregarious behavior, dominance interactions, and territorial activities. There is a great deal of vocalization between adults and adults and their young.



The majority of socializing occurs during the seasonal reproductive activities. Body postures such as tail thrashing and snout lifting occur while the males are trying to establish territories and gain dominance prior to courtship and mating.

Conservation Status: In the past (1950s-1960s), the main source of threat to *Crocodylus palustris* was illegal skin trading. Now, the current threats have changed to individuals drowning in fishing nets, egg predation by people, and habitat destruction. There has been considerable progress with the management of crocodiles in India. The management of the mugger is based principally on the legal protection of wild populations and large scale captive rearing programs.

1.17.3.13. Conservation plan for Schedule-I Bird Species:

Birds, occupying higher trophic levels in the ecosystems, respond quickly to the changes in the habitats and therefore serve as one of the best indicators for evaluating the ecological status and functioning of ecosystems of the area. Therefore, we created baseline data on birds by systematically collected data on occurrence in the core and buffer areas separately. For creating baseline data on birds, we carried out bird surveys in different habitats as differential habitat preferences are seen in birds. Based on our extensive field visits, literature survey, and consultation local people, we found 8 bird species of high conservation significance as they belong to Schedule-I of Indian Wildlife Protection Act 1972 (**Table-1.13**).

Table-1.13 List of Scheduled Bird species from study area

Birds			
1.	<i>Pavo cristatus</i>	Indian Peafowl	Schedule-I
2.	<i>Aquila rapax</i>	Tawny Eagle	Schedule-I
3.	<i>Gyps bengalensis</i>	White Rumped Vulture	Schedule-I
4.	<i>Nisaetus cirrhatus</i>	Crested Hawk Eagle	Schedule-I
5.	<i>Anthracoceros coronatus</i>	Pied Hornbill	Schedule-I
6.	<i>Ciconia episcopus</i>	White stork	Schedule-I
7.	<i>Neophron percnopterus</i>	White Scavenger Vulture	Schedule-I
8.	<i>Sarcogyps calvus</i>	King Vulture	Schedule-I



Occurrences of birds in the study area are mainly due to the overall ecological condition which provides them suitable habitats where they obtain their food and safety for their breeding or wintering in the region. Therefore, any changes or degradation of air, soil and water quality would lead to degradation of vegetation and habitats of birds. Increased noise levels and disturbance levels would result in their displacement from the core area and its immediate surroundings. Direct disturbance by presence of people, vehicle, their noise, vibrations, lights etc. can potentially displace most of the birds' species from core area.

Therefore, it is recommended that project proponent shall take utmost care in controlling dust, fugitive emissions and put in place all pollution control measures during construction phase which would not result in degradation of air, soil, water qualities that affect the surrounding forest areas and vegetation. It is also recommended that workers shall be strictly instructed so that they don't engage in poaching of birds. It is further recommended that project proponent shall monitor the ecological status of the study area including species of birds and their habitats as part of their periodic comprehensive biodiversity monitoring programme.

1.18 Forest Types:

According to revised Forest Types (Champion & Seth, 1968) the forest type of the lease area confirms to following forest types:-

- i. Dry Peninsular Sal Forest (5B/C1c)
- ii. Northern Dry Mixed Deciduous Forest (5B/C2)
- iii. Dry Bamboo Brakes (5/E9)

1.18.1. Status of Forest in Singrauli district According to FSI Report:

According to the '**India State of Forest Report -2017**' (latest) the total forest area of the Singrauli district is 2,189 Km² which is 38.57 % of the geographical area. The forest area included, 398 Km² (39800 Ha) of very dense forest, 1014 Km² (101400 Ha) of medium dense forest and 777.0 Km² (77700 Ha) of open forest.

1.18.2. Details of the forest present within the Study Area:

The study area comprises of one Reserve Forest and seven Protected Forest as detailed below:



Table-1.14 List of Forest Blocks within 10 km radius

Sr. No.	RF/PF	Direction	Distance (km)
1.	Mohanban RF	All Directions	Core zone
2.	Langhadol PF	SW	9.1

1.18.3. Wildlife Scenario of State:

Madhya Pradesh, with 31% of geographical area as forest land (FSI 2011), is rich in floral and faunal biodiversity. These forests host 9 National Parks, 25 Wildlife Sanctuaries, 2 Biosphere Reserves, 5 Tiger Reserves and also house a large number of villages which are highly dependent on forests for livelihoods of villages.

It is predicted that changing land-use may affect the composition and distribution of forest types of Madhya Pradesh. These changes may also alter the productivity of NTFPs/Fodder/Fuel wood etc which are the basic sources of livelihood for forest dependent communities. Shift in habitat and search for favourable weather would induce migration of wild animals and may subsequently increase the incidences of increasing man-animal conflict. In terms of phyto bio-diversity, many alien invasive species may expand their spread threatening the existence of indigenous species.

Tigers and Leopards can be tracted in most of the Wildlife Sanctuaries besides the Tiger Reserves. The most easily sighted wildlife species are Chinkara/Indian Gazelle (*Gazella bennettii*) and Chital (*Axis axis*). Other major species found in the Sanctuaries are **Nilgai/Blue Bull** (*Boselaphus tragocamelus*), **Sambar** (*Cervus unicolor*), **Gaur** (*Bos gaurus*), **Barking Deer** (*Muntiacus muntjack*), **Chausingha** (*Tetracerus quadricornis*) **Sloth Bear** (*Melursus ursinus*), **Wild Boar** (*Susscrofa cristatus*), **Dhole** (*Cuon alpinus*), **Jackal** (*Canis aureus*), **Striped Hyena** (*Hyaena hyaena*), **Indian Porcupine** (*Histrix indica*) and **Bison** (*Bison bison*). The region also abounds in avifauna which includes **Darters** (*Anhinga melanogaster*), **Wood Peckers** (*Micropternus brachyurus*), **Peacock** (*Pavo cristatus*), **Jungle Fowl** (*Gallus sonneratti*), **Green Pigeon** (*Ducula aenea*), **Painted Partridge** (*Galloperdix lunulata*), **Parakeets** (*Psittacula. sp.*) and **Black necked Storks** (*Ephippiorhynchus asiaticus*) etc. To attract migratory Birds, artificial



water holes have been developed in the area with close proximity to jungle areas which offer good sites for bird watchers during winter.

According to the book "**Right of Passage**", **Elephant Corridors of India-2017** the elephant habitats in central India extend over 21,000 sq km in the states of Odisha, Jharkhand, Chhattisgarh and southern West Bengal, at times extending to Madhya Pradesh and Bihar, and hold a population of about 3128 elephants (*MoEFCC, 2017*). There have been recent reports of elephants straying into Madhya Pradesh's eastern districts of Singrauli and Anuppur from bordering northern Chhattisgarh, causing concern among the locals and forest officials. The deterioration in habitat quality has forced elephants to undertake long-range disoriented movements by using smaller forest patches to move to larger forest areas. This is one of the major causes for the migration of elephants into Chhattisgarh and at times extending to Madhya Pradesh.

1.19 Movement of Mega Wildlife:

Elephant is the flagship species of this area and the only mega herbivore (wildlife) with long ranging movement behaviour, present in the Singrauli Forest Division. Elephants have not been reported from the mining lease area as well as from the impact area. However, there are reports of the movement of elephants, far beyond the lease area in the district of Korba and Sarguja of Chhattisgarh State. Elephants follow streams and move in valleys and unless hard pressed try to avoid hilly terrain to conserve energy. This behaviour exposes them close to human habitation. The movement of elephants also reported in the eastern part of the Renukoot Dam. But the dam is a huge barrier for the elephants to reach anywhere near to the presently Suliyari coal mine lease area. The movement of elephants in Singrauli Forest Division is shown in **Figure-1.4**.



1.20 Man-Animal Conflict:

Man animal conflict refers to negative interaction between wild animals and human beings such as crop raiding, human death and injury caused by wildlife and in retaliation (or otherwise) human beings killing the animals. Wildlife conservation efforts raise conflict issues not only through crop raiding, cattle lifting, property and life damage but also, generally when conservation comes into conflict with development. Both wildlife and people are in conflict and the goal is to enable coexistence and sharing of resources on sustainable scale. This is best achieved by addressing both sides of the equation.

The bear population is quite high in this area and the surrounding forests. A peculiar phenomenon is prevalent in this area. The sloth bear usually remains inside the forest during the winter months but comes out of its cover in search of Mahua flowers which is a delicacy for it. Normally in the winter mornings the environment remains full of fog and the bear has long fur on its eyebrows, which obstruct its vision. On the other hand the villagers are also engaged in Mahua collection during the early hours and are usually also not able to see the approaching Bear early enough due to fog. As a result, the Bear and the Mahua collectors invariably find themselves face to face and then the Bear usually attacks the Mahua collectors on instinct.

Of late, another phenomenon has also troubled the local populace. Elephant herds have been reported to have occasionally crossed the area while moving from the Odisha Forests to the Elephant habitats down south. The local populaces have had their houses brought down and suffered a lot on account of these elephant movements. The Madhya Pradesh Government has however taken a commendable stand on this account. While the aggrieved villagers have been provided adequate compensation, the Elephant movement has not been discouraged and the wildlife wing of the Madhya Pradesh forest department is actually working on a very elaborate plan in this direction.

1.21 Poaching / Killing of animals:

While forest fires are usually unintentional and are inadvertently due to carelessness, poaching is intentional and a crime of a very serious nature. Poaching is usually organized crime and there are tiers of different level of criminals involved in the racket. At the lowest level are usually the local people. There are certain tribes that are known to have



been poachers for generations. They are usually the least benefited in terms of money that a serious poaching can accrue but without them usually poaching is not possible. The reason is simple, it's they who know the jungles well and its they who can walk long distances inside the forest and its they who use ingenious and usually difficult to trace methods like electrocution (by using a connection from overhead H.T. electrical transmission lines), poisoning (sometimes even large poisoning of water sources which shrink during the pinch period and a large number of animals can come to drink water from one water hole and get poisoned) and traps. The traps are sometimes very ingenious and entirely home made using small iron pieces and iron springs. These are usually so smartly hidden that they can be completely overlooked even by the people. The forest staff may have a real tough time in weeding out such traps.

Apart from the local people there is a whole chain that goes upright to the International level. This well-oiled system makes wildlife crimes very lucrative and International data suggest that wildlife related crimes are only third after arms drugs related crimes in terms of money exchanged (WPSI-Wildlife Protection Society of Indian publication).

Nevertheless, poaching can be thwarted and the poachers brought to book but there is no short cut. It requires 24 hr monitoring of forest areas, particularly those that have relatively high biodiversity and where the number of animals is high.

1.22 Working Plan Prescriptions:

The present Working Plan of Singrauli Forest Division, valid from 2009-10 to 2018-19 consists of nine Working Circles as detailed below:-

- Selection cum Improvement Management Working Circle
- Improvement Working Circle
- Protection Management Working Circle
- Soil and Water Conservation Working Circle
- Rehabilitation Working Circle
- Plantation Working Circle
- Plantation Maintenance overlapping Working Circle
- Rehabilitation of degraded Bamboo Forest Working Circle
- Wildlife Working Circle



The demand of the day is to manage the forest by active participation of local people (Joint Forest Management) on sharing basis. In the end for any felling takes place the stake holders will have a 50% share. Only in Protection Management Working Circle this procedure has not been adopted as no felling is permitted. Therefore thrust has been more on eco-development through strategies aimed at uplifting the local economy and also at increasing the general awareness of the local community about the importance of biodiversity and wildlife. When we plan for conservation of Wildlife in a forest area (and its neighbouring Impact Area) that has to be diverted for a non-forest activity like coal mining, the task becomes rather peculiar because the question of usufruct sharing in case of Participatory Forest Management can only be addressed by the forest department and can certainly not go beyond the provisions of the Working Plans in force. What can be done though is a whole-hearted effort towards eco-development through uplifting of the local economy and also through enhancing the awareness level of the local community about the need of biodiversity and wildlife conservation. The Conservation Plan would then focus towards awareness building of local people and also uplifting of local economy through capacity building and monetary support. While previously the whole emphasis used to be on exploitation of forests produce for economic gain, now a day the emphasis is more on protection, improvement and rehabilitation of the forests by treating the forests more as an ecosystem rather than as a timber factory. For our case we would discuss the Bio-diversity and Wildlife Conservation Management Circle in some detail in the paragraphs below.

1.23 Bio-diversity Conservation Management Circle:

The main objectives of this Biodiversity Conservation Management Circle as listed in the two Working Plans are outlined briefly below:

- Conservation and propagation of Biodiversity
- Increase density of Forest Crop
- Soil & water conservation
- Improve habitat for wildlife
- Conservation and propagation of endangered species
- Provide special protection to plants of medicinal value
- Involve fringe villagers for active cooperation in eco-development



To meet these objectives the following treatments are proposed in general:

- Wildlife Habitat Improvement by Enrichment Plantation which will include species suitable for wildlife in general and Elephant in particular.
- Priority would be given to engineering structures (Soil Moisture Conservation measures) for preventing soil erosion.
- Special Fire protection measures including fire lines and use of fire blowers.
- Provisions for salt licks and water holes.
- Creation of Grass lands and meadows especially for herbivores.
- Studies on elephant habitat utilisation by engaging Research Scholars.
- Bio-diversity assessment and monitoring by engaging Scientist and Research assistant.
- To create a Bio-diversity Park for nature lovers and student having Biology as a subject in their reading to identify the species, their phenology and area of distribution.

1.24 Wildlife Conservation:**Objectives of Wildlife Management:**

- To improve the habitat of wildlife by reducing biotic interference caused in the form of illicit felling, poaching, grazing, shifting cultivation, encroachment, over exploitation of timber and bamboos and forest fire etc.
- Food, water, cover and space are the most important components of wildlife habitats
- To conserve and preserve the diversity and integrity of flora and fauna within natural ecosystem.
- To carry out extensive as well as intensive research concerning to the improvement and development of wild habitat and wildlife.
- To educate the local inhabitants about the importance of wild fauna in the forest ecosystem.
- To conserve the existing prime wildlife habitats like the areas which are frequently visited by wild animals and birds for shelter, food, water, cover, etc. By providing adequate protection and by taking various developmental measures.



- Food is an essential prerequisite for wildlife habitat. Food availability in a habitat changes with the season. Herbivores depend on plant materials for their sustenance and normally selective feeders as their food preference are related to palatability.

Herbivores prefer the leaves, barks, twigs, flowers, fruits and seeds of their selective species. Wild elephants feed on barks and leaves of especially of Moraceae family. Deer, monkey, langur, hares feed on wild fruits. Among the plant materials, grass constitutes a major portion of the herbivores' foods.

Dead trees (snags) and stag headed trees are to be preserved for avi-fauna (wood picker) and reptiles like snakes and lizards to live and breed. Similarly rookeries are to be preserved for mongoos to live and breed. Earthen mounts inside the forests are to be retained for bear and ratel that mainly depend on white ants.

Wildlife are basically divided into two broad groups i.e. Carnivores and herbivores. Carnivores prey on herbivores. The population growth of herbivores will increase the population of carnivores. Therefore, protection to forest is primefacily required. Besides, anti-depredation squad has to be deployed at vulnerable places in order to depredate elephant intervening to human habitats and herbivores soling near the villages to quench their thirst during summer.

1.24.1. Methodology:

This conservation plan will follow the methods regularly used by foresters (starting from forest guard to DFO, Waidhan Division). The objectives of this plan are necessarily, prescriptions of approved Working Plan need to be followed by the foresters for management of both forest and wildlife of the ZoI of this coal block area. The prescriptions are applicable to the Core area (mining project) and Buffer area i.e. **10 km from the periphery of mining lease boundary.**

Biogeographically, the state falls in Deccan bio-region comprising representative fauna of central India like Tiger (*Panthera tigris*), Leopard (*Panthera pardus*), Gaur (*Bos gaurus*), Sambhar (*Cervus unicolor*), Chital (*Axix axis*), Nilgai (*Boselaphus tragocamelus*) and Wild Boar (*Sus scrofa*). The wild buffalo (*Bubalus bubalis*) and Hill myna (*Gracula religiosa*) are also present which have been declared as rare and endangered (IUCN Red Data Book).



1.24.2. Data Referred:

The following Data has been referred;

- Project Details including impact of mining.
- Locality factors including Climate, Geology, Hydrology and Ecology.
- Demography
- Forest and Wildlife related Chapters of Working Plan.
- Bio-diversity scenario.
- Survey of India Toposheets, Maps indicating mining area, surface map, forest maps of Singrauli district.
- Information about Plant species of medicinal and economic importance.
- Information about rare and endangered plants and animals.
- Information about Wildlife census and Poaching.
- Information about Compensation paid to victims due to Wildlife- Human interface.
- Present forest management practices and Working Plan prescriptions.
- Present Wildlife management in the area as depicted in the Working Plan (Wildlife overlapping Working Circle).

1.24.3. Data Source:

- Working Plans of Singrauli Forest Division were the primary source of Data for preparation of this Plan.
- Range Officer, Suliyari furnished data about poaching, compensation to Wildlife Victims apart from data on wildlife census, presence and movement of wild animals and indirect evidence about them in the impact area of this Coal mine.
- On our approach to Chief Conservator of Wildlife regarding census figure of Wildlife in the State, he replied that no such detailed census has been carried out nor recorded.
- Topo Sheets, Mining Plan with maps were provided by the User Agency.
- Forest Maps of Singrauli district particularly corridor area was collected from Divisional Forest Office, Singrauli and studied.



- The local Forest Staff and villagers were also interviewed by displaying a pictorial Book on Wildlife according to Schedule as depicted in the Wildlife Protection Act, 1972 to collect data about wildlife available in the area.

The Project area and Impact area was visited by the author to conceptualize the flora and fauna available in the area from 27.09.2018 to 02.10.2018.

The following informations were collected from Mining Plan:

- Although the life of this mine is 25 years but open cast mining can be done upto 22 years.
- The geological reserve from open cast mining is 147.99 Mt (million tonnes) whereas the extractable reserve is only 108.57 MT. A total of around 805.62 Million cu. m overburden & Inter-burden waste will be generated from the mines upto the conceptual stage.
- Green belt development, progressive afforestation since inception of the project and concurrent backfilling from 10th year of mining will facilitate at least ground nesting birds and reptile and small herbivores to take shelter in and under the reclaimed land/ green cover.
- In the Mining Plan, it has been envisaged to divert a village road. While constructing the diverted road care should be taken to provide vent holes to serve as reptile pass mainly on slushy areas.



CHAPTER-2

**THE PERCEIVED IMPACTS
OF THE PROJECT ON THE
ENVIRONMENT**

2.0. THE PERCEIVED IMPACTS OF THE PROJECT ON THE ENVIRONMENT

2.1. Impact on the Environment in General:

Any mining project has its impacts on the biotic, physical and socio-economic environment. Some are beneficial to the society some are not. Evaluating these impacts, all projects are implemented. The Suliyari Coal Mine is not left untouched in these aspects. When certain impacts are disasters, it necessitates mitigating such problem with established technology and scientific study. Such negative impacts are discussed here to help in implementing mitigative measures. This mining lease when in operation will certainly displace wild animals and flora and restrict the use of habitat within the lease. All the species from the area of mine will be displaced to the adjoining Protected Forest. Mining have long term adverse impacts on wildlife, including impairment of its habitat or native environment. Many animal species cannot adjust to the changes brought on by the land disturbances due to mining. Important habitats such as primary breeding ground may lead to elimination of species. The unique habitat of old forest growths may be impossible to restore even after proper reclamation of the mined out areas. The exodus of animals from the lease area will force them to move into safer habitats, putting extra pressure there on existing resources and also they may move into human habitation, leading to more conflict with human.

The block area has highly undulating and rugged topography. The northern and southern parts of the mine are occupied by hillocks with maximum elevation upto 500m AMSL. In general, the elevation of ground varies from 441.07 m AMSL as observed in borehole MS-2 to 499.23 m AMSL in borehole MS-37 located in the south-western and northern parts of the mine respectively. A few hillocks are also observed in the eastern part of the mine.

The Singrauli Coalfield is located in the drainage area of Son & Rihand Rivers. Suliyari Coal Mine has dendritic to sub-dendritic drainage pattern. The drainage of the mine is mainly controlled by westerly flowing Hurdul nala which traverses the mine in the north-eastern part and passes through the mine. Many small seasonal nallas drain into Hardul Nala. In the north of the block, Mahan River flows outside the mine towards north. As per the topographical survey, reduced levels (RLs) on banks of Hurdul nala varies from 471.30m to 432.30m.

