CENTRAL COALFIELDS LIMITED
(A Mini Ratna Company)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP

Ref No: - GM (A-C)/Forest/2024-25/ 1663 **Dated: - 22-11-2024**

To,

The Divisional Forest Officer,
Chatra South, Chatra

Sub: Pointwise compliance of conditions of Stage-I Clearance for 431.59 Ha Forest land of Amrapali OCP, CCL issued by MoEF&CC, Govt. Of India, vide F.No.8-48/2008-FC-(Vol) dated 21.12.2023

Ref: Stage-I FC granted by MoEF&CC Delhi vide No.-8-48/2008-FC-(Vol) dt. 21.12.2023.

22/11/2024

Dear Sir,

Pointwise compliance of conditions of Stage-I Forest Clearance for 431.59 Ha Forest land of Amrapali OCP, CCL issued by MoEF&CC, Govt. Of India, vide F.No.8-48/2008-FC-(Vol) dated 21.12.2023 in Chatra District of Jharkhand is given below:

	Stage – I FC conditions	Compliance Status
1.	Legal status of the diverted forest land shall remain unchanged;	Amrapali OCP undertakes that Legal status of the diverted forest land shall remain unchanged. **ANNEXURE-1**
2 (i)	**Compensatory Afforestation:** The compensatory afforestation over suitable non-forest land, equal in extent to the forest land being diverted i.e. 431.59 ha, shall be raised by the State Forest Department at the cost of the user agency and the work of compensatory afforestation shall start within two years of issue of order of diversion of forest land;	As per the MoEF&CC Gazette Notification G.S.R. 582(E) dated 20/09/2024, FC proposal of Amrapali OCP may be considered for further processing under exceptional circumstance. (In the instant matter, Justification for considering Double Degraded Forest land for CA purpose, is attached as **ANNEXURE- 2)**. Also, Double Degraded Forest Land (DDFL) for CA purpose has already been submitted and accepted by IRO, Ranchi, and Advisory Committee of MoEF&CC, Delhi. In this regard, copy of **Site Inspection Report (SIR)** by IRO, MoEF&CC Ranchi dated 10-04-2023 is attached as **ANNEXURE-3** for kind reference. Further to the above, CCL Undertakes to make payment against CA as per the Demand
(ii)	The non-forest land identified for raising Compensatory Afforestation shall be demarcated by concrete pillars of suitable size and handed over, free from all encumbrances to the State Forest Department and the same will be notified as protected forest under section 29 of Indian Forest Act,1927(16 of 1927) or under any other law for the time being in force before the Final/Stage-II approval;	

(iii)	The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation as per the approved CA Scheme at the current wage rate in consultation with State Forest Department in the account of CAMPA of the concerned State through online portal;	raised by State Forest Deptt. The undertaking to this effect is attached at **ANNEXURE-4.**
(iv)	The cost of compensatory afforestation at the prevailing wage rates as per compensatory afforestation scheme and the cost of survey, demarcation and erection of permanent pillars, if required on the CA land, shall be deposited in advance with the Forest Department by the user agency. The CA will be maintained for 10 years. The scheme may include afforestation of indigenous species with appropriate provision for anticipated cost increase for works scheduled for subsequent years;	
3 (i)	**Net Present Value**: The User Agency shall transfer the funds towards the cost of Net Present Value (NPV) of the forest land being diverted under this proposal in accordance with the MoEF&CC's guidelines dated 6.01.2022 read with guidelines dated 19.01.2022;	A total demand of **Rs 53,02,47,158** was raised by DFO Chatra South through letter no. 151 dated **19.01.2024**. Out of this, **Rs 34,73,69,770** was paid on **31.03.2016** via the following transactions: 1. RTGS payment of **Rs 220,50,00,000** to CAF AC Jharkhand Account (Account No. 037100101025212, IFSC Code CORP0000371). 2. NEFT payment of **Rs 41,439** to CAF AC Jharkhand Account (Account No. 037100101025212, IFSC Code CORP0000371) for thirteen different projects. A copy of the payment details is attached as **Annexure-5** for reference. The remaining demand of **Rs 18,28,77,389.00** was raised by DFO Chatra South via letter no. 643 dated **20.03.2024**. The payment for this amount was made on **16.10.2024** via UTR no. **ICICR42024101600000215**. Copies of the payment details are attached as **Annexure-5** and **Annexure-5A** for reference.
(ii)	At the time of payment of the Net Present Value (NPV) at the present rate, the user agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as	Amrapali OCP undertakes to pay the **additional amount of NPV, if so determined,** as per the final decision of the **Hon'ble Supreme Court of India. Annexure-6.**

	per the final decision of the Hon'ble Supreme Court of India;	
4	Keeping in view the encroachments over the areas earlier proposed for CA, the State Govt. shall provide areas free from all encumbrances for the purpose of raising compensatory afforestation along with relevant documents, certificates and kml files and uploaded the same on the PARIVESH portal;	As per the MoEF&CC Gazette Notification G.S.R. 582(E) dated 20/09/2024, FC proposal of Amrapali OCP may be considered for further processing under exceptional circumstance. (In the instant matter, Justification for considering Double Degraded Forest land for CA purpose, is attached as **ANNEXURE- 2).** Also, Double Degraded Forest Land (DDFL) for CA purpose has already been submitted and accepted by IRO, Ranchi, and Advisory Committee of MoEF&CC, Delhi. In this regard, copy of **Site Inspection Report (SIR)** by IRO, MoEF&CC Ranchi dated 10-04-2023 is attached as **ANNEXURE-3** for kind reference. Further to the above, CCL Undertakes to make payment against CA as per the Demand raised by State Forest Deptt. The undertaking to this effect is attached at **ANNEXURE-4.**
5	The road has been constructed/widened/blacktopped within the area of coal block and involves violation of the provisions of FCA, 1980. The State shall conduct a detailed enquiry and initiate action as per section 3A/3B;	Action has been taken by State Forest Department. A forest offence report was registered against NBCC Officials on 15.12.2021 for black topping of the existing road. Xerox copy of the aforesaid offence report is enclosed herewith **(ANNEXURE-7)** **A forest offence report was registered against NBCC Officials on 15.12.2021 for blacktopping of the existing road by Forest Officials. The Xerox copy of the offence report registered against NBCC Officials is enclosed herewith. The investigation is under process.**
6	The violation for the construction of road has taken place within the area of the coal block, therefore the user agency shall deposit penal NPV at the rate of Five times of the Normal NPV for forest area broken up without prior approval of the central government;	A demand of Rs 64,50,098/- has been raised by DFO Chatra South vide letter no-151dated 19/01/2024. Accordingly, it has been paid vide UTR no. ICICR42024101600000215 dated 16.10.2024. Copy attached as **Annexure-8 & 5** for kind reference.
7	Keeping in view the likely impact of the project on the movement of wildlife in general and elephant in particular, the user agency shall prepare on a	1. 'Integrated Site-Specific Wildlife Conservation Management and Impact Mitigation Plan' has been approved by PCCF Wildlife and Chief

	landscape level in 10 km circumference of the Project proposal area and the 531.64 ha already diverted area, an 'Integrated Site specific Wildlife Conservation Management and Impact Mitigation Plan';	Wildlife Warden, ide letter no. 27 dated 22.03.2024. Copy of the letter is attached here with as **Annexure-9** for kind reference. 2. Approved plan has also been attached herewith as **Annexure-10** for kind reference. 3. A demand of Rs 52.65 Crores has been raised by DFO Chatra South vide letter no. 7541 dated 04.04.2024, which has been paid vide UTR no. ICICR42024101600000215 dated 16.10.2024. Copy of payment made as aforesaid is attached as **Annexure-11 & 5** for kind reference.
8	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;	**Agreed**
9	All the funds received from the user agency under the project shall be transferred/deposited in CAMPA account only through e-portal (https://parivesh.nic.in/). Amount deposited through other mode will not be accepted as compliance of the Stage-I clearance;	All the demands raised by DFO Chatra South have been transferred/deposited in CAMPA account only, through e-portal (https://parivesh.nic.in/). **Annexure-12.** Payment against Demand for raising CA, as and when issued by DFO Chatra (South) will be deposited in CAMPA Account.
10	The compliance report shall be uploaded on e-portal (https://parivesh.nic.in/);	**Agreed**
11	Following activities, as per approved plan / schemes, shall be undertaken in the lease area by the User Agency under the supervision of the State Forest Department. Approved scheme/plan shall be submitted to the Ministry along with compliance of Stage-I approval:	
(i)	Mitigative measures to minimize soil erosion and choking of stream shall be implemented within a period of three year with effect from the issue of Stage II clearance in accordance with the approved Plan in consultation with the State Forest Department;	Amrapali OCP undertakes that the all the activities will be carried out as per approved Mine Plans. **Annexure-13**
(ii)	Planting of adequate drought hardy plant species and sowing of seeds, in the appropriate area within the mining lease to arrest soil erosion in accordance with the approved scheme;	

(iii)	Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme;	
(iv)	Stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than 280; and	
(v)	No damage shall be caused to the top-soil and the user agency will follow the top soil management plan.	
12	User agency either himself or through the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.40), if any, located in the area within 100 meter from outer perimeter of the mining lease. The plan for plantation and SMC activities will be prepared and submitted to MoEF&CC before Stage-II Clearance;	As per MoEF& CC guidelines dated 7th June 2022, a demand note (0.5 % of project cost) of Rs 25.68 Crores has been raised by DFO Chatra South vide letter no 2042 dated 15.10.2024. Accordingly, payment has been made vide UTR no ICICR22024112106344101 dated 21.11.2024. Copy attached as **Annexure-14 & 14A** copy attached for kind refrence.
13	**Safety Zone Management**: Following activities, at project cost, shall be undertaken by the user agency for the management of safety zone as per relevant guidelines issued by the Ministry's guidelines:	Amrapali OCP undertakes that the demarcation of safety zone will be done (7.5 meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration will be done by erecting adequate number of 6 feet high RCC boundary pillars inscribed with DGPS coordinates with barbed wire fencing and deploying adequate number of watchers under the supervision of the State Forest Department. (Ref : **Annexure-15).**
(i)	User agency shall ensure demarcation of safety zone (7.5 meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration by erecting adequate number of 6 feet high RCC boundary pillars inscribed with DGPS coordinates with barbed wire fencing and deploying adequate number of watchers under the supervision of the State Forest Department;	
(ii)	Boundary of the safety zone of the mining lease, adjacent to habitation/roads, should be properly fenced by the user agency;	Amrapali OC Project undertakes to properly fence Boundary of the safety zone of the mining lease, adjacent to habitation/roads. (Ref : **Annexure-16).**
(iii)	Safety zone shall be maintained as green belt around mining lease and to ensure dense canopy in the area, regeneration shall be taken up in this area by the user agency at project cost under the supervision of the State Forest Deptt	Amrapali OC Project undertakes to maintain a safety zone as green belt around mining lease and to ensure dense canopy in the area, regeneration will be taken up in this area under the supervision of the State Forest Deptt. (Ref : **Annexure-17).**

(iv)	The State Government and the user agency shall ensure that safety zone is maintained as per the prescribed norms;	Amrapali undertakes safety zone will be maintained as per the prescribed norms; (Ref:**Annexure-18).**
14	The R&R Plan shall be implemented 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;.	Agreed.
15	The User Agency shall prepare a list of existing village tanks and other water bodies with GPS co-ordinates located within five km from the mine lease boundary. This list is to be duly verified by the concerned Divisional Forest Officer. The User Agency shall regularly undertake desilting of these village tanks and other water bodies so as to mitigate the impact of siltation of such tanks/water bodies. A detailed approved plan for de-silting of identified ponds and water bodies to be prepared in consultation with forest department and shall be submitted to MoEF& CC before Stage-II approval;	De-siltation Plan involving list of existing village tanks and other water bodies with GPS co-ordinates located within five kms from the mine lease boundary has been prepared in consultation with State Forest Department. The same has been duly verified by DFO, Chatra South. Copy of De-siltation Plan is attached for kind reference (Ref: **Annexure 19).**
16	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. Also the trees should be felled in phased manner as per the requirement in the approved Mining Plan with prior permission of concerned DFO;	**Agreed.** Amrapali OCP undertakes to explore the possibility of translocation of maximum number of trees identified to be felled and shall also ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department. Also, the trees should be felled in phased manner as per the requirement in the approved Mining Plan with prior permission of concerned DFO. (Ref: **Annexure-20).**
17	The cost of felling of trees shall be deposited by the User Agency with the State Forest Department;	**Agreed.** Amrapali OCP undertakes to deposit the costs associated with tree felling as required by the State Forest Department (Ref: **Annexure-21).**
18	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	**Agreed.** Undertaking is attached as **Annexure-22.**

	from the very first year, and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned 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 Addl. Principle Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed;	
19	The User Agency shall comply with the Hon'ble Supreme Court order on regrassing, and re-grass the mining area and any other areas which may have been disturbed due to mining to restore them to a condition which is fit for growth of fodder, flora, fauna, etc. in a timely manner;	**Agreed.** Undertaking is attached as **Annexure-23.**
20	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 proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under;	**Agreed.** Undertaking is attached as **Annexure-24.**
21	The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required;	Amrapali OCP has been granted Environment Clearance for a capacity of 24.19 MTPA vide letter No. J-11015/109/2003-IA (M) dated February 5, 2024.
22	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;	**Agreed.** Undertaking is attached as **Annexure-25.**
23	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 coordinates;	**Agreed.** Undertaking is attached as **Annexure-26**

24	The layout plan of the mining plan/ proposal shall not be changed without the prior approval of the Central Government and the forest land shall not be used for any purpose other than that specified in the proposal;	**Agreed.** Undertaking is attached as **Annexure-27**
25	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;	**Agreed.** Undertaking is attached as **Annexure-28**
26	No damage to the flora and fauna of the adjoining area shall be caused;	**Agreed.** Undertaking is attached as **Annexure-29.**
27	The user agency shall comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project;	**Agreed.** Undertaking is attached as **Annexure-30.**
28	The User Agency shall submit the annual self -compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year regularly;	**Agreed.** Undertaking is attached as **Annexure-31.**
29	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 with by the State Government and user agency;	**Agreed.** Undertaking is attached as **Annexure-32.**
30	Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as prescribed in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act, 1980 as issued by this Ministry's letter No. 5-2/2017-FC dated 28.03.2019.	**Agreed.** Undertaking is attached as **Annexure-33.**

You are requested to kindly consider the compliance and forward the proposal.

Thanking you

Yours Faithfully

Project Officer
(Amrapali Project)

Coal India Limited
A Maharatna Company
www.coalindia.in

CENTRAL COALFIELDS LIMITED

A Mini Ratna Company
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP, HONHE, 825321
PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Annexure-1

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project(431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (1)

CCL undertake that "The legal status of forest land shall remain unchanged.".

Project Officer
(Amrapali Project)

Annexure-2

CENTRAL COALFIELDS LIMITED

(A Mini Ratna Company)

OFFICE OF THE GENERAL MANAGER

AMRAPALI-CHANDRAGUPT AREA,

BINGLATH, TANDWA, CHATRA, JHARKHAND, 825321

Ref.No. GM (A-C)/PD/Forest/2023-24/ 541 Dated: 13.02.2024

15.02.2024

To,

Divisional Forest Officer
Chatra South, Chatra

Sub: Modification in Stage-I FC condition of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project of Central Coalfields Limited, wrt requirement of equivalent non-forest land for Compensatory Afforestation.

Ref: 1. Proposal No.FP/JH/MIN/17211/2015
2.Stage-I FC granted by MoEF&CC vide file No. 8-48/2008-FC-(Vol) dtd 21.12.2023

Dear Sir,

Amrapali OCP has been granted Stage-I for 431.59 Ha forest land by MoEF&CC vide file No. 8-48/2008-FC-(Vol) dated 21.12.2023.

In this context, it is requested to refer to condition no 2(i) & 2(ii) of aforesaid Stage-I clearance which is reproduced as under **(Annexure I):**

"2(i) The compensatory afforestation over suitable non-forest land, equal in extent to the forest land being diverted i.e. 431.59 ha, shall be raised by the State Forest Department at the cost of the user agency and the work of compensatory afforestation shall start within two years of issue of order of diversion of forest land.

2(ii)The non-forest land identified for raising Compensatory Afforestation shall bedemarcated by concrete pillars of suitable size and handed over, free from all encumbrances to the State Forest Department and the same will be notified as protected forest under section 29 of Indian Forest Act,1927(16 of 1927) or under any other law for the time being in force before the Final/Stage-II approval"

With respect to the above conditions, it would be pertinent to draw your kind attention towards following submissions:

1) Forest application of Amrapali OCP was accepted by Nodal officer on 28.01.2016.For proposals which have obtained acceptance of Nodal Officer prior to 28.06.2022, Forest (Conservation) Rules 2003 are applicable as per MoEF&CC guideline dt. 18.07.2022 **(Annexure II)**.
2) At the time of making application, specific details of double degraded forest land were entered under Sl. No. 13 (details of CA scheme) in part-II by concerned DFO. The details included KML files of CA patches, CA schemes, geo-referenced maps, survey of India Toposheets and site suitability certificate. All these details were entered as per the standard protocol after ascertaining the suitability and appropriateness of CA land.
3) Further based on the details uploaded in Part-I by User Agency & part-II by DFO, the proposal was duly recommended by CF and Nodal Officer for diversion under Forest (Conservation) Act 1980 and Forest (Conservation) Rules 2003. Subsequently, the

proposal got examined at the level of PCCF/HoFF and Govt. of Jharkhand before having been forwarded to MOEF&CC.

4) Subsequently, based on the directives by MOEF Delhi, IRO Ranchi has submitted SIR (Site Inspection Report) to Delhi after making physical inspection of area identified for CA. In his report AIG Forest has affirmed that the area is devoid of vegetation and free from encroachment and hence can be considered suitable for CA as proposed by concerned DFO in its site suitability certificate.
5) The above report was forwarded by DDG Forest-cum-Head IRO Ranchi.
6) Finally, based on the information given in part-I and part-II, recommendation of State Government, and report of IRO Ranchi, the proposal was scrutinized at MOEFF New Delhi and placed in FAC on 29.11.2023.
7) In the deliberations, AC observed *inter alia* that CA has been proposed over 865 Ha degraded forest land. The point to make is that various authorities have taken cognizance of double degraded forest as CA land all through the process.
8) Stage-I (In-Principle) approval accorded on 21.12.2023 vide file No. 8-48/2008-FC-(Vol).

Against the above background, imposition of equivalent non-forest land for CA purpose at this juncture will not only make the joints efforts of CCL and State Forest department of identifying CA land (double degraded) in vain, but more importantly, will call for long-drawn process of identification of non-forest land for CA purpose. The process will delay the submission of compliance of Stage-I conditions hampering the progress of coal production.

It is to submit that as a responsible Public Corporate, CCL understands the importance of afforestation in mitigating the impacts of mining projects and is committed to environmental sustainability.

We will abide by the requirement of equivalent non-forest land for new proposals or proposals which have not received the acceptance at the level of ED/ Nodal Officer. This way, the requirement of equivalent non-forest land will have a prospective effect.

In the light of above submissions, may I take this opportunity to submit that in view of the Guideline dt 18.07.2022 wherein it is stated that the proposals which were accepted by Nodal Officer before 28.06.2022 will be guided by Forest (Conservation) Rules 2003 (that require double degraded forest for CA), conditions given in Amrapali Stage-I approval pertaining to equivalent non-forest land [point 2(i) &2(ii)] may be replaced by conditions pertaining to double degraded forest land.

With best regards,

Yours Faithfully

General Manager
Amrapali – Chandragupt Area

Copy for kind information:

1. RCCF, Hazaribagh.
2. DT (P&P), CCL HQ, Ranchi.

Annexure-3

भारत सरकार / Government of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change
एकीकृत क्षेत्रीय कार्यालय/Integrated Regional Office
पता: द्वितीय तल, झारखण्ड राज्य आवास बोर्ड मुख्यालय, हरमू चौक, राँची, झारखण्ड - 834002
Add: 2nd Floor, Headquarter-Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand - 834002
Tel: 0651-2410002, 2410007; E-mail: ro.ranchi-mef@gov.in

सत्यमेव जयते

Nature Protects if She is Protected

मिसिल सं0 **FP/JH/MIN/17211/2015/1028** दिनांक **10-04-2023**

सेवा में,

साइंटिस्ट "डी"
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय,
इंदिरा पर्यावरण भवन, अलीगंज,
जोरबाग रोड, नई दिल्ली–110003

विषयः **मेसर्स सी. सी. एल की आम्रपाली खुली खदान परियोजना फेज-II रकवा 431.59 हे० वन भूमि अपयोजन के प्रस्ताव (संख्या: FP/JH/MIN/17211/2015) के सम्बन्ध में वांछित स्थल निरीक्षण प्रतिवेदन प्रस्तुत करने बाबत।**

सन्दर्भः पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार के पत्र संख्या 8–48/2008–एफ.सी (vol) दिनांक **05.07.2022**

महोदय,

उपरोक्त विषयान्तर्गत श्रीमान् के संदर्भित पत्र के आलोक में परियोजना से संबंधित वांछित स्थल निरीक्षण एकीकृत क्षेत्रीय कार्यालय राँची द्वारा दिनांक **17 & 18.03.2023** को किया जाकर तैयार प्रतिवेदन को विभागाध्यक्ष के अनुमोदनोपरांत उनकी संस्तुति के साथ संलग्न प्रेषित किया जा रहा है।

संलग्नः यथा उक्त

भवदीय

10/4/2023

(शशि शंकर)
सहायक वन महानिरीक्षक
एकीकृत क्षेत्रीय कार्यालय, राँची

Site Inspection Report by Integrated Regional office (MoEFCC), Ranchi towards FC Proposal No. FP/JH/MIN/1721/2015.

A proposal of 431.59 Ha forest area diversion towards Amrapali open cast (coal-mining) project has been applied by CCL (Central Coalfields Limited) in Chatra South Forest Division in Chatra District of Jharkhand.

While processing the proposal, ministry (MoEFCC) has requested IRO Ranchi to inspect the area under consideration of diversion and to submit a Site Inspection Report (SIR) as per the provisions of FC Rules. The SIR is expected to include assessment of the status of compliance of conditions stipulated in the approval dated 12.10.2010 granted for an area of 531.64 ha for the same project.

Accordingly, site inspection was done by AIGF of IRO Ranchi on 17 & 18th March 2023.

At the time of site inspection, the following officials were present: -

- Sri Saba Alam Ansari, DFO Chatra (South) Forest Division, Jharkhand SFD.
- Sri A.K. Singh, GM Amrapali OCP, CCL
- Sri P.K. Sinha, DGM Amrapali OCP, CCL

along with their team.

Amrapali OCP is comprised in a total lease area of 1298 Ha. It contains 963.23 Ha of Forest areas as well as 335.75 Ha of non-forest land. In this lease, a forest area of 531.64 Ha has already been diverted for Amrapali OCP to CCL vide ministry's final approval dated 12th Oct 2010. Mining is happening/ongoing in these diverted areas. Final Approval order mentions 22 conditions which user agency/SFD is expected to fulfil during the implementation phase. The complete compliance report was solicited from the project proponent which is attached herewith as Annexure-I. During the field visit it was found that the user agency and SFD have adhered to the stipulated conditions in considerable manner.

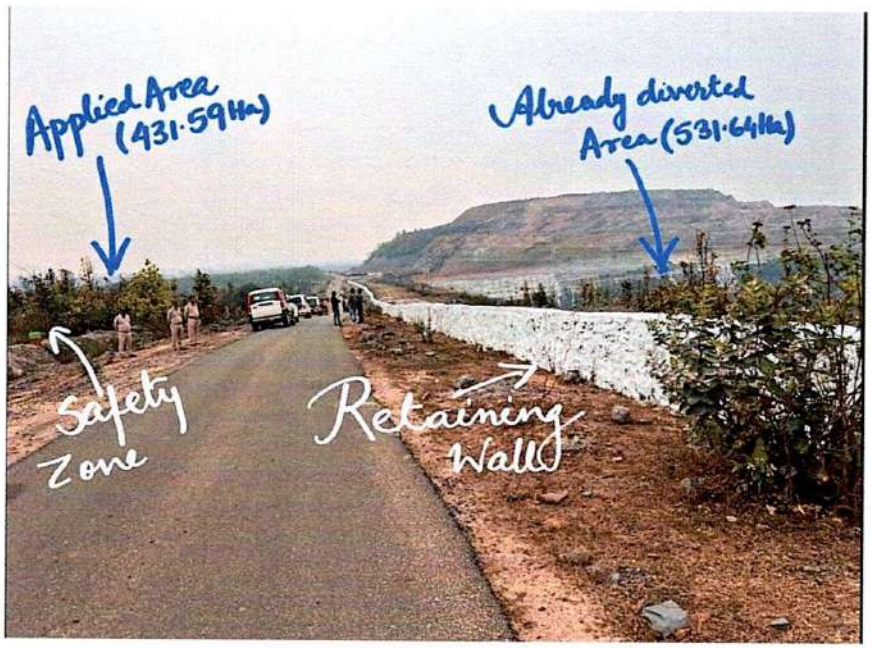
Further, the land under the extant application was visited. Applied forest land comprises of Protected Forests as well as GMJJ both. The synoptic of the entire land types involved in the lease are given in the following table:

Land details in Amrapali OCP (all figures in Ha.)					
	Protected/ Res.Forest	GMJJ	**Total Forest**	Non-Forest	Total Land
Total Lease Area	808.22	155.01	**963.23**	335.75	1298.98
Already Diverted Area	472.77	58.87	**531.64**	3.84	535.48
Applied Diversion (extant)	335.45	96.14	**431.59**	331.91	763.5

The extant proposal envisages horizontal expansion of the existing mining area, especially north & south wards.

The prevailing situation is depicted in the following illustrative satellite imagery: -

The proposed area was visited extensively during the site inspection visit along with State Forest department officials and user agency representatives. The proposed area is, at places, in contiguity to the already diverted area/active mining area but there exist clear demarcation between already diverted and proposed diversion areas. Such delineation has been done either through retaining wall or through fencing and maintaining a safety zone or both as shown in the photographs below: -



User agency was asked to explain the reasonability of maintaining safety zone at the boundary of active mining area and area which is under consideration of diversion. Representative of user agency apprised that the same is being done in compliance to the condition number 11 of the Final Approval order of the 531.64 Ha area. User agency was further asked to maintain such safety zones at the periphery of lease but within the lease to ensure their utility & perpetuity.

Further since such clear demarcation is in place, user agency has not violated the area proposed for mining. The forest area proposed for diversion is comprised of 335.45 Ha of Protected Forest & 96.14 Ha of GMJJ under administrative jurisdiction of State Forest Department and State Revenue Department respectively.

The forest area under consideration shows varying amount of vegetation density. Few blank patches were observed whereas few areas were found to support good vegetation index. An average of 0.5 Canopy density for the entire area was ocularly estimated State Forest Department Staff apprised that 21620 no. of trees are enumerated in the proposed area but considerable time has lapsed since the counting as counting was done in year 2016-17. The area was characterised by gregarious flowering of Palas trees.

Following photographs try to illustrate the vegetative cover in the proposed area:

Although no significant wildlife presence was felt during the visit, the DFO apprised that the area is frequently visited by elephant herds and hence need of a wildlife management plan which should be specific to the site should be in place from the project cost.

It was also informed that only site specific activities are being proposed in forest area and non-site specific activities like Overburden Dumping etc. are being planned in non-forest areas only.

The Compensatory Afforestation (CA) area proposed against the proposal:

The total CA Land identified among the degraded forests against 431.59 Ha of forest land proposed for diversion, is 865 Ha. The entire CA DF land identified are from Chatra South Forest Division. The entire proposed CA land earlier comprised in 14 patches as listed in the following table: -

S.no	Area(ha.)	Name of PF/RF	Range
1	50.00	Mali PF	Lawalong
2	60.00	Katiya PF	Lawalong
3	60.00	Kanti PF	Lawalong
4	60.00	Parwani PF	Lawalong
5	55.00	Mahesha PF	Lawalong
6	50.00	Jojowari PF	Lawalong
7	50.00	Gulli PF	Chatra Range
8	48.00	Ulatu alias Simratanr PF	Tandwa
9	74.00	Jaspur PF	Lawalong
10	60.00	Mahuari PF	Lawalong
11	103	Ramtunda PF	Chatra Range
12	100	Dariyatu PF	Chatra Range
13	40.00	Gidhour PF	Chatra Range
14	55.00	Pitizi PF	Chatra Range
Total = 865 Ha.			

Out of this total 865 Ha of DFL identified for CA, as shown in the above table, few patches were not found suitable either because of higher vegetative density or apparent existence of encroachment. The DSS analysis of the proposed CA areas as done by the ministry, revealed 127 Ha of CA DFL unsuitable. Therefore, the inspecting team of IRO enquired about the alternate CA area proposed by DFO in place of the above unsuitable 127 Ha land. It was informed that 102 Ha DFL in Karo Village and 25 Ha DFL in Kurlonga village has been identified by the SFD for the purpose. Therefore, identified land in Karo was visited by the team. The area identified for proposed CA in Karo village was found highly infested with encroachment and hence was found not acceptable for taking up as CA. The following satellite imagery depicts the situation at Karo Village's identified CA land:

Hence, the DFO present was asked to find another suitable area and to inform the visiting IRO Team at the earliest.

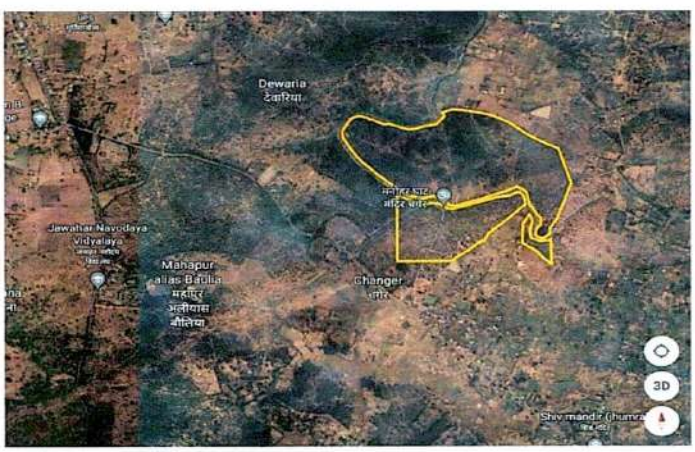
Accordingly, DFO vide his letter dated 31.3.2023 (attached as Annexure-II) has provided the details of newly identified 102 Ha of CA Land in Village Jangi (50 Ha) and Changer (52 Ha) against Karo

Village (Area 102 Ha) along with its Suitability certificate, KML files, Topo sheet, DGPS MAP and CA Scheme which is being attached herewith as Annexure-I.

The revised 127 CA land which has been provided along with its Suitability certificate and CA Scheme are listed in the table below: -

S. No	Name of Range	Village Name	Plot number	Net Area (Ha)	Gross Area (Ha)
1	Tandwa	Kurlonga	402P	25.00	25.27
2	Chatra	Jangi	3872P, 3873P, 3874	50.00	59.99
3	Chatra	Changer	11P, 14, 15, 16, 17P	52.00	78.87
			Total:-	**127.00**	**164.13**

The satellite imagery of the newly proposed above CA land are shown below:-



From the above imagery it is being seen that the areas are mostly devoid of any significant vegetation and are free from apparent encroachment hence can be considered suitable for compensatory afforestation as proposed by the concerned DFO in his site suitability certificate.

Therefore, considering the fact that user agency has been doing mining in the lease for a considerable period of time and the extant proposal is for horizontal expansion of the ongoing mining activities in the same lease the extant proposal may be appraised in light of site specificity of the reserve and corresponding need.

The Site Inspection Report is hereby being put for perusal and necessary action further please.

10/4/23

Shashi Shankar
AIGF, IRO, Ranchi

The Site Inspection report as prepared by AIGF, IRO Ranchi has been perused, examined & approved by me and the same is being forwarded for consideration of this site specific FC proposal under the provisions of FC Act and Rules.

Santosh Tewari 10/4/23
DDGF cum Head, IRO Ranchi

Coal India Limited
A Maharatna Company
www.coalindia.in

CENTRAL COALFIELDS LIMITED

A Mini Ratna Company
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP, HONHE, 825321
PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Annexure-4

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (2)

CCL undertakes that "Before Forest handover from State Govt. CA Scheme will be prepared & demand note thus raised will be deposited by CCL in CAMPA account"

Project Officer
(Amrapali Project)

Annexure-5

Annexure 5 A

[redacted]

ICICI Bank

Date – October 16, 2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Central Coalfields Ltd has made the below mentioned payment from their Current Account maintained with Our Bank-

Sl No.	Beneficiary Name	Amount	Beneficiary A/c no	Bene IFSC	UTR	Date of Transaction
1	JHARKHAND CAMPA	71,58,78,486.00	150725817211754	UBIN0996335	ICICR42024101600000215	16-10-2024

It is clarified that this information is furnished in strict confidence and without any risk and responsibility on our part or on the part of any Bank's officials in any respect more particularly either as guarantor or otherwise.

This certificate is issued at the specific request of the said customer.

Regards,

Authorized Signatory
ICICI Bank Ltd
Ratu Road Ranchi – 834001

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

ICICI Bank Limited
Modi Heights, Shop # 05 & 06
Opp. All India Radio Station,
Ranchi- 834001,
Jharkhand, India

Website www.icicibank.com
CIN.: L65190GJ1994PLC021012

Regd. Office : ICICI Bank Tower,
Near Chakli Circle,
Old Padra Road,
Vadodara 390 007, India.

ICICI Bank

Date – November 21, 2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Central Coalfields Ltd has made the below mentioned payment from their Current Account maintained with Our Bank-

Sl No.	Beneficiary Name	Amount	Beneficiary A/c no	Bene IFSC	UTR	Date of Transaction
1	JHARKHAND CAMPA	25,68,00,000.00	150725817211931	UBIN0996335	ICICR22024112106344101	21-11-2024

It is clarified that this information is furnished in strict confidence and without any risk and responsibility on our part or on the part of any Bank's officials in any respect more particularly either as guarantor or otherwise.

This certificate is issued at the specific request of the said customer.

Regards,

Authorized Signatory
ICICI Bank Ltd
Ratu Road Ranchi – 834001

Project Officer
Amrapali Project
Amrapali Dhanbad Gupt Area

ICICI Bank Limited
Modi Heights, Shop # 05 & 06
Opp. All India Radio Station,
Ranchi- 834001,
Jharkhand, India

Website www.icicibank.com
CIN.: L65190GJ1994PLC021012

Regd. Office : ICICI Bank Tower,
Near Chakli Circle,
Old Padra Road,
Vadodara 390 007, India.

कार्पोरेशन बैंक
(भारत सरकार का उद्यम)
ब्लाक 11, भूतल,
सी.जी.ओ. काम्पलेक्स, फेज--1,
लोधी रोड, नई दिल्ली--110 003

Corporation Bank
(A Government of India Enterprise)
Block-11, Ground Floor,
C.G.O. Complex, Phase-1,
Lodhi Road, New Delhi-110 003

KIND ATTN: Sri ALOK KUMAR

Date:04.04.2009

To whomsoever it is concerned

This is to confirm that we have received following RTGS to the Current Account No. **CA01001587 of Ad-hoc CAMPA on 31.03.2009**

1)RTGS- UTR No. PUNBH09090076038 for Rs 72,92,35,396/-
2)RTGS- UTR No. PUNBH09090076036 for Rs 1, 89,09,476/

Asst. Divisional Manager

कार्पोरेशन बैंक C.G.O Complex Lodhi Road New Delhi-3 Corporation Bank

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

फोन Phone : 011-24392051(AGM), 24361781, 24361469, 24367520(O). कृपया हमसे संपर्क करें Do visit us at www.corpbank.com ई-मेल E.mail : cb371@corpbank.co.i फैक्स Fax : 011-2436354

Office of Divisional Forest Officer,
Chatra South Forest Division, Chatra

E-mail : dfo-chatrasouth@gov.in Phone : 8987790213

Letter No. 643 Date : 20/03/2024

To,

The Project Officer,
Amrapali OCP,
Honhe, Tandwa, Chatra.

Subject: In-principle (Stage-I) approval of Central Government under Forest (Conservation) Act, 1980 for diversion of 431.59 ha of forest land in favour of Central Coalfields Limited for Amrapali Open Cast mining project in Chatra South Forest Division in Chatra District of Jharkhand state – reg.

Ref: Your letter no 508 dated 31.01.2024, Letter No. 251 dated 14.03-2024 of PCCF – cum-ED, Nodal, Jharkhand.

Sir,

Kindly refer the letter in the reference, wherein, it was reported that in compliance of Circular No. 11-599/2014-FC dated 01.04.2015, Amrapali OCP, CCL had already disbursed an amount of Rs. 34,73,69,770.00 vide RTGS transaction no. PUNBR52016033110254S9 dated 31.03.2016 & SD1288460349 dated 31.03.2016 and it was requested that the balance amount Rs. 18,93,27,486.00 (53,66,97,256.00 – 34,73,69,770.00) to be demanded against NPV + Penal NPV against diversion of 431.59 ha of forest land.

As, vide letter no 251 dated 14.03.2024 of PCCF – cum- ED, Nodal, Jharkhand the deposit of Rs. 34,73,69,770.00 in Jharkhand, CAMPA has been verified, the demand of balance amount of Rs. 18,93,27,486.00 (Eighteen Crore Ninety-Three Lac Twenty-Seven Thousand Four Hundred Eighty-Six Rupees) is being raised.

It is requested to deposit the above-mentioned amount i.e. Rs. 18,93,27,486.00 (Eighteen Crore Ninety-Three Lac Twenty-Seven Thousand Four Hundred Eighty-Six Rupees) in CAMPA Account. The amount should be deposited to CAMPA fund only through e-portal (https://parivesh.nic.in) against 431.59 Ha of forest land in Chatra South Forest Division.

Your faithfully

20.03.2024

Divisional Forest Officer,
Chatra South Forest Division, Chatra

Performa to be furnished for remmitence of fund in Ad-Hoc CAMPA(431.59 Ha)

S.N.	Column1	Column 2
1	Name of Regional Office	Ranchi
2	State/District/Forest Division to which the proposal related Jharkhand/Chatra /Chatra (S)	Jharkhand, Chatra , Chatra South
3	Name of User Agency, name of proposal	CCL, Amrapali OCP
4	Extent of forest area involved in Ha	431.59 Ha
5	Whether original, or extension	Original
6	If extension of lease, please clarify if proposal involves additional forest area, and if so, specify	NA
7	Date of Stage-1 clearance	21.12.2023
8	Extent of CAMPA charges, head wise	
	a) Compensatory Afforestation in Rs.	0
	b) Penal CA in Rs.	Rs 64,50,098/- paid vide UTR no. ICICR42024101600000215 dated 16.10.2024.
	c) Catchment Area Treatment	NA
	d) Wildlife Management Plan (for safety purpose)	Rs 52.65 Crores paid vide UTR no. ICICR42024101600000215 dated 16.10.2024.
	e) Additional Charges for diversion area falling under notified/protected area (block plantation 5 times of tree to be felled	0
	f) Net present value in Rs	Rs 53,66,97,256
	DFO	Chatra South
	g) Any other Charges/Levies (SMC)	Rs 25,68,00,000 vide UTR no ICICR22024112106344101 dated 21.11.2024.
	h) Lease transfer fees in Rs.	0
	9) Details of bank draft no, date and amount), head wise against terms indicated in the paragraph & above	Attached
	10) Whether deposited by RTGS, if so, the particulars and date of remittance	Attached
	11) Bank (Corporation Bank, Lodhi complex/Union bank of India, Sunder Nagarjin which Deposited, with date of Deposition	Corporation Bank, Lodhi Complex, CAF AC Jharkhand A/C no. 037100101025212, IFSC code CORP0000371
	12) Any other remarks	
	DETAILS OF SL NO. 8, 9, 10	
	8(1) Net Present Value (NPV) in Rs	Rs 53,66,97,256
	(a) NPV Paid 1st time in Rs.	Rs 34,73,69,770
	Ref. no. NPV 1st time paid	On dated 31.03.2016, RTGS for Rs 220,50,00,000 to CAF AC JHARKHAND ACCOUNT NO. 037100101025212, IFSC Code CORP0000371 and NEFT for Rs 41,439 to CAF AC JHARKHAND

		ACCOUNT NO. 037100101025212, IFSC Code CORP0000371 was made for thirteen different projects. The NPV payment for Rs. 347369770 of Amrapali project is a part payment at the rate of 8.03 Lakh per Ha. Area Of Forest Land 432.59 Ha Paid Ist time
	(b) NPV Paid 2nd time in Rs.	Rs 18,93,27,486
	Ref. no. NPV 2nd time paid	UTR no. ICICR42024101600000215 dated 16.10.2024.
	TOTAL PAYMENT	Rs 132,00,48,256.00

Project Officer
(Amrapali Project)

CENTRAL COALFIELDS LIMITED

A Mini Ratna Company
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP, HONHE, 825321
PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Coal India Limited
A Maharatna Company
www.coalindia.in

Annexure-6

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (3)

CCL undertake that "The additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India."

Project Officer
(Amrapali Project)

Annexure-7

पत्रांक- 1e 3

दिनांक- 16/12/2021

सेवा में,

माननीय मुख्य न्यायिक दण्डाधिकारी,
पलामू।

विषय- अपराध प्रतिवेदन संख्या- 00010, दिनांक- 15.12.2021 को संक्षिप्तावद्ध करने के संबंध में।

महाशय,

सादर सूचित करना है कि दिनांक- 15.12.2021 को दोपहर में करीब 04:00 बजे श्री सुनिल कुमार उरांव वनरक्षी अपने सहयोगी वनरक्षी श्री विकाश कुमार के साथ होन्हे पी0एफ0 में वन सीमा का अमीन द्वारा सर्वे करा रहे थे तो पाया की वन सीमा के अन्दर में पहले से सड़क का निर्माण किया गया था। वनरक्षी द्वारा स्थानीय लोगों से पता करने पर जानकारी हुई की उक्त सड़क एन0बी0सी0सी0 (इंडिया) लिमिटेड कम्पनी- NBCC (INDIA) Limited द्वारा बनाया गया है। तत्पश्चात उनके द्वारा परिसर कार्यालय आकर अपना अपराध प्रतिवेदन संख्या- 00010, दिनांक- 15.12.2021 को समर्पित किया। होन्हे पी0एफ0 जोपिसूचित वन है जिसकी अधिसूचना संख्या CPF/10166/52/9RD दिनांक 02.01.1953 है।

इस तरह अपराधियों ने जान-बुझ कर भारतीय वन अधिनियम 1927 (बिहार वन संशोधन अधिनियम 1989) की धारा 33 का उल्लंघन किया है जो एक संज्ञेय एवं अजमानतिय अपराध है। घटना की विस्तृत प्रतिवेदन जाँचोपरांत उचित माध्य से समर्पित की जाएगी।

अतः श्रीमान् से अनुरोध है की अपराध प्रतिवेदन संख्या - 00010, दिनांक- 15.12.2021 को संक्षिप्तावद्ध करने की कृपा की जाय।

16/12/2021

आपका विश्वासी
16/12/21
वन परिसर पदाधिकारी
दण्डवा (चतरा)

अनुलग्नक-
1. अपराध प्रतिवेदन संख्या-00010, दिनांक- 15.12.2021 की मूल प्रति

Complaint case - 1341/21

सेवा में, सीमान्त वन क्षेत्र पदाधिकारी,
दण्डवा वन प्रक्षेत्र।

महाशय को सूचनार्थ एवं आवश्यक कार्यवाही हेतु समर्पित।

16/12/2021
वन परिसर पदाधिकारी
दण्डवा (चतरा)

कार्यालय:- वन क्षेत्र पदाधिकारी, दण्डवा वन प्रक्षेत्र।
ज्ञापांक:-575 दिनांक:- 17-12-21.
वन प्रमंडल पदाधिकारी, चतरा कृपया वन प्रक्षेत्र की ओर से
प्रसार सूचनार्थ एवं आवश्यक कार्यवाही हेतु समर्पित।

17/12/2021
वन क्षेत्र पदाधिकारी
दण्डवा प्रक्षेत्र

Schedule XVIII - Form No. 21A.

FOREST, ENVIRONMENT AND CLIMATE CHANGE DEPARTMENT, GOVERNMENT OF JHARKHAND.

वन, पर्यावरण एवं जलवायु परिवर्तन विभाग, झारखण्ड

No. CS 00010

Chatra, South Forest Division.

चतरा दक्षिणी वन प्रमंडल

NOTE - This report is to be Submitted within 24 hours of the detection.
नोट :- यह रिपोर्ट पकड़े जाने के 24 घन्टे के अन्दर दाखिल करना चाहिये।

Date.......................
तारीख 18/12/2021

Offence Report No....................
पूर्व नम्बर 00010

1. Place of occurrence -
घटना स्थल - हैन्टे सुरक्षित वन

2. Date and hour of detection -
पकड़ने का समय और तारीख - लगभग 4:00 PM

3. Name(s) parentage and residence of offenders -
नाम अपराधी और उसके पिता का नाम एवं पता - 1) श्याम सुन्दर दुबे (Director) पिता - अज्ञात
2) कमल रिजवी (Director) पिता - अज्ञात
NBCC (INDIA) Limited
पता - NBCC BHAWAN, LODHI ROAD NEW DELHI DL 110003 IN

4. Property seized, if any -
जप्ती माल, अगर कोई - X

5. Custody of seized property -
जप्ती माल का जिम्मेवार - X

6. Name(s), parentage and residence of witness(es), if any -
नाम गवाह और उसके पिता का नाम एवं पता - श्री विकाश कुमार वनरक्षी

7. Nature of Offence and facts of the case -
तफसील और बयान जुर्म -

सेवा में,

वन परिसर पदाधिकारी
गिद्धौर वन परिसर, टण्डवा

महाशय,

निवेदन है कि दिनांक 18/12/2024 को मैं अपने सहयोगी विकास कुमार (वनरक्षी) के साथ सुरक्षित वन में वन सीमा का अमीन द्वारा सर्वे करा रहे थे तो पाया कि वन सीमा के अन्दर में पहले से सड़क का निर्माण किया गया है। पता करने पर जानकारी हुई की सड़क का निर्माण NBCC (India) Limited के द्वारा निर्माण कराया गया है। तदनुसार, मैं अपराध प्रतिवेदन समर्पित कर रहा हूँ।

अतः श्रीमान् से अनुरोध है कि उपरोक्त प्रतिवेदन में नामित अपराधी पर उचित कानूनी कार्रवाई करने की कृपा की जाय।

आपका विश्वासी
Sunil Kumar [illegible]
18/12/2024
वनरक्षी
क्षेत्र उप परिसर

वन क्षति :
लगभग लं० = 450m
लगभग चौ० = 15m

Annexure-8

Office of Divisional Forest Officer, Chatra South Forest Division, Chatra

E-mail : dfo-chatrasouth@gov.in Phone : 8987790213

Letter No. 151 Date: 19/1/2024

To,

Project Officer,
Amrapali OCP,
Honhe, Tandwa.

Subject: In-principle (Stage-I) approval of Central Government under Forest (Conservation) Act 1980 for diversion of 431.59 ha forest land in favor of Central Coalfields Limited for Amrapali Open Cast mining project in Chatra South Forest Division in Chatra District of Jharkhand State – reg.

Reference: Ministry of Environment, Forest and Climate Change, GoI vide letter no 8-48/2008-FC-(Vol) dated 21st Dec 2023.

Sir,

Kindly refer the letter in reference, wherein, certain conditions have been stipulated by Ministry of Environment, Forest and Climate Change, GoI vide letter no 8-48/2008-FC-(Vol) dated 21st Dec 2023.

A. As per Condition No. 3 (i) :-

"The User Agency shall transfer the funds towards the cost of Net Present Value (NPV) of the forest land being diverted under this proposal in accordance with the MoEF&CC's guidelines dated 6.01.2022 read with guidelines dated 19.01.2022"

It is, therefore, the demand for the payment of the NPV is, hereby, being raised :-
Density of the Forest proposed for diversion : 0.5
Eco Class : III

Hence, applicable rate of NPV per Ha. : Rs. 1228590.00 (Twelve Lakhs Twenty Eight Thousands Five Hundred Ninty Rupees Only)

Total for 431.59 Ha : 1228590.00 lakh/ha X 431.59 ha. = Rs. 53,02,47,158.10 or 53,02,47,158.00 (Rs. Fifty three crore two lac forty seven thousand one hundred fifty eight only)

B. As per Condition No. 6 :-

"The violation for the construction of road has taken place within the area of the coal block, therefore the user agency shall deposit penal NPV at the rate of Five times of the Normal NPV for forest area broken up without prior approval of the Central Government"

It is, therefore, the demand for the payment of the Penal NPV is, hereby, being raised :-
Area Violated : 1.05 Ha
Density of the Forest proposed for diversion : 0.5
Eco Class : III

Hence, applicable rate of Penal NPV (5 times of normal NPV) per Ha. : Rs. 1228590.00 x 5 : 6142950.00 (Sixty One Lakhs Forty Two Thousands Nine Hundred Fifty Rupees Only)

Total Penal NPV for 1.05 ha of violated land	:	Rs. 6142950.00 x 1.05 Ha.
	:	Rs. 64,50,097.50 or say 64,50,098.00 (Rs. Sixty four lac fifty thousand ninty eight only)

It is, therefore, requested to deposit the abovementioned amount i.e. 53,02,47,158.00 (Rs. Fifty three crore two lac forty seven thousand one hundred fifty eight only) towards cost of NPV of 431.59 ha of forest land and 64,50,098.00 (Rs. Sixty four lac fifty thousand Ninty eight only) towards cost of Penal NPV for violation over 1.05 ha of forest land (total Rs. 53,66,97,256) in CAMPA Account. The amount will be deposited to CAMPA fund only through e-portal (https:// parivesh.nic.in) against 431.59 ha of forest land in Chatra South Forest Division.

Sent for necessary action.

Yours Faithfully,

19.01.2024

Divisional Forest Officer,
Chatra South Forest Division.

Annexure-9

Office of the Principal Chief Conservator of Forests,
Wildlife & Chief Wildlife Warden, Jharkhand.
Van Bhawan, Doranda, Ranchi-834002
Email : pccf-wildlife@gov.in,Phone No. 0651-2481744

LiFE Lifestyle for Environment

Office Order No. 27 **Date.** 22/03/2024

Sanction Order of the Site Specific Wildlife Conservation Plan prepared with reference to a specific condition laid by the MoEF&CC towards diversion of 431.59 hectares (Forest land 335.45 ha and Jangal Jhari 96.14 ha) of Forest Lands for Amrapali Coal Mining Project in favour of M/s. Central Coal Fields Limited (CCL), Amrapali Area, Tandwa, Chatra, Jharkhand.

The instant Site Specific Wildlife Conservation Plan (referred to as "*the Plan*" hereinafter) has been prepared by Central Coalfields Limited, Social Initiative through Development & Humanitarian Action (SIDHA), Ranchi in pursuance of the Specific Condition laid under condition no. 7 of the letter of Ministry of Environment, Forest & Climate Change (MoEF&CC) (Forest Conservation Division), Govt. of India vide F.No. 8-48/2008-FC (vol) dated 21th December, 2023 granted diversion of 431.59 hectares of Forest Lands for Amrapali Coal Mining Project (referred to as "*the Project*" hereinafter) in favour of M/s. Central Coalfields Ltd. (referred to as "*the Project Proponent*" or "the PP" or "M/s. CCL" hereinafter) in Amrapali Project, Distt-Chatra, Jharkhand.

The aforesaid conditions laid by the Ministry of Environment, Forest & Climate Change (MoEF&CC) (Forest Conservation Division), Govt. of India vide F.No. 8-48/2008-FC (vol) dated 21th December, 2023 reads as follows:

> *"(7) Keeping in view the likely impact of the project on the movement of wildlife in general and elephant in particular, the user agency shall prepare on a landscape level in 10 km circumference of the Project proposal area and the 531.64 ha already diverted area, an 'Integrated Site Specific Wildlife Conservation Management and Impact Mitigation Plan'."*

In the above stated background, the User Agency and DFO Chatra South Forest Division in pursuance of complying the aforesaid condition laid by the Central Government have prepared the instant Plan in consultation with each other. Vide his letter no 201 dated 27.01.2024 the Regional Chief Conservator of Forests, Hazaribag has submitted the plan to the office undersigned for its due sanction.

In order to examine the plan prescriptions a communication was issued to the Regional Chief Conservator of Forests, Hazaribag, vide this office letter no. 230 dated 14.03.2024, to arrange a Power-Point Presentation on 19.03.2024 in the Office chamber of the undersigned. The presentation was made by the PP in the presence of RCCF, Hazaribag, DFO, Chatra South Forest Division, Sri C.S. Tiwari, G.M (Forest), CCL, Sri Amresh Kumar Singh, G.M, Amrapali Chandragupt, Smt. Rabeya Nawaz, Dy. Manager (Forest), CCL, Sri Omprakash Ranjan, Dy. Manager (Env), CCL and Sri Hemant Kumar, SIDHA.

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

The various work components have been assigned to the implementing agencies so as to achieve the maximum efficiency in terms of output and to the best of appreciation of the needs of conservation of forests and wildlife. The cost of the proposed 10 year Site Specific Wildlife Conservation Plan with respect to the activities to be carried out by DFO, Chatra South Forest Division has been estimated to be Rs. 5265.51lakh The summary of the proposed interventions (component wise) under the Plan with the objective of conservation of forest and wildlife resources is as follows:

Sl. No.	Work Components	Cost Estimates (Rs. In lakh) – To be implemented by Chatra South Forest Division
1.	**Biodiversity Enhancement**	1220.47
2.	**Measures for Forest Protection, Anti-depredation and wildlife protection**	560.25
3.	**Capacity building and procurement of anti-depredation items**	235.20
4.	**Fire Prevention and Protection of Habitat**	559.10
5.	**Livelihood improvement and capacity building to local people**	150.00
6.	**Capacity building to local people in fringe villages**	220.00
7.	**Capacity building of forest department for implementing, monitoring and supervision of plan**	636.90
8.	**GIS and remote sensing for implementation and monitoring**	249.00
9.	**Awareness promotion/research about protection of Flora and Fauna**	357.00
	Total	**4187.92**
10.	Contigency amount	100.00
11.	Corpus for emergency payments	100.00
12.	Cost escalation consolidated @ 20%	877.58
	G. Total	**5265.51**

The Plan with a total financial outlay of Rs 5265.51 lakh for implementation of Site Specific Wildlife Conservation Plan (SSWCP) extending over a period of 10 years (Year 2024-25 to 2033-34; tentatively), shall be utilized by the State Forest Department through the DFO, Chatra South Forest Division in accordance with the Plan prescriptions.

Considering the proposals under the plan, sanction is hereby accorded to the instant Plan subject to the following conditions:

(i) That the Project Proponent shall ensure that its officials/ contractors and the work force engaged into mining and allied operations under the Project shall not commit or abet any forest/ wildlife offence in their area of operation. They will also promptly report any forest/ wildlife offence in the area to the nearest forest office/ official. Further, they will extend their full cooperation to the forest officials in control/ mitigation of any incident, natural or man made, detrimental to forest and wildlife in their area of operation.

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

(ii) That the total amount of Rs.5265.51lakhs involved in the instant Plan shall be deposited by the Project Proponent in CAMPA account under the relevant head/ sub-head and shall be utilized by the State Forest Department through the DFO, Chatra South Forest Division ('Implementing Agencies' hereinafter) as delineated under the Plan, strictly in accordance with the prevailing norms under the Jharkhand Forest Departments.

(iii) That the Implementing Agencies shall prepare detailed Annual Plan of Operations (APOs) with respect to areas under their control, at the beginning of the Financial Year in accordance with the activities mentioned in the Plan following all the rules, regulations, Schedule of Rates etc. issued from time to time by the State Government/ Forest Department. RCCF, Hazaribag shall accord sanction to the said APOs submitted by DFO, Chatra South, following due process and he/ she will closely monitor the implementation/ progress of the activities undertaken by the DFO, Chatra South as per directions issued by the Forest Department from time to time.

(iv) The Project Proponent and project personnel will comply with the provisions of Standard SOP/ Guidelines issued by WII, Dehradun for linear projects.

(v) The User Agency shall comply all the interventions as mentioned in Chapter-4 of the Site Specific Wildlife Conservation Plan.

(vi) That the CF, Chatra shall supervise all the activities as per directions issued by the Forest Department from time to time.

(vii) That the DFO, Chatra South shall carry out the activities under the Plan strictly as per the duly sanctioned APOs.

(viii) That the DFO, Chatra South shall ensure that no violation of duly sanctioned Working Plan of Chatra South Forest Division takes place during implementation of any of the activities involved in this plan over notified and demarcated forest land.

(ix) That the instant Plan is dynamic and shall be revisited after every 2 years and a revised plan may be formulated as per need of the impact area and convenience of the implementing agencies. The revised plan, if any, shall be put up before the Principal Chief Conservator of Forests, Wildlife & Chief Wildlife Warden, Jharkhand for its approval.

(x) That though adequate provisions have been made towards cost escalation in the plan, yet the Project Proponent shall submit an Undertaking to the DFO, Chatra South to the effect that they will deposit extra cost of the Plan beyond the cost escalation provision owing to increase in wage rate, cost of materials etc. in due course of time as well as consequent upon revision of the plan, if any, as and when given effect to by the competent authority.

Sd/-

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden, Jharkhand

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

Memo No. **Dated:**

Copy forwarded to Principal Secretary, Deptt. of Forest, Environment and Climate Change, Jharkhand, Ranchi/ Principal Chief Conservator of Forests, Jharkhand, Ranchi/ PCCF-cum-Executive Director, Wasteland Development Board, Jharkhand, Ranchi for information.

Sd/-
Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden, Jharkhand

Memo No. **Dated:**

Copy forwarded to Addl. PCCF, CAMPA, Jharkhand, Ranchi with a copy of the Plan for information and necessary action.

Sd/-
Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden, Jharkhand

Memo No. **Dated:**

Copy forwarded to Regional Chief Conservator of Forests, Hazaribagh/ DFO, Chatra South Forest Division/ Conservator of Forests, Chatra for information and necessary action.

Sd/-
Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden, Jharkhand

Memo No. 306 **Dated:** 22/03/2024

Copy forwarded to General Manager, CCL, Amrapali Area, Tandwa, Chatra for information and necessary action.

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden, Jharkhand

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

D:/pandey/AMrapali Coal mine 18.03.2024

Annexure-10

SITE SPECEFIC WILD LIFE CONSERVATION PLAN

2023

Amrapali Open Cast Project

Chatra , Jharkhand

SUBMITTED TO

DFO CHATRA SOUTH FOREST DIVISION

Chapter-1
Introduction, background of project and impact area

Introduction:

Mining is vital for human sustenance and a crucial sector in the state economy. However, its impacts on the environment and biodiversity cannot be underestimated, which are potent to the attract government's attention. Environment and wildlife are subject to the harmful impacts of mining and its related activities. The report has tried making an assessment of impacts on wildlife adversely affected by the mining activities in the proposed area. The fauna has been observed to bring the calculated risks and threat perception of the regional wildlife in the view of the general masses and department as well. Many species of mammals, birds and reptiles have been present in the area. The report explored that mining is primarily responsible for land degradation, which lead to food and agriculture losses. Several other factors like blasting, pollution, deforestation, habitat loss was also observed. Deforestation surfaced one of the major causes for disturbance of habitat of fauna in the said region and primitive measures are needed to seize the man-made catastrophe.

Over the past century, human population growth has facilitated land use changes at the state level and the district of Chatra is not exception to this. The energy and infrastructure required to support this human population growth can negatively impact wildlife. Anthropogenic structures constructed in previously un-fragmented landscapes, can have direct and indirect effects on local wildlife populations. For example, deep mining voids may harm the wild life by drowning and contamination of water by the coal particles and other sediments making water less suitable for drinking. Anthropogenic development may also indirectly affect wildlife populations by causing changes in animal behaviour (e.g., displacement, increased predation risk, or by creating impediments to seasonal migration. The magnitude and consequences of these behavioural changes are often difficult to measure due to the absence of immediate population level effects. As such, identifying and quantifying both the direct and indirect effects of anthropogenic structures on wildlife as well as effective measures to minimize negative impacts are essential for conserving affected wildlife populations.

The potential incompatibility between wild life and anthropogenic structures led the state forest department to identify the placement, operation, and maintenance of mining operations and associated anthropogenic structures related to energy development of the district of Chatra as a conservation threat for wild life. These may

impact local wild animal populations through destruction of nests or abandonment of suitable habitats.

To reduce the potential negative impact on the wild life due to commissioning of mining projects wild life management plan need to be prepared to mitigate the negative impacts of the mining in the proposed project area.

The present documents attempts to address the issues concerned with wildlife and mitigation in regard with it.

Location of the project and status of diversion of forest land

The proposed Amrapali OCP is located in the northern fringe of the N.K. coalfield and lies in the Chatra District of Jharkhand. The Amrapali block covering an area of 10.11 sq.Km (coal bearing 9.28 sq. Km) is bounded by Latitude 230 51' 31" & 230 53' 38" N and Longitude 850 00' 05" & 850 02' 07" E. The Kishanpur block (5.89 sq. Km) having coal bearing area of 5.45 Sq.Km is limited by the Latitude 230 51' 58" & 230 53' 30" N and Longitude 840 58' 55" and 850 00' 05" E. The Amrapali OCP is enclosed by Pachra block on the east and Koed block on the west. The block is covered by Survey of India Topo Sheet No.73-A/13(RF 1:50000) and special sheet no. 12 & 13 (RF 1:10000). The surface contours and other surface features of the OCP have enlarged photographically from the above topo sheets.

Two Geological Blocks i.e. "Amrapali" and "Kishanpur" have been identified for formation of an Opencast Project i.e. Amrapali OCP to feed coal to proposed STPS at Barh near Patna which is located at a distance of about 300 km from this proposed site.

The proposed project is approachable by a 12 Km long fair weather Kutcha road from Tandwa Village. Tandwa village is connected to Khalari by a 20 KM fair - weather road in the south. It is connected with Hazaribagh also by a 50 KM long metal road via Barkagaon.

The latitude of the Amrapali Block is bounded by 23051'31" & 23053'38" N as well as longitude 850 00'05" & 85002'07" E. The Kishanpur block is limited by latitudes 23047'40" & 23050'38" N and longitude 84055'35" & 84057'40" E.

The proposed project is characterized by more or less flat terrain with gentle undulations. In general, ground slopes towards south. The maximum and minimum elevation is 497 m & 440m, respectively.

Total of 7676.25m was drilled in 85 boreholes in the Amrapali Block covering an area of 8.1 sq.km. The product mixed quality of the proposed OCP will be Grade-F, average UHV-2659 K.Cal per Kg & average ash 40.61%

Project Report for Amrapali OCP (12Mty), CCL with both coal and OB outsourcing variant was approved by CIL Board vide letter no.CIL:XI(D):04112:2012:3874 dated 23rd February2012 for an initial capital investment of Rs. 858.11 crores.

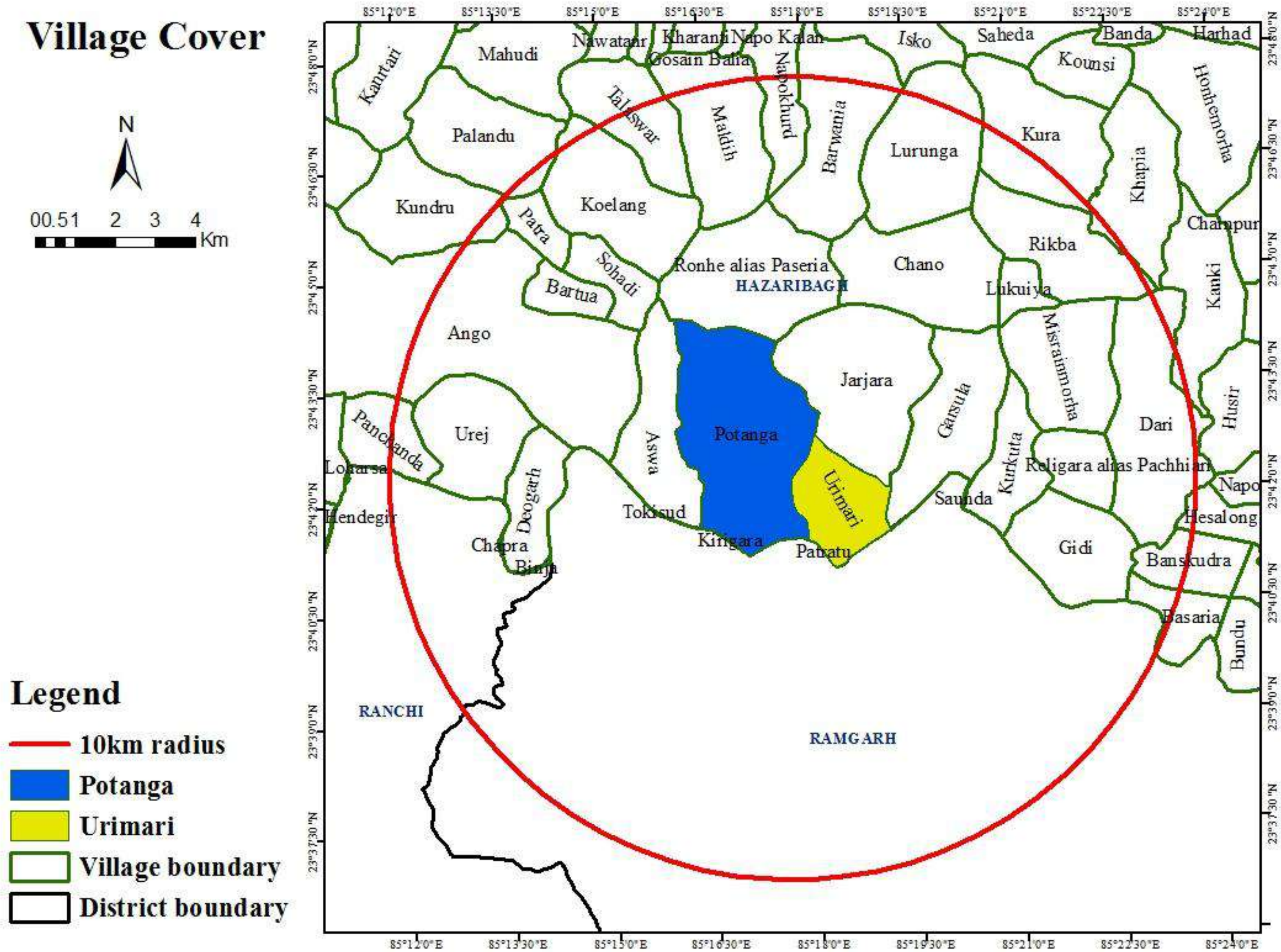
Three power projects are being set up by NTPC under the Mega Power Policy of Govt. of India. The three power projects are (i) North Karanpura/Tandwa STPS (2000 MW) (ii) Barh STPS (2000 MW) and (iii) Kahalgaon TPS (1500MW). The Hon'ble Prime Minister of India laid the foundation stone of these mega power projects on 6th March'99. Two Opencast Projects in N.K. Coalfield Magadh and Amrapali OCPs have been identified for supplying coal to above two STPS. The requirement of power grade coal will be around 10 M.te per annum for each STPS and with these objective in view, the above two OCP's were prepared for a rated capacity of 12 MTPA each. It is envisaged that these two OCPs will be worked at an operating efficiency of not less than 85%.

Communication:

The metalled road connecting Tandwa with Hazaribagh (80 Km.) via Semarie passes through the block. Another metalled road connects Tandwa with Hazaribagh (50 Km.) via Barkagaon. Tandwa is also connected to Ranchi (92 Km.) via Khalari (28 Km.) and Bijupara by metalled road. Nearest railhead is Ray Station at a distance of about 34 Km. from the block on Barkakana Dehri-on-sone loop line of the eastern railway. Tori is another nearby Railway Station located south of the block at a crow fly distance of about 52 km.

Topography:

The Amrapali and Kishanpur blocks are characterised by more or less flat terrain with gentle undulation. In general ground slopes towards south. The maximum and minimum elevation is 497, 440m and 501m, 449m respectively. Chundru and Barki rivers flowing west to east and north to south respectively control the drainage of the block. The Chundru River marks the Southern boundary of the block whereas Barki River is the eastern limit of the property. Besides, there are some small seasonal nalas, which discharge their load into main nalas of the block.


Village Cover
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Urimari
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RAMGARH
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Koelang
Patra
Champur
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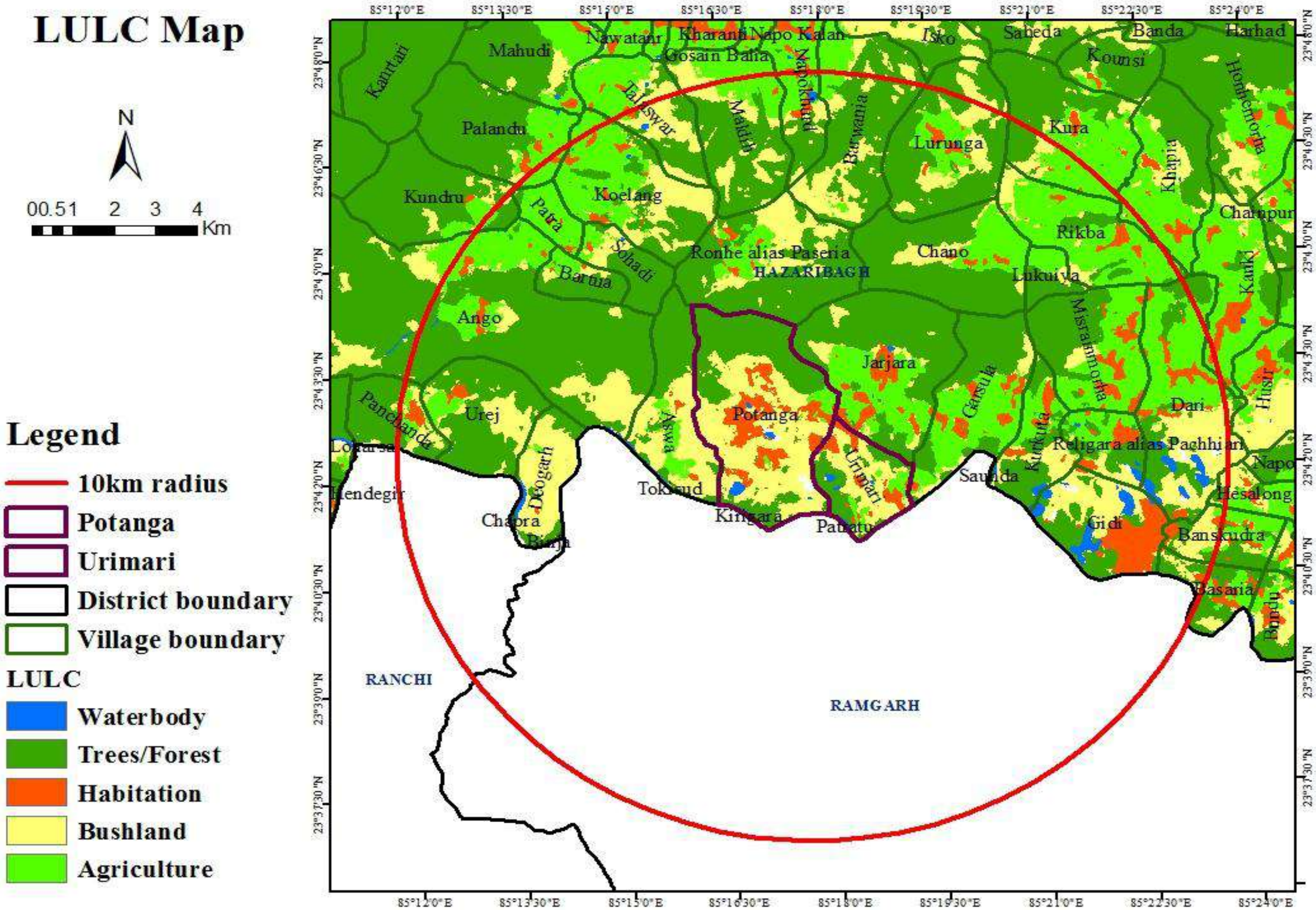
LULC Map
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10km radius
Potanga
Urimari
District boundary
Village boundary
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Waterbody
Trees/Forest
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Agriculture
HAZARIBAGH
RANCHI
RAMGARH
Mahudi
Palandu
Kundru
Koelang
Ango
Urej
Potanga
Jarjara
Lurunga
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Ronhe alias Paseria
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Environmental clearance and its status:

The project proponent has already carried out an EMP report prepared by the CMPDI and has submitted it to the concerned authorities and it has been approved. Compliances are submitted by the project proponent as per guidelines on regular basis.

Villages and habitations within the project area and its impact area under 10 KM radius:

Though the project impact area encompasses Hazaribag, Latehar and Chatra district. For all practical purposes the impact area under the Chatra district and Chatra South forest division has been considered for implementation of the mitigation measures for the wild life.

There are 33 villages which will be covered under the project with a population size of 54332.

Extents of biotic pressure on forest:

Practice of open grazing contributes to biotic pressure in addition to demand for fuel wood and construction of houses. Fuel wood creates biggest biotic pressure and one family of six members uses wood equivalent to one full grown tree in one year. Large herds of less productive cattle with open grazing tramples seedlings and reduce natural regeneration in the process. Goats by virtue of their biological characteristics reduce growth of plants in to tree and create more bushes than trees.

Dependence on NTFPs, method of collection and impact on wild life:

NTFPs like mahua. sal resins, sal leaves and medicinal herbs plays an important role. Fruits like char, jackfruit, jamun, kendu and bhelwa are being collected and used for self consumption and for sale also.

For mahua people burn the leaves on forest floor which they do year after year. It makes oil hard and reduces moisture content and thus growth of any vegetation is limited under the crown. Sometimes this fire becomes uncontrolled and causes damage to both flora and fauna.

Resins are collected by putting a cut mark and it does not have much negative impact onflora and fauna. Medicinal herbs are collected in unscientific manner and it reduces bio diversity of the forest. It requires training and awareness to sustain the livelihoods of traditional healers itself.

Fruits are collected for consumption and sale. It does not have much impact on the wild life.

Occupational Profile:-

The major occupation of the villagers in the impact area is agriculture. People do have jobs in the mines but it is very limited. Most of the other people are involved in the wage earning in the mines and related activities. Ancillary activities like transportation, small road side hotels and other petty business also find a place in the day to day earnings. Along with the major activity of cultivation allied activities like cattle rearing and small ruminant farming also makes a living for many families. Collection of NTFP also contributes to the family earnings. So a basket of activities are being taken up by community to make a living in the area.

Cropping Pattern:-

The agriculture lands available in the impact area are cultivated primarily under rain fed conditions. The total land is not utilized for cultivation because of low facility of irrigation. Kharif is the main crop in which villagers grow paddy (Oryza Sative). The important fruit plants are Jack fruit (Artocarpus hetrophyllus), Imli (Tamarindus indicus) Jamun (Syzygiumcumini), etc.

Status of Habitat

The proposal for diversion of forest land for 963.23 Ha in Amrapali OCP will constitute quarry, infrastructure etc., which will result in felling of all tree in the area. All avifauna found in the area will be displaced by the mining and allied activities. These activity will displace the habitat of all birds, animals etc. which depends upon the local plants for food, shelter and nesting. Thus the mass displacement of avifauna will occur when the mine operation will start.

There were also changes in the shrubs and woody climbers. Only 14 shrub and woody climber species were observed in areas nearer to mines against 40 species in the natural forests.

Avifauna in Amrapali OCP

The various species of avifauna found in core and buffer zone of the proposal are Common myna, Small blue kingfisher, Pond Heron, Cattle Egret, Lesser pied Kingfisher, Blue rock pigeon, Indian roller, Indian tree pie, Maratha Woodpecker, Black drango, Little egret, white- Breasted King fisher, Little Green Bee eater, black kite (Common), white wagtail, Golden Oriole, Large Cormorant, Little cormorant, Blossom headed Parakeet, Rose- Ringed Parakeet, Red-vented bulbul, Indian robin, Spotted dove, Pied myna, Brahminy myna, Grey hornbill, Common babbler, barn owl, Common hoopoe. Little Green Bee Eater, Black kite(Common), White wagtail, Golden Oriole, Blossom

headed Parakeet, Rose-Ringed Parakeet, Red-vented bulbul, Indian robin, Spotted dove, Pied myna, Brahminy myna, Grey hornbill, Common babbler, Barn owl.

Common plants used by the birds in the locality

The birds use varieties of plant species. They use different trees and shrubs for feeding, resting, roosting and nesting. The bushes of lantana which are considered as weed are most beneficial for birds. It provides food and breeding shelter for most of the ground dwelling birds. The most important plants which will be lost to birds of this area are- Amla, Mango, Arjun, Babool, Bel, Ber, Bans, Bargad, Peepal, Dumar, Dhoutha, Dhela,Didhour, Imli, khair, Siris, Kachnar, Kanwad, Khajoor, Kusum, Karam, Jamun, Mahua, Neem, Piar, Palas, Semal, Sal and variety of shrubs. The grasses like spear, kush, khas, dudhi are important for feeding and safety. The large trees are nesting places for kites, eagle, crows etc.

Biotic pressure on project impact area

Grazing: In the absence of adequate productive pasturelands in impacts areas, forests have been become the major source of grazing and fodder for rural cattle population. Grazers also collect green fodder by lopping and harvesting grasses which adversely affects regeneration of forests and also deteriorates habitat of the wildlife. The overgrazing by the village cattle in forest area creates shortage of food for wildlife especially during summer season. The impact of grazing is clearly visible in the impact area as fodder removal and the forest has reached unsustainable levels and weeds have begun to invade.

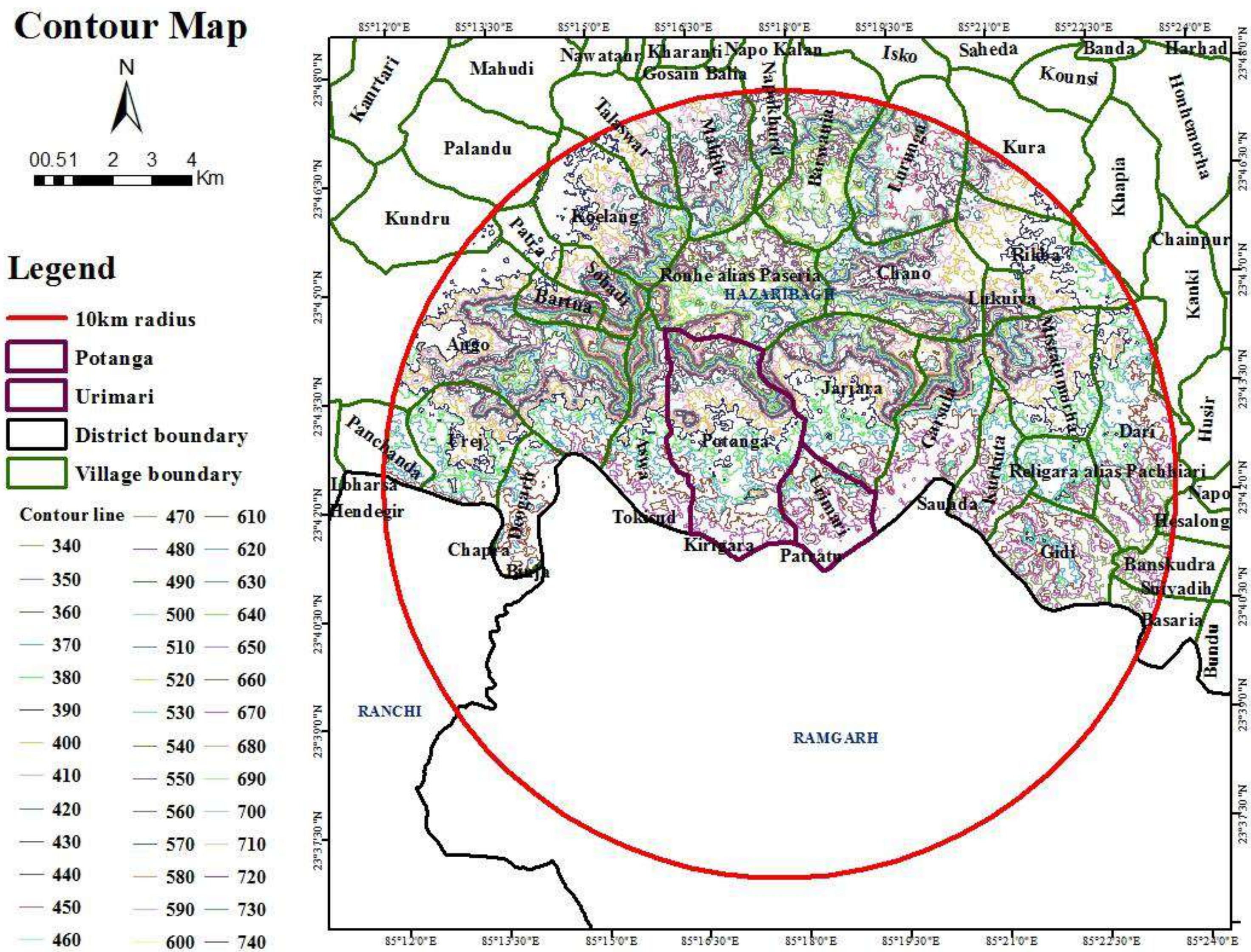
There is no culture of stall feeding for the cattle in this area. The forest in the vicinity of thickly populated area are worst affected by incidence of grazing. In rainy season the grazing affect the forest crop badly by destroying and crushing of new forest crop - shoots. Thus the domestic live stock tries to compete with wildlife for food, fodder and water.

Forest fire: Forest fires in the impact area are generally ground fires. Annually a several numbers of forests are affected by fires. About 90% of fires are caused by human to promote new flush of grasses, collection of Mahua flowers, Fruits and Honey. The forest fires which are caused for different activities are major threats for the local wildlife. These fires cause significant destruction of habitats and affected slow moving fauna such as snakes, lizards, insects etc. most of the villagers mentioned that these fires were likely of natural causes. But negligence on part of industrial units mining institutions and villagers are also be a cause of those fires.

Felling for fuel wood: Felling of forest in the impact area is mainly for the purpose of fire wood collection, small agricultural and household requirement of timber, fodder for cattle and to a small extent for illegal mining etc. In the impact area the 50% of the households depends on the nearby forests for their day to day requirement of fuel, fodder and timber. It affects the growth of entire forests which cause degradation of forest and destruction of the wildlife habitat.

Fuel wood consumption: The surveyed indicated that the rural population of the impact arena dependent on forest biomass for cooking purposes mainly on fire wood. The respondents using fire wood were clearly said they collected fire wood from the nearby forest. The forest situated near thick populated village are worst affected. It was seen during studies that more than 65% people use gas for their cooking rest 35% depends on fire wood and coal for their cooking.

NTFP are very important to rural households in terms of their contribution to health, food, energy and other aspects of rural life. NTFP which at present contribute to rural livelihoods on a subsistence level could play a much bigger role in economic growth and poverty alleviation. NTFP covers a wide range of products (goods and services) from thatching materials to medicinal plants. These products are the essential needs of local communities.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HAZARIBAGH
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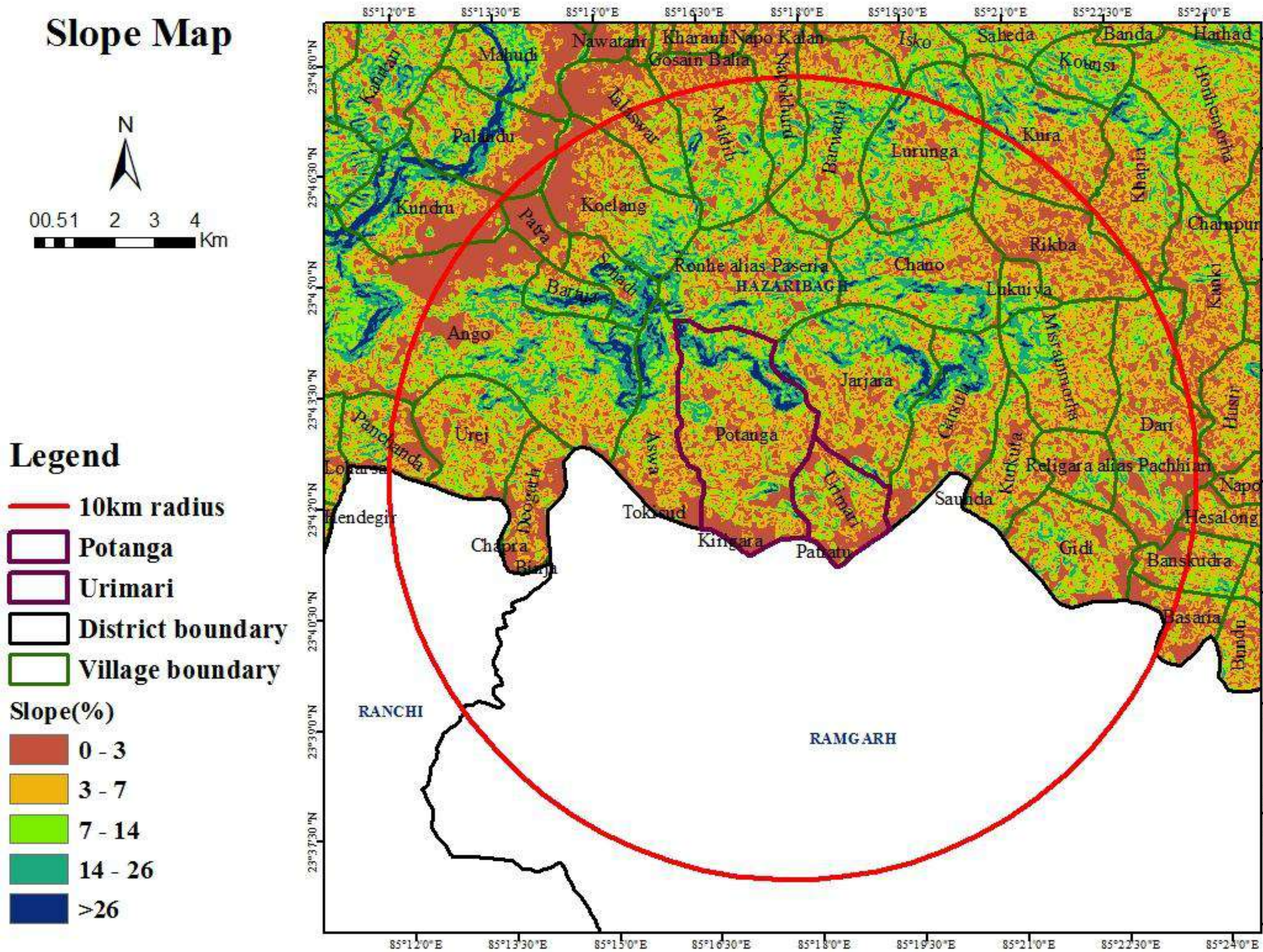
Slope Map
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10km radius
Potanga
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District boundary
Village boundary
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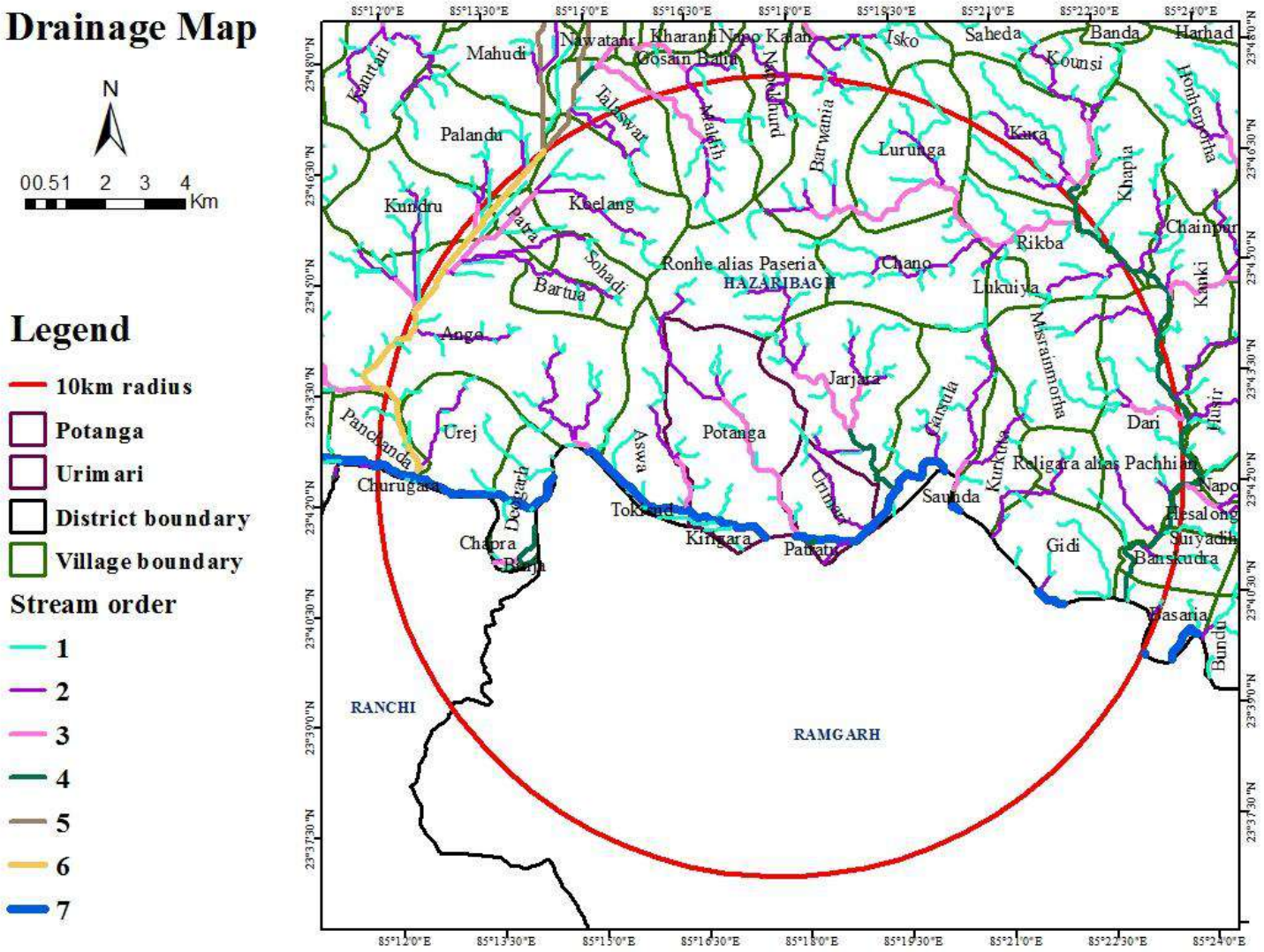
Drainage Map



Climate and Rainfall: The climate is tropical. The summer, which is between April and June, is very hot. The maximum temperature reaches upto 46°C during summer and the minimum temperature reaches 4°C during winter months of December and January. The average rainfall is usually about 50"-60" during monsoon.

Details Of Linear Infrastructure In The Impact Area: The linear infrastricure on the area include the railway lines and roads along with the transmission lines for electricity.

Socio Economic Data of Amrapali OCP

Socio-Economic Profile

Socio-economic study including demographic, economic, workforce, civic amenities and basic & civic amenities in the study area is based on 2011 census data.

Demographic Profile of the study area

The study area comprises **33** villages, with a total population of 54332 persons.

Average household size :

Average household size lies between 4 and 6 persons per family, in the study area.

Average HH Size = (Total Population) / (No of Households)

No of Households	Total Population	Avg_HH_Size (Persons)
10060	54332	5.4 (4 to 6)

Gender ratio

Gender ratio is an indicator of social status. In places where women have a better social status, there the difference between the numbers of male and female is less, the ratio is found to be close to 1:1.

Below is the summary of the same data in tabular form, representing number of female every 1000 male.

Sex ratio = (Number of females*1000) / (Number of males)

The ideal sex ratio is 1:1. From the above table, it can be observed that in study area, the number of female per 1000 male is less than required. It is at 947 female per 1000 male.

Economic Profile of the study area

The census classifies workers into two groups, namely, 'Main workers' and 'Marginal workers'. Main Workers are those who have worked for the major part of the reference period, i.e. 6 months or more. Marginal Workers are those who have not worked for the major part of the reference period i.e. less than 6 months.

The main/marginal workers are classified on the basis of Industrial category of workers in following four categories:

- Cultivators
- Agricultural Laborers
- Household Industry Workers
- Other Workers

Below is the summary of the same data, in tabular and figurative form.

The number of female workers is less than half the number of male workers. Interestingly, among agricultural marginal workers, Females out the number of males. In urban areas, majority of Female workers are engaged in households industry and other work.

Infrastructure Profile of the study area

Basic and civic amenities pattern of the villages indicates presence of tap water for drinking along with other sources like wells and hand pumps.

Land use pattern: Attached as annexure from census 2011

Land use and land management practices have a major impact on natural resources, including water, soil, nutrients, plants and animals. Land use information can be used to develop solutions for Natural Resource Management.

From above we can observe that % of Non- irrigated Land is much higher than irrigated land. Also, % of barren land is negligible. The study area soil conditions are favourable for forestation.

Occupational health survey

Under the Occupational Health and Safety Act, occupational illness is defined as a condition that results from exposure in a workplace to a physical, chemical or biological

agent to the extent that the normal physiological mechanisms are affected and the health of the worker is impaired.

It is observed that Asthma, Hypertension and Chest disorder (TB), Paralytic attack, Cataract, Conductive Hearing Problem (CHB), Coronary Artery disease (CAD) and Dislipedimia(Cholesterol) are common in people of old age group (> 40 years). Malaria, Jaundice, Dysentery/Diarrhoea and Skin diseases are common in all age groups. Baseline health status is also enclosed as Annexure XI.

Public awareness and opinion about the project

Most of the respondents are aware about the project. 85% respondents have favourable opinion, 10 % have unfavourable opinion and 5 % have not given any opinion.

The respondents were asked to opine about the project. They expect increase in job opportunities, improvement in educational, transport, medical, housing, sanitation facilities.

Project benefits

The implementation of the project will improve the socio-economic status of the joining areas and will help to meet the energy demand of the nation. Project will lead to development of ancillary industries and an overall economic growth of nearby towns to supplement the population of the area.

The project is likely to give a boost to the economy of the area and providing primary and secondary employment to local people. There will be improvement in infrastructure facilities like drinking water, medical, educational, schools etc. There will be overall gain with respect to improvement in social and economic aspect. This will lead to the overall development of the society.

Description of the flora and fauna

The forests of Chatra are mostly over hills and undulating lands. This unproductive nature of the soil coupled with low rainfall and high drainage reflects itselfthe poor condition of the growing stocks, which has been accentuated by heavy tree felling over grazing and fire. In some cases, the proposed rotation has been transformed into a scrub due to human interference. The anthropogenic factors have let loose severe erosion which has continued over the past several decades and brought down the productivity. Although in several patches there are dense forest cover still preserving theoriginal habitat and bio-diversity. At the onset of summer all the trees

shed their leaves, remaining leafless for about 6 months in a year. The fallen leaves increase the fire hazard and before adding nutrients to the soil, are burnt every year. The ashes are washed out of the forests by next monsoon.

Sal & Palash are predominant species with its associates. Some areas have miscellaneous forests with species like Kend, Arjun, Sidha, Mahua, etc. Sal is generally confined to plains, narrow valleys and foothills of hills. Because of severe problem of grazing and hot climate, moisture retaining capacity of soil is very low. Soils have become impoverished. As a result, xerophytic plants like Salai, Bamboo, Khair, Harsingar out number other species. Type of forest is the resultant reconciliation of the floristic inheritance of the locality with the habitant. A forest type can be defined as a unit of vegetation possesses broad characteristics in physiognomy and structure, sufficiently pronounced to permit its differentiation from other such units. Usually, a forest type is described with reference to its geographical location, climatic and edaphic features, composition and condition. The upper forest canopy in the region is light but probably fairly even and continuous in the climax form, the latter is however very rarely encountered and an irregular often broken canopy is usual in consequence, the tree is having a relatively short bole and poor form, and a height rarely over 15 m and often lesser. The canopy is formed entirely deciduous trees, most of which extend to moist deciduous forest with far better development. There is considerable inter-mixture of rather smaller trees, which in this moist deciduous they may be in the second story. There is usually thin shrubby undergrowth.

There is a great impact of geology on the distribution of forests in the region. The relative compositions of crop are found according to aspect, biotic factors and topography. Miscellaneous forests occur in all the zones. Some where it is confined to a small patch. In upper storey are *Anogeissus latifolia*, *Terminalia belerica*, *Terminalia chebula, Adina cordifolia, Butea monosperma, Diospyros melanoxylon, Cassia fistula, Lagerstromia parvifolia, Sterculia urens, Albizzia sps, Buchannia lanzan , Aegle marmelos etc. In the under storey are found Holehhrena antydysentrica, Croton oblongifolius, Nycatanthes arbostristis, Ziziphus sps*. The commonest climbers are Bauhinia vahlii.

Tree species present in the tract belong to several families. The prominent families are Dipterocarpaceae, Ebenaceae, Fabaceae, Anacardiaceae, Flacourtiaceae, Lytheraceae, Mimosaceae, Rubiaceae, Sapindaceae, Tiliaceae, Arecaceae, Bombacaceae,Combretaceae, Moraceae, Meliaceae and Euphorbiaceae.

Regeneration Status

The natural regeneration appears to be a complex process. Most of the species do not exhibit the same type of liking to all the localities within forest. They favour certain type of areas to regenerate profusely. The dominant species regenerate under their own shade. At the dawn of the favourable season, the natural regeneration of the important species can be found to be prolific. Along the banks of the streams, nalas, river and valley are where the conditions are more favourable accelerating the rate of regeneration of species.

Fauna Diversity

Historic data indicates presence of the major carnivores in the past, including tiger, leopard, wolf, hyena and fox in the area. However, tiger and leopard which were once seen frequently, has no trace now. Among the vertebrates, documented information is available only for Mammalian, Reptiles and Avifauna. However, other vertebrates like Amphibians (frogs, toads) are also found. Recent studies on reptiles in Jharkhand revealed 25 species of snakes, 8 species of lizards in the state. Snakes serve the mankind in different ways which go unnoticed. The two economic aspects of the snakes are their role in nature as destroyers of insect and rodents. Among snakes, Spectacled Cobra, Banded Krait, Common Krait, Russell's viper, Green Pit-viper are poisonous. The common non –poisonous snakes are India Rock Python, Rat Snake, Checkered Keelback and Buff-stripped Keelback etc. Among Lizards, Monitor Lizard, Indian house gecko, Rock lizard, Common Garden Lizard and Skink etc. are found. Indian Rock Python (Python morulus) belong to Schedule-I species. Monitor Lizard (Varanus monitor) is listed in Sch.II

As regards invertebrates, except for little documentation, there is no proper scientific documentation whatsoever. However, a number of invertebrates exist in the area ranging from Annelids (earthworms, Centipedes, millipedes) Moluscans (Snails and slugs) to a variety of insects including beetles, bees, butterflies, bugs moths, crickets, grasshoppers, termites etc., which are not only abundant but diverse in nature.

Among recorded mammals Elephant (Elephas maimus), Pangolin (Manis crassiicaudata) and Sloth Bear (Melursus ursinus) are enlisted in Schedule-I of wildlife (Protection) Act, 1972 and the others are in Sch. III and IV.

The destruction of wildlife corridors due to development projects causes

disturbance of biodiversity of the region. A wildlife corridor or green corridor is an area of habitat connecting wildlife populations separated by human activities. This allows an exchange of individuals between populations, which may help prevent the negative effects of inbreeding and reduced genetic diversity (via genetic drift) that often occur within isolated populations. Corridors may also facilitate the re-establishment of populations that have been reduced or eliminated due to random events. This may potentially moderate some of the worst effects of habitat fragmentation. Wildlife corridors are susceptible to edge effects; habitat quality along the edge of a habitat fragment is often much lower than in areas further from the habitat edge. Wildlife corridors are important for large species requiring significant sized ranges; however, they are also vital as connection corridors for smaller animals and plants as well as ecological connectors to provide a rescue effect. Elephant corridors are narrow strips of land that allow elephants to move from one habitat patch to another. There are 88 identified elephant corridors in India. The elephant habitats of central India are spread over an area of 17,000 km2 in the states of Jharkhand, Orissa and a part of southern West Bengal. The 2500 elephants in the range occupy the most fragmented elephant habitat of the country that has been degraded and fragmented due to mining, shifting cultivation and developmental activities (The Right of Passage, Wildlife Trust of India). Jharkhand has two distinct elephant populations, viz. Palamau and Singhbum and about 700 elephants. The Palamau population occupies about 1200 km2 of the Betla National Park, Palamau Tiger Reserve and adjoining areas. The forest area of project site of the concerned Forest Division is not a part of already identified 14 corridors in India (The Right of Passage, Wildlife Trust of India). Apart from this although no other scientific study has been made to identify corridor of wild animals like elephant in the project area yet very limited movement of elephant was reported in few villages under Chatra Forest Division.

Description of the flora and fauna: Habit and habitat of some important animals found in the forest of Bermo range under Chatra South Forest Division

The following photos of different wild animals are from the field of project and its impact areas sited and collected during and before the course of preparation of the site specific wild life management plan. The habitat requirement, feeding & breeding behaviour of some important animals found in and around project area are as follows: -

Elephant

Common Name: Indian Elephant Scientific

Name: Elephas maximus indicus

Habit: Elephant are social animals and may form herds of 20-30 individuals led by the oldest female. Herds usually break into stable family groups of 4-7 animals for foraging and may rejoin. Elephant is intolerant of hot summer and retreats into a shady spot during noon. In the past, when forest ranges were continuous, elephants used to migrate seasonally in search of better pastures alternating with forests. Human activities like cultivation, highways, townships, railways, dams, industries and mines have now fragmented their habitat and made seasonal migrations virtually impossible. Elephants enjoy cultivated foods such as ripe paddy, banana, mango, jack fruit, sugar cane.

Habitat: Elephants are animals of grass lands and scrub forests who have secondarily switched over to forests once grass lands were mostly brought under cultivation. The mosaic of grass, scrub forests, open forests and dense forests suits them well. Elephants consume a variety of diet, bark, roots, leaves, stems and twinges, bamboos, vines, shrubs belongings to 100 plus species. An average day's intake for adults is 150 Kg of vegetation (20-25% body weight). Elephant may drink 100-140 litres of water at least once in a day.

Threats:

i. Habitat loss and fragmentation due to encroachment of forest.

ii. Poaching for tusk.

iii. Forest fire

iv. Conflict with human beings.

Conservation issues

i. Raid in the village and agricultural field for food leads to man-animal conflicts.

ii. Loss of habitat for food and water.

iii. Particular attention should be paid to identifying ways to reduce human conflict through promotion of methods that ensure to keep the elephant away from human.

iv. Unawareness among the people. Awareness programme to reduce conflicts.

BLUE BULL

Scientific Name: Boselaphus tragocamelus

Local Name : Nilgai

The Nilgai (Boselaphus tragocamelus), is the largest Asian antelope. Nilgai, also known as Blue Bull, is one of the most commonly found wild animals of northern India as well as eastern Pakistan. Even though it is an antelope, it looks quite similar in appearance toan ox. Therefore, it has been given the name of Blue bull in India. The average lifespan of the Blue bull is 21 years. This is the largest antelope found in the division. The adult bull has a coarse iron-grey coat, a white ring below and two white spots on each cheek. Young bulls and cows are tawny. Bulls have stout come like horns-but not long. Blue bull avoid dense forests. Their usual hunts are hills sparsely dotted with trees, or level orundulating plains covered with grass and patches. Blue bull are very bold in cultivated fields. They feed upon grasses, leaves and wild fruits till late in the morning and evening and

seek shade during the day specially in hot summer days. Nilgai like other antelope have habit of resorting to the same spot to deposit their droppings, forming in this way considerable accumulations.

Natural Habitat Nilgai is a diurnal creature, found inhabiting Indian grasslands and woodlands. It avoids dense forest and has preference for plains and low hills with shrubs. Blue bulls generally come to the same place to deposit their droppings.

Behaviour Nilgai antelope is a sociable creature, usually found in single-sex or mixed- sex herds. The membership of a herd may be anywhere between four and twenty. In winter, male blue bulls of northern India are known to form herds of 30 to 100 animals. Male Blue bulls, after they reach old age, may be found leading a solitary life. One can also come across individual male or female in cultivated or semi-urban areas.

Diet Blue bulls of India are herbivorous creatures, surviving primarily on grasses, leaves, buds, and fruits. Blue bull can survive for a long period of time without water. Generally, Blue bull prefers the mature growth stage of different crops (e.g., paddy, maize, mustard, chili, cauliflower, cow-pea, black gram, cabbage, etc), while wheat,

potato, radish and pumpkin are preferred in the early stages of growth, and lentils are preferred at all stages. Blue bulls were reported to feed on all the major crops grown in the boundary areas. Apart from agricultural crops, Blue bulls also caused considerable damage to vegetables.

Conservation Status

Nilgai antelope has been listed in the 'Low Risk' category by the IUCN. The estimated population of Nilgai in India is approximately 100,000. It is enlisted in schedule III of wildlife protection Act 1972. The main threat to the Nilgai is from the destruction of its habitat to accommodate the everswelling human population. In India, it is believed that the Nilgai antelope is a sacred animal (precisely a cow) and it is protected against hunting

Problems Caused in Village Habitats by Blue Bull

The Blue bulls cause a lot of destruction in the agricultural lands of the villagers. They usually take shelters in the bushes near the agricultural fields during the day and by dusk; they will start entering into the fields. They either eat or destroy the produce in the farmland. Even though the farmlands are watched over by the farmers or dogs at night, they are usually chased away by 40 to 50 Blue Bulls who come at the same time. Many suffer loss because of the rampage created by the Blue Bulls.

STRIPED HYENA

Scientific Name: Hyaena hyaena

Local Name : Lakkar baggha

Habits The hyena is rare in forested districts, abundant in open country, especially were low hills and ravines offer convenient holes and caves for shelter. Many lie hidden by day in high grass, under bushes or in cane fields but the den usually preferred is cave amongst rocks or a hole dug in the side of a hill or ravine. Quite often a hyena enlarges a porcupine's burrow to suit its needs. They come out in quest of food by night, retiring before sunrise. Pairs usually go about together, sometimes a group of 5 to 6 is seen but this is probably a family party. In search of food the hyena tramps many miles. Its 'spoor' is much like a dog's except that the imprint of the forefoot is much larger than that have hind, and that of the main pad is uneven and oval. Animals that have died of disease or those killed by the larger beasts of prey are the usual food of the hyena. Its share is the coarser remain the heavier bones which the others reject. These it breaks and crushes with its powerful jaws and teeth, swallowing and digesting great fragments. Portions of the meal may be carried to the den to be eaten in greater security. Though scavengers by profession, performing useful services as such, hyenas do not feed wholly on carrion, occasionally sheep and goats and quite often stray dogs are carried off by them. Some individuals, developing the cattle-killing habit, become perfect pests on livestock. Larger cattle are seldom attacked. Despite its bulk and power our hyena does not attack big animals, though an individual may be quite prepared, if need be, to appropriate the kills of panthers.

Threats

i. Road accident

ii. Killed by villagers when enters villages for cattle lifting.

iii. Habitat loss

Conservation issue

i. Lifting of cattle by Hyena leads to man-animal conflicts.

ii. Particular attention should be paid to identifying ways to reduce human-carnivore conflict through promotion of methods that ensure adequate numbers

of prey persist and/or methods that reduce livestock killing.

iii. Unawareness among the people. Awareness programme to reduce conflict

MONKEY

Scientific Name: Macaca mulatta
Local Name: Hindi – Bandar

Habits

Captive or wild, this is the common monkey of Northern India. Large troops live near or in villages and towns and in groves round taken and temples. In the jungle, they usually keep to the fringes rarely penetrating into the depths, except where driven to seek denser cover. Almost everywhere the Rhesus enjoys freedom from molestation. To raid fields and gardens of a morning or evening is their common and established practice, to which popular and religious sentiment permits little check. Capture and export on a large scale has now abandoned many areas. Like most macaques, the Rhesus feeds mainly on the ground. Some live habitually among rocks and cliffs.

Threats

i. Hunting

ii. Deforestation – affect the food availability and habitat loss .

iii. Forest Fire

Conservation Issue

i. Enters into agricultural fields leading to conflict.

ii. Human interaction to be reduced

iii. Needs to improve habitat.

iv. Awareness generation among public.

INDIAN PORCUPINE

Scientific Name: Hystrix indica
Local Name : Sayal, sahi,

Habits: The Indian Porcupine favour rocky hill-sides. It adapts itself to any type of country, moist or arid, and inhabits both open land and forest. Porcupines come out after dark. They have a keen sense of small and display high intelligence in evading traps. Vegetable of all kinds, grain fruit, and roots are their main food. They can be very destructive in gardens and cultivation, tunnel line under walls and hedges to make an entry. When irritated or alarmed, porcupines erect their spines, grunt and puff, and rattle their hollow tail quills. Their method of attack is peculiar. The animals launches itself backwards enemy, drives its erect quills deep into it with painful, or even fatal, results. It has been reported from canary hill apart from Sanctuary.

The popular belief that porcupine “shoot’ their quills can be disregarded. Porcupines were found with young in Madhya Pradesh in March. Both parents usually occupy the burrow with their offspring, which may number 2 to 4. They are born are born with theireyes open and the body covered with short soft spines.

Threat

i. Hunting/Poaching for their quills and food.

ii. Habitat loss

Conservation issue

i. Habitat protection and conservation.

ii. Awareness generation among public.

INDIAN WILD BOAR

Scientific Name: Sus scrofa
Local Name : Jangali suar

Habits: Indian Wild boar live in grass or scanty bush jungle, sometime in forest: after the rains, quite commonly in high crops. They are omnivores, living on crops, roots, tubers, insects, snakes, offal, and carrion. They feed in the early morning and late in the evening and, where much disturbed, chiefly at night. These raid the agricultural field and eats crops and tubers. No animal is more destructive to crops and in cultivated areas, it is impossible to make a plea for its protection. Wild boar display great intelligence and few animals show greater courage and determination. The sense of smell is acute, the eyesight and hearing moderate. Wild Boar are highly prolific. It is seen that breed at all seasons. In central India the majority of young are born at two periods, shortly before and shortly after the rains. The period of gestation is said to be four months, four to six young are born at a time. The mother shelters them in a heaped-up mass of grass or branches which she builds before she litters. After breeding the big boars live along or in company with another of equal size or with one or two sows.

Threat:

i. Hunting for meat, sport or in revenge for crop damage.

ii. Habitat loss.

Conservation issue

i. Habitat loss hence enters into agricultural field.

ii. Increases in population.

iii. Awareness for conservation.

JACKAL

Scientific Name : Canis aureus

Local Name : Siyar

The Jackal's long-down, eerie howling at dusk or just before down is perhaps more familiar to most people. It lives almost in any environment, in humid forest country orin dry open plains or desert. The greater number lives in around town and villages and cultivation, sheltering in holes in the ground, among ruins or in dense grass and scrub. These usually comes out at dusk and retires at dawn. Usually they go about alone or two or more hunt together. They are good scavengers and clears the carcasses. They may hunt poultry and goat. It is some time known to hunt small deer and wounded animals. It has been reported from all the forest division. Apart from this Jackals raid melon patches and sugarcane fields. Also feeds upon fallen fruits of Ber tree. In the study area it was found that these raid the Groundnut andsugarcane agricultural fields. Little is known about its family life, it is so secretive in habits. Life span is about 12 years.

Threat:

i. Road Accident

ii. Habitat loss.

Conservation issue

i. A part from stealing poultry enters into agricultural field hence conflict with the human.

ii. Little information is available on jackal densities, habitat use, and ranging patterns in relation to food availability. Information on dispersal, survival and mortality factors of adults, pups and dispersing individuals is not known.

iii. Awareness generation programme for conservation.

JUNGLE CAT

Scientific Name : Felis chaus
Local Name : Jangli billi,

Habit: Jungle Cats inhabit the driver and more open parts of the country, keeping more to grassland, scrub jungle, the reedy banks of river and marshes. The Jungle Cat is frequently come out by day, more usually in the mornings and evenings. Its movements in the open area much like those of a small panther. It preys on small mammals, birds, and when near villages on poultry. There is record of one making bold to seize its prey even in the presence of the owners. Very swift and exceedingly strong for its size, it is quite capable of bringing down larger game. Births have been recorded between January-April and in August and November. The litter size usually 3 but occasionally up to 5 kittens. The eyes open

11 to 15 days after birth.

Threat:

i. Enter in villages for stealing poultry due to this conflict with the people and gets killed.

ii. Habitat loss and decrease in prey.

Conservation issue :

i. Needs awareness among the people.

ii. Habitat improvement.

SPOTTED DEER

Scientific Name : Axis axis
Local Name : Chital

Habitat: They are commonly seen in herd of 10-30 individuals. They prefer

company of langurs and monkeys. These animals feed upon fruits and shoots of trees fallen on ground after langurs and monkeys have finished their food. They are fond of Mahua flowers and are often seen under Mahua trees. These may enter the cultivations and eats up the crops. They are less nocturnal them Sambhar and feed till late in the morning and in the afternoon. They prefer open and shrubby areas and do require cover also.

Threats

i. Poaching for meat and skin

ii. Habitat loss

iii. Comes out in open during summer near villages for water.

Conservation issue: Since it is killed for meat and its skin and horns is used as trophy. It is important to generate awareness among public for importance of conservation.

SAMBHARS

Sambhar, the largest of deer species in India, which is found all over the P.A. The Sanctuary is suitable for the Sambhar on account of the fact that it's tract, the terrain, the climate and the vegetation make the habitat most suitable for them. The Sambhars mostly browse on the leaves, young shoots, flowers and fruits of the following species, Nyctanthes arbortristis, Bauhinia species, Eugenia dalbergioides, Terminalia species, Zizyphus species, Leaves of bamboo, Tender leaves of sal.

They have been rarely found grazing on grass. The food for sambhars is usually available throughout the year, though the intense heat and incidences of fire make them strive hard for food during peak of summer.

Threats

i. Poaching for meat and skin

ii. Habitat loss.

Conservation issue

Since it is killed for meat and its skin and horns is used as trophy. It is important

to generate awareness among public for importance of conservation.

COMMON MANGOOSE

Scientific Name : Hrpestes edwardsi

Local Name : Newala

Habitat: They are not creature of forests but of open lands, of scrubs jungle and cultivations near the villages. These prey upon rats, snakes, lizards, frogs, Tharns and insects etc. It digs in moist soil for earthworm and eat eggs of ground nesting birds. It also eats fruits, roots and carrion. It breeds all the years and three litters may beproduced in a year.

Threats

i. Hunted for keeping pet.

Conservation issue

i. Habitat management

REPTILES

A typical reptile is lizard-like in shape, with three main parts the head, trunk and the tail constituting the body. Reptiles are the first vertebrates to break their link with water and become truly adapted to terrestrial life. All reptiles are covered by dry scales or horny plates. All are cold blooded animals i.e. their body temperature is not constant and varies with the surroundings. Most reptiles, barring the burrowing snakes and some degenerate lizard, have fairly well developed eyesight. A vast majority of the reptiles are carnivorous, insects constituting the principal food. Sexes are separate but are not easily distinguishable. Most reptiles lay hard-shelled eggs which are usually buried in pits in the soil for incubation but a few produce live young. Parental care among reptiles is negligible.

The beneficial role played by reptiles is little known. Lizards destroy countless harmful insects. Snakes are efficient destroyers of rats which damage our food crops. It is suggested that snakes can even be utilized as indicators of levels of pollution. Snakes are used in basic research because they spend their lives in slow motion capable of subsisting on a fraction of food input. Apart from providing antivenin - the life saving antidote for snakebite, the venom of snake is put to other uses. Cobra venom is said to be an effective pain killer while that of the Russell's viper can prevent excess bleeding during the dental surgery.

The poisonous snakes found in the study area were Spectacled Cobra, Banded Krait, Common Krait, Russell's Viper, Green Pit-viper. The common non – poisonous snakes are India Rock Python, Rat Snake, Checkered Keelback and Buff-stripped Keelback. Among Lizards, Monitor Lizard, Indian house gecko, Rock lizard, Common Garden Lizard and Skink are found. Indian Rock Python (Python morulus) belong to Schedule-I species and Common Indian Monitor Lizard belong to Schedule-II.

PYTHON

Scientific Name : Python molurus
Local Name : Ajgar

Habit: The Indian Rock Python is a serpent of marshes, and wet rocky areas near streams and pools. It is a resident of burrows, dense clumps of vegetation, large rotten logs, caves, crevices and old ruins namely, structures and monuments. It is a good clumber and sometime suspends itself from the branches of trees, waiting motionless for a prey to come within its easy reach. It is extremely fond of water and is an expert swimmer.

Like all other species of reptiles it is cold blooded by nature and as such it hibernates into hollows of trees, underneath rocks or rock-shelves. The species is more nocturnal than diurnal.

Food: Its dietary habits are largely restricted to reptiles (monitor lizard), birds (peafowl, poultry, wild ducks) and mammals (hare, porcupine, langur, jackal, mouse deer, hog deer, chital etc.) but seem to prefer mammals.

COMMON INDIAN MONITOR

Scientific Name : Varanus bengalensis

Local Name : Goha

Common Indian Monitor lizard famous in Indian history for its reported use by Maratha heroes in scaling the walls of Mughal fortresses. Monitors are distinguished by their long and flattened body, long tail, long neck and the extremely elongated, slender, forked tongue, similar to that of snakes. Eyes with well-developed eyelids. Head covered with small scales. Body covered with small round or oval scales. Ventral scales arranged in regular rows. Limbs well developed and the digits armed with strong claws. Inhabits a variety of habitats from semi-deserts and scrub to evergreen forests and plantations.Diet consists of a variety of insects and spiders, snails, crabs, frogs, small mammals, birds.

Common threat to reptiles:

i. Several species of reptiles are killed for their valuable skin for commercial use.

ii. A number of species of reptiles are, however, critically endangered now due to thegradual loss of their habitat and overexploitation by man for food, medicine and skin.

iii. Fear from death due to snake bites make them vulnerable to human kill.

Conservation issues

In general the reptilian fauna of India is on decline due to various factors including environment apathy, habitat loss, forest fire and ignorance of the common people towards them and their over exploitation for commercial uses; besides, non- implementation of the conservation measure is also important. Snakes don't get much legal protection because of the public prejudice.

Birds

Birds are amongst the most eye-catching forms of animal life. These are bipedal egg laying vertebrates in which the forelimbs have modified into wings. There are about 10,000 living bird species in the world. Birds are one of the best indicators of environmental quality of any ecosystem (Ripley, 1978). Of the total number of different species of birds known to inhabit earth, about one tenth is found in India alone. The avifauna of India includes around 1313 species (Grimmett et al., 2011). .

The site specific survey reveals presence of at least 119 species of birds belonged to 47 families. Indian Peafowl (Pavo cristatus), Critically endangered White-backed Vulture (Gyps bengalensis), Indian Vulture (Gyps indicus) is enlisted in Schedule-I of wildlife (Protection) Act, 1972. Among observed several, notable species observed are the WhiteBacked Vulture and Lomg-Billed Vulture. Himalayan Grifon(Gyps Himalayensis) is reported to be a winter visitor and Egyptian Vulture (Neophron percnopterus) is known to be rare.

Many endangered species of birds are documented from this district.The district Chatra has a undivisible and unique relation with forest. Therefore, literally as well as symbolically, Chatra is associated with forests. In ancient period, the area covered by the present district and adjoining areas were ruled by a number of states, which were collectively known as the *Atavika* (forest) states..Nature wears her best clothes in this district. This district is endowed with abundant flora and fauna wealth. Many water bodies and rivers like Baksha Dam,Laxmanpur Dam,Dahuri Dam,Dhulki

Dam,Hiru Dam,Leelajan river,Amanat river and Mahane river..Chatra district is also blessed with many forests like Lawalaung Wildlife Sanctuary,adjoining areas of Gautam Buddha and Hazaribagh wildlife sanctuary,The hills distributed from Chatra to Palamau,Kauleshwari hill the forest of Piri,Kunda and Pratappur etc.

Name-The lesser adjutant (Garuda) **Food-**Water Weeds, fishes, reptiles, frogs, rodents etc. **Conservational Status**-Threatened (Vulnerable) **Residential Status**-Local

Name-Red naped Ibis **Food**-Beatles, insects, frogs, and other small vertebrates as well as grain. **Conservational status**-Least Concern **Residential Status**-Local

Name-Asian Openbill **Food-** Predominantly on molluscs,fishes **Conservational Status**-Least concern **Residential status**-Local

Name-White Barn owl **Food**-small prey items **Conservational status**-Least Concern **Residential status**-Local

Name-Kingfisher **Food-**Fishes **Conservational status**-Least Concern **Residential status**-Local

Name-White stork **Food**- insects, fish, amphibians, reptiles, small mammals etc. **Conservational Status-** Least Concern **Residential status**-Local

Name-Indian Grey Hornbill **Food-**figs, and seals etc **Conservational Status-** Least Concern **Residential Status-**Local

Name-House Crow **Food-**rubbish, leftovers, debris, and sewage etc.**Conservational Status-**Least Concern **Residential Status**-Local

Name-Indian Bulbul Food- fruits, nectar and insects **Conservational Status**-Least concern **Residential status**-Local

Name-Common Myna **Food-** insects, arachnids, crustaceans, reptiles, small mammals etc **Conservational Status**-Least concern **Residential status**-Local

Name-Common Coot **Food-**Water Weeds **Conservational Status-Least Concern Residential Status-Migratory**

Name-Red Wattled Lapwing **Food-** insects, snails and other invertebrates etc. Conservational Status-Least Concern Residential status-Local

Name-Indian Roller Food-insects,reptiles, birds, and small mammals etc. Conservational status-Least Concern Residential Status-Local

Name-Peacock **Food**-plants, flower petals, seed heads, insects etc. **Conservational status**-Least Concern **Residential Status**-Local

Name-Sandpiper **Food**-Water Weeds,fishes,insects etc. **Conservational status**-Least Concern **Residential status**-Local

Name-Asian Koel **Food**- fruits, insects, lizards and eggs of birds and other animals **Conservational status**-Least concern Residential status-Local

Name- rose-ringed parakeet (ring-necked parakeet) **Food-**buds, fruits, vegetables, nuts, berries, and seeds etc. **Conservational status-**Least Concern Residential status-Local

Name- Indian spotted eagle **Food-** small birds, mammals, reptiles and frogs.
Conservational Status- Vulnerable(Threatened) **Residential Status-**Local

Name- Rock Pigeon **Food-** plant matter,chiefly fruits and grains. **Conservational Status**- Least Concern **Residential Status-**Local

Name- Spotted dove **Food-** grass seeds, grains, fallen fruits and seeds of other plants
Conservational Status- Least Concern **Residential Status-**Local

Name- Falcon **Food-** shorebirds, ducks, grebes, gulls, pigeons, and songbirds
Conservational Status- Least Concern **Residential Status-**Local

Name- Cattle Egret **Food-** Insects, flies, moths etc. **Conservational Status-** Least Concern **Residential Status-**Local

Name- Black Drongo **Food-**Insects, termites, wasps, bees, ants, moths etc. **Conservational Status-**Least Concern **Residential Status-** Local

Name- Jungle babbler **Food-** insects, grains, nectar and berries etc**.**
Conservational Status- Least Concern **Residential Status-** Local

Name- Hoopoe **Food-** Insects,small reptiles etc. **Conservational Status-** Least concern **Residential Status-** Local

Name- House Sparrow **Food-** seeds,weeds etc. **Conservational Status-** Least Concern **Residential Status-** Local

Name- Jungle Fowl **Food-** Insects,Plants etc. **Conservational Status-** Least concern **Residential Status-**Local

Name- Grey Francolin(Teetar) **Food-** seeds, grains as well as insects, particularly termites and beetles etc. **Conservational Status-** Least concern **Residential Status-** Local

Common threats to the bird

i. Hunting/Poaching

ii. Habitat loss

iii. Pesticides

iv. Use of NSAIDs

v. Electrocution due to mining project

Conservation issue

i. Habitat loss due to anthropogenic activity should be compensated by plantation of food yielding plants and nesting trees.

ii. The habitat of the wetland species of birds (water bodies like pond, lakes etc.) for roosting, nesting and feeding is important. Hence the water management is important survival.

iii. Artificial nest to be installed in villages and trees around the impact zone to

compensate the loss of habitat due to ground clearance during operational phase.

Amphibians

Eight species of amphibians were recorded from the quadrates sampled for abundance. It is also possible that a thorough search in the wet areas would have resulted in more species.

Movement of mega fauna in last 3 years

Movement of mega faun which mostly involves movement of elephants have been reported in Gargoma in the year 2016, Matkoma in the year 2016, 2020 and 2021, Nawadih in the year 2015, 2016, 2017, 2018 and 2020,Chumba in the year 2015, 16 and 20. From the data above it can be easily understood that Nawadih has been the most affected village in the area as every year elephant movement has been recorded.

Man-Animal Conflict

As per the information received from the local villagers it has been learnt that most of the conflicts are resultant of crop raiding by Elephant, Nilgai, Wild Boar. Besides few incidences of cattle killing and injuries to human is due to presence of Jackal and Hyena. Apart from this during the village level survey in the sample area and talking to local peoples it was found that most of the conflicts are resultant of crop raiding by Elephant, Blue bull (Nilgai), Wild Boar and conflict was due to Hyena and Jackal. Specially herbivores are found of maize and paddy crop. Beside this snake bite cases have been reported from almost all the places. A few incidences of cattle killing/lifting due to presence of Hyena, Jackal, was reported during the survey. Such man-animal conflicts should be resolved giving attention towards sensible scientific & compassionateapproach.

List of experts for preparation of the wild life management plan

Sl no	Name	Education	Experience	Role
1	Hemant Kumar	B Sc Forestry	24 Yrs	Team leader
2	Divyanshu Ganjir	M Tech	2 Yrs	GIS Expert
3	Sumant Kumar	Dip in watershed	14 Yrs	Watershed expert
4	Jai Prakash Tiwari	Inter	15 Yrs	Community mobilizer
5	Dwarika Bediya	Inter	3 Yrs	PRA and planning expert
6	Nisar Ahmad	Graduation	12 Yrs	Survey and net planning
7	Nayum Ansari	Graduation	11 Yrs	PRA and net planning

Chapter-2:

Potential Impacts on Environment & Wild Life

Introduction

The impacts of the project were assessed: to help and determine the acceptability of the project, and to ensure that any residual impacts are properly recognized and addressed by appropriate mitigation measures. The process involved looking at the environmental features, uniqueness, potential vulnerabilities and the nature, location, and duration of mining activities, and project design features in effect throughout operation.

A process of examining all possible interactions between all project components, in all phases (pre-mining, mining, and closure) and the environmental and socioeconomic features in and around the project was then used as a "filter", to sharpen the impact assessment and focus on the critical interactions, and to separate out the less important interactions. Less important interactions are usually the ones that self- correct over time, due to the short-term nature of some interactions and the resilience ofcertain features.

Determining the degree of potential impacts

The degree of impact of the proposed mines is determined by the following factors:

- The degree of disturbance that already exists in the project site;
- The uniqueness of the resources or protected nature of the habitat/forest/landscape;
- The threat of future disturbance or considering how this project will affect land use in the future;
- Duration of the impact or activity. Long term impacts exist as long as the mining is in place.

To be clear on the nature of the impacts, the following definitions of impacts that embody the concept of recovery from impact are used:

A major impact can be considered as follows: (for environmental resources) the

project affects an entire population or species in sufficient magnitude to cause a decline in

abundance and/or change in distribution beyond which natural recruitment (reproduction, immigration from unaffected areas) would not return that population or species, or any other populations or species dependent upon it, to its former level within several generations; or (for social values), the project affects a subsistence or commercial resource use, business activity, or social behavior to the degree that the wellbeing of the user or local community is affected over the long term. These kinds of impacts are difficult to mitigate, except by changing location or significantly altering project design.

A moderate impact (less significant) can be considered as follows: (for environmental resources) the project affects a portion of a population or habitat and may bring about a change in abundance and/or distribution over one or more generations, but does not threaten the integrity of that population, or any population dependent upon it; or (for social values), a short term effect upon the social and economic wellbeing of resource users or local communities using the project area may also constitute a moderate impact, but from which recovery is expected within 3-6 months. These kinds of impacts can be mitigated or may be acceptable without mitigation, if recovery can be assured.

A minor impact can be considered as follows: (for environmental resources) the project affects a specific group of localized individuals (plants and animals) within a population or a habitat over a short time period (one generation or less), but does not ultimately affect other trophic levels or the population itself; or (for social values), activities of resource users or local communities in the project area are not affected measurably beyond a minor disturbance of resource use or local activities, from which recovery is relatively quick. Impacts of this nature are often amenable to mitigation, or require no mitigation at all.

Some aspects of the environment that are not expected to be affected by the mining process have been screened out and will not be mentioned further in assessing the impacts of the mining.

Field Rationale

- Production of dust is the only effect on atmosphere
- There are no major industries in any areas to be affected by the project
- Construction will not affect population numbers, location or composition

Basically, a habitat or population that can recover fairly quickly from a project

impact is not considered to be significantly impacted. Also, if the habitat or population affected is only a small percentage of the total population or habitat in the immediate area (perhaps 1-2%), and there is continuity of habitat in affected areas with adjacent habitat in unaffected areas (providing a refuge for affected species), then the impact can also be considered insignificant, as it would likely not be visible or measureable within the spatial and temporal variability of habitat quality and function, and it would not create a barrier (at this scale) to access to adjacent similar habitat, which can provide a buffer or compensating function. To help assess impact significance, for each project activity, all possible interactions with the environment are considered; this means direct and indirect impacts (the latter requiring other conditions to be in place for an impact to occur), and cumulative impacts (the results of project interactions being added to the possible environmental impacts of other projects and planned development in the area).With regard to socio-economic parameters, if a project activity causes a negative impact in one parameter that can be compensated by an overall positive development impact, then the impact can usually be considered to be acceptable.

Habitat loss and alteration

The area cleared for mining is smaller than, for example, clearing for forestry or rural or urban development. However, the impact of disturbance also extends into the forest. Mining near the streams can alter habitat for a large distance, including changes to erosion, sedimentation and flow, and pollution from runoff mainly in the form of residual muck. To reduce the erosion impact maintaining canopy cover over the surface can help to some extent.

Disturbance effects - the emission of matter and energy

Mining can create disturbance in adjacent areas, including noise, vibration, movement, electromagnetic radiation and pollution. Many animals avoid areas near mining areas, so reducing the amount of suitable habitat. Noise can cause stress and hearing damage, alter behaviour and disrupt communication. The penetration of noise is altered topography (e.g., noise travels further on steep slopes). Dense forest vegetation can help to screen particulates from penetrating the forest edge. Heavy metal accumulates along left during the mining phase may enter the food chain via soil invertebrates.

Edge effect

Abrupt margins between relatively natural habitat and clearings cause alterations in microclimate, vegetation structure and floristics, so altering habitat for fauna. Changes include increased wind speed and turbulence, and increased light penetration. This in turn leads to greater soil temperature fluctuations, higher evaporation, and decreased humidity and soil moisture. Higher light levels favour disturbance adapted species, including weeds and woody vines. Winds and vines can cause increased canopy damage and tree death. Forest specialist species avoid these areas, and there is a rise in gap and edge specialist birds and other generalist species. Restoration of forest around mine clearings can decrease the extent of microclimate alteration.

Spread of weeds, feral animals and fauna from other habitats

Clearing for mining cites create disturbance that facilitates weed invasion by reducing competition from native species. Pests and exotic fauna are also more able to penetrate forests from cleared areas. Weeds can impair ecosystem function and limit the recruitment of native species. Restoration including weed control can allow the re-establishment of forest vegetation, and the return of forest fauna. Feral species (e.g., wild cats, wild dogs) may use cleared patches for movement and hunting.

Barrier effects

The combination of the impacts of mining means they create barriers for many species. This effect is increased by fences, concrete dividers, and other physical barriers. Complete subdivision of a population can lead to the remaining populations being smaller, less viable, and more vulnerable to local extinction. In the long term inbreeding may also occur. The degree of the barrier effect depends on clearing width, traffic volume and speed, and whether canopy connections exist.

Impact on the soil, vegetation, water regime and air

There will be two kinds of land acquisition. Temporary land requirement will last at the most 18 months for the construction of labour camps, and for storage of construction materials and machinery. Permanent land acquisition is required for clearing the mining areas in the forests.

The project will displace any private fruit trees, standing crops, structures

(homesteads/house or living quarters, other physical structure, commercial or industrialstructure, business establishments, and rented or occupied commercial premises) religious, community or cultural sites, or any common property resources. Also, some indigenous people are to be displaced by the project.

Given that the total amount of land required is minimal and that compensation has been already provided, the impact of permanent project land acquisition are deemed to be acceptable which in this case is forest land. The direct impact of project land acquisition (temporary and permanent) requires compensation for loss of land (permanent) and loss of access to land. Compensation (as already worked out) will prevent any additional vulnerability for the affected households for private land and for forest land already places and extent of compensatory afforestation has been identified.

Temporary land is required for setting up Contractor facility establishment, storage site and worker camps. The land will not be acquired but shall be taken on lease from the private land owners. It is expected that the Contractor Facility and storage sites will be selected at the last point.

Given the fact that both types of project land acquisition are less than 1% of the map area, and that temporary land acquisition will actually result in rehabilitated and revegetated, the net impacts of temporary and permanent project land acquisition are deemed to be acceptable.

Impacts on air quality

With the current ongoing mining works, it is expected that air quality will be impacted due to cumulative impacts of additional machines and vehicles from project. The only source for air pollution will be from the mining.

Increase in demand for water resources

It is estimated that workers will be deployed at various locations across the mining locations. According to the World Health Organization (WHO), 50 to 100 litres of water per person per day are needed to ensure that most basic needs are met and few health concerns arise.

While the water in the labour camps shall be required throughout the mining period but water tankers will be needed to sprinkle water during day time to reduce the impact of coal particles being air born during the transportation of coal

from the mines. About 30 tankers of water shall be used in road sprinkling. About 10000 litres of water will be required per tanker for sprinkling on to the area of mining and road to suppress dust. All water requirements will need to be met from nearby streams, which have been identified in the EMP.

Impact on surface waters

The impact on surface water is directly linked to slope instability and therefore impacts on surface water will also be negligible if mines are located at a safe distance of at least 30 m away from surface water sources. Other impacts on surface water will arise from improper waste disposal and sewerage from the workers camps, improper sourcing of water, washing dishes and clothes or bathing along streams.

Like the risk of slope stability, the net impact on water quality will be small provided mitigation measures restricts the distance of workers camps away from the rivers and streams, and prohibit and enforce measures to minimize pollution of surface water.

Impacts from improper storage of fuel

Since the material requirements for this project need to be supplied prior to mining period, there is no need for large quantities of fuel as material drop off is limited to this period alone. Thus, there are no risks of improper storage of fuel and spillage resulting in contamination of groundwater and surface water. Vehicles can get the required fuel from the local depot and no fuel is required for the mining work itself.

Impacts from improper closure of project work sites

To ensure that project components will not pose future threat to human health or to the environment, Contractor(s) will be required to ensure proper closure of mining activities.

Potential degradation due to project in quantified terms

The area cleared for mining is smaller than, for example, clearing for forestry or

rural or urban development. However, the impact of disturbance also extends into the forest. 175.65 hectares of forest land will be used for the mining. We cannot deny the fact that there shall be temporary disturbances during the active mining phase of the project, the potential degradation can be easily mitigated without any harm to the environment.

Qualitative changes in the forest area

175.65 hectares of forest land shall be diverted for the above mentioned project. To compensate the loss two times area of double degraded forest land shall undergo afforestation with species that shall be appropriate for the area concerned, looking into the fact that species planted shall not be a reason of forest fire which might happen if the length of tree is more and it touches any overhead structure.

Spread of weeds, feral animals and fauna from other habitats

Clearing for land for mines create disturbance that facilitates weed invasion by reducing competition from native species. Pests and exotic fauna are also more able to penetrate forests from cleared areas. Weeds can impair ecosystem function and limit the recruitment of native species. Restoration under mines including weed control can allow the re-establishment of rainforest vegetation, and the return of rainforest fauna. Feral species may use cleared patches for movement and hunting.

Loss of forest cover and habitat for wildlife

As with other project areas where trees will be cut, the potential loss of bird and wildlife habitats can be countered by habitat enhancement in areas adjacent to the mines, and replanting twice the size of the area cleared through Compensatory Afforestation where suitable local trees are planted in currently degraded areas.

The removal of trees and other vegetation along the mines will also have ecological impacts as it will destroy forest habitat and displace species that are living in these areas. This could affect large and small mammals, birds, reptiles, amphibians, insects and other invertebrates. Some inhabitants will simply move away to other areas, but some could be damaged or killed during the clearing

process. The biodiversity survey along the mines indicates that a high level of disturbance already exists in the area, from grazing, lopping of trees, and fodder leaf collection by local communities in the area. While clearing of forest areas can have huge consequences on the species' abundance (wildlife, birds, and insects) and these pressures may be further exacerbated by hunting/poaching by outsiders, the forest cover along the alignment is quite scanty and tree density is not very high.

The net impacts of the Project on forest cover may be low but ecological impacts are more significant. Mitigation measures must compensate not only for loss of trees (and forest cover) but also include measures to collect more information and conduct research on the rarer and near threatened species so that specific conservation measurescan be implemented.

Probable increase in vehicular traffic and its impact

Since the material requirements for this project need to be supplied prior to mining period, there is no need for large quantities of fuel as material drop off is limited to this period alone. Thus, there are no risks of improper storage of fuel and spillage resulting in contamination of groundwater and surface water. Vehicles can get the required fuel from the local depot and no fuel is required for the construction work itself. During the pre-mining and mining phase of the project, vehicles shall be used. Since it is a mining project, which has a impact greater than other projects; the vehicular traffic should be kept minimum and its impact shall be mitigated by measures discussed in the next chapter.

Noise, water, soil and air pollution and its impact on flora and fauna

During the active mining and closure of mines phase, noise and air pollution might occurdue to the movement of vehicles for carrying goods and materials that shall influx during the project, however the impact shall be minimal. It is estimated that many staff will be hired/deputed during the mining and closure stage excluding security. This also includes Contractors and their regular staff plus migrant workers.

Contract workers under an individual contractor will come in two phases; during the preconstruction phase to undertake the land clearing and preparation (relatively small numbers) and during the peak mining phase, for all project

components, when numbers may rise to about 300.

Impacts on air quality

With the current ongoing mining works, it is expected that air quality will be impacted due to cumulative impacts of additional machines and vehicles from project. The only source for air pollution from the mining shall be the excavation which shall be carried out during benching and foundation work. However, with only about 9mx9m area to be excavated, the amount of dust generated will be minimal.

Increase in demand for water resources

It is estimated that about 300 workers will be deployed at various locations along the mining areas during the peak of the proposed mining activities of water per person per day are needed to ensure that most basic needs are met and few health concerns arise. Assuming usage of 50 litres of water per day for each worker (as community kitchens and pit latrines are expected to be used), the total water requirement during peak mining period is 15,000 litres per day.

While the water in the labour camps shall be required throughout the peak mining, for mining water shall be used for sprinkling to suppress the dust also. About 300000 litres/day of water shall be used in dust suppression. About 10000 litres of water will be also required for sprinkling on to the area close to habitation to suppress dust.

Risk of slope instability

The concern for slope stability only arises for excavation work carried out at localized sites. The design and planning of the mines requires detailed investigation of the geology to ensure that there are no risks associated with stability of mines.

Environmental Impacts

Operations and maintenance of the roads will not incur major ecological impacts asthere will mitigation measures taken for every aspects of the impacts. Maintenance works will be very small in scale and infrequent, and involves few

changes to the existing situation. The practice of allowing some re-growth of vegetation along the road will also have ecological benefits as it will allow plants and animals to re-colonise. Because the forest canopy is now open in these areas the species will be different from those that were originally present, which may be seen as a further gain as this will increase the diversity of habitats.

Study methodology and observations of the experts

Primary research and secondary research has been conducted with an approach of longitudinal study for the preparation of the plan.

Primary research: Primary research has been conducted by using quota sampling, the data regarding the plan were inquired through focus group discussion.

Key stakeholders of the village were a part of the discussion, since they help us in understanding the actual scenario of the village in context to animal human conflict over the years. A triangulation of the data gathered was also performed while interviewing the respective DFOs, respective RFOs, Forest Guards, and JFMPCs. Secondary research: Extensive research on secondary material is conducted. Existing reports, articles, journals has been used for the review of literature.

Chapter-3

Management Objective And Mitigation Strategies

Objectives of the wild life management

This chapter discusses the mitigation and management plan for the impacts associated with the mines and the required management plans. Specific details associated with each proposed mitigation measure, including the institutional and financial requirements to ensure proper implementation, accountability and monitoringis also detailed out. The identification of impacts covers both the immediate project areaas well as adjoining areas within 5 km in the immediate vicinity of the Project.

Management plan for loss of private land and livelihood

Since all designated forest is owned by the state there is no need to purchase land for themine where it will be done in the forest.

Land compensation is guided by the "Land Compensation Rates (2013)". The compensation rates also apply for compensating structures and fruit trees. The project has made compensation for private lands as mentioned below in accordance with the law-

(i) Acquisition shall entail fair compensation;

(ii) The compensation can be in cash or land or a combination of both (the land owner shall have the discretion to opt for one or the other);

(iii) All the compensation process should be completed before the actual start of the project on the ground;

(iv) If land is provided as compensation, the certificate for new land shall be made available so that the affected people do not encounter any

problems in the future.

If affected households are not satisfied with the proposed compensation, their grievances shall be redressed through so called the “Grievance Redressal Mechanism” tothe Grievance Redressal Committee constituted.

Due to the type of land being acquired as well as the extent of land acquisition, no significant impacts on the income of the displaced households is anticipated as a resultof the acquisition.

Employment opportunities

The project will be able to provide job opportunities to the local people. This shall require several workers and the preference shall be given to those affected by the project. Further, the affected people shall also be provided employment in mining work depending on their skills and qualification. Job opportunities include working for Contractors, transportation of materials, involvement in compensatory forestation programs and land management work initiated by the project.

The project will also bring in new opportunities to sell locally grown vegetables, milk products and meat. Renting of living quarters and office space to project contractors and their employees, leasing of vehicles and equipment to the project contractors, or leasing of private land to project contractors are some other ways for locals to earn increased incomes.

Management of Social Impacts

The project may cause a conglomeration of internal and external labour in the project sites. Workers may come from either the same locality or from other areas. There would be worker camps established. The impacts from these would increase opportunities for employment for the local people which is a positive move but on the negative side the accumulation of waste both liquid and solid, intrusion to the village life etc. should be managed. Waste disposal should be properly organized so that there would not be any littering and pollution of nearby water bodies. All the mining sites, stores of materials, temporary and permanent building, utensils used for cooking etc. should be carefully maintained. All the disposals should be properly supervised.

Management of workers/worker camps

The impacts due to influx of workers will begin from the mining phase and will continue at an expanded scale in the post mining phase. This means more workers at each work location, and more frequent movement of materials and equipment. Proper planning and experience in the mining phase will set the stage for effective planning and mitigation measures in the post mining phase. The main concerns with an influx of workers include:

(i) Risk of communicable diseases spreading in the local community;

(ii) Waste and sewage entering the local environment;

(iii) Safety issues at the work sites.

(iv) Possible social instability;

(v) Health concerns in the camps (communicable diseases, poor air quality).

(vi) Risk of communicable diseases spreading in the local community

To avoid or at least to minimize the spread of communicable diseases to the localcommunity, the following management measures shall be taken up:

(i) Screening and regular unannounced checking of workers. As per the procedure for hiring workers, all contractors and labor agencies are required to make all prospective workers undergo medical tests to screen for diseases and sicknesses, prior to selection and employment of any foreign worker. The contractor is also responsible for ensuring that no foreign worker who has a criminal record is employed at the project site.

(ii) Checking of workers. In addition to this, the Project Management will also undertake sudden, unannounced checks on workers to look for diseases such as HIV, STDs, and hepatitis. If such cases are detected, the contractor will be required to immediately release the worker from the site (as this indicates that proper screening was not conducted).

Ensure Minimal Land clearing and Removal of Vegetation for housing

The project will ensure that wherever possible no land conversion will be required for additional housing. This can be done through worker camp selection in already degraded/semi cleared forests in discussion with the authorities.

Housing and sanitation for workers

a) The main mitigation approach is proper siting and design of the temporary worker camps, and to get these built quickly (accommodating at least 50 workers at a site). The relative isolation of the worker camps (quite far away from local communities) will help to minimize an overloading of worker-local community interactions, which should help reduce social and cultural conflicts, as well as the risk of spread of communicable diseases.

b) Prior to beginning the mining works, the general layout of the labour camps at each mining site should be designed to plan for location of important structures like:

   (i) Drinking water storage tanks or taps

   (ii) Community kitchens

   (iii) Pit latrines and soak-away (as far away from watercourses as possible),

   (iv) Proper site drainage

   (v) A solid waste storage area (for onward transfer to the local landfill).

The use of community kitchen and community toilets will help to reduce both the demand for fuel, water and minimize pollution and allow centralized waste and wastewater management.

Provision of Drinking water

It is estimated that about 300 workers will be deployed at various locations along the mining areas during the peak mining and various mining period. According to the World Health Organization (WHO), 50 to 100 litres of water per person per day are needed to ensure that most basic needs are met and few health concerns arise. Assuming usage of 50 litres of water per day for each

worker (as community kitchens and pit latrines are expected to be used), the total water requirement during peak mining period is 15,000 litres per day.

While the water in the labour camps shall be required throughout the mining work water shall be used for sprinkling on the raids for suppressing dust. About 300000 litres/day of water shall be used in sprinkling works.

About 30 tankers of water will also be required for sprinkling on to the area of mining and roads to suppress dust However; this shall be required only during the excavation. All water requirements will need to be met from nearby streams, which have been identified in the EMP.

Strategies for mitigation of impactWater

Drinking water will be sourced and provided for each worker camp. The amount of water available in the project area is sufficient to meet the requirement of the project. Although, it is been estimated as above, the actual quantity of use shall be even lesser due to use of community kitchen and pit latrines. All labour camps shall be located near the streams and water extracted through PVC water pipes. The labourers shall be distributed into 5 gangs at different locations of mines and shall be provided each with a camp, a community kitchen and two pit latrines.

Method of Water Extraction

The water shall be extracted through Gravity-Fed System. The system works on gravity which allows the water stored in the tank to move down by its own weight inside the pipes and run out from the taps. The water from the nearest stream shall be tapped into the Header Tank/the collection which shall then be passed into a Rapid sand filter and then into storage tank. The main distribution pipe shall be connected to the storage tank through which water shall be distributed into the secondary distribution pipes into labour camps, kitchen and common tap.

Waste and sewage entering the local environment

The source of the waste will be from the temporary colonies of labour, and mining sites. Waste includes PET bottles, papers, plastics, glass, organics,

metal, batteries etc. Improper segregation and dumping of waste will result in negatively impacting the visual aesthetics, pollute nearby streams as well as invite vectors to transmit diseases.

Implementing agencies must ensure that the reduction, reuse, recycling and disposal of non-hazardous waste are addressed in an environmentally sound manner.

The project will implement the following waste management:

(i) Waste Reduction through promoting the use of renewables instead of firewood wherever possible.

(ii) Waste Reuse by promoting the reuse of large plastic containers, jars and bags wherever possible in worker campsites.

(iii) Waste recycling especially organic waste which can be recycled to make compost at asuitable location. Otherwise the organic waste cans also be given to the nearest household to be fed to cattle and pigs.

(iv) Waste segregation for recycling each site (including offices, colonies and worker camps) will be provided with 2 separate bins for degradable and non-biodegradable waste. Only Waste that cannot be reused or recycled will be disposed. This residual solid waste will have to go to a designated landfill site, away from settlements and water sources.

A waste collection protocol will be established for each site so that waste does not pile up and cause problems to the environment or workers. The waste from the labour camps and construction sites shall be brought to the nearest road side from where it shall be collected. Since, the labour camps shall be located away from the highway; the waste generation shall be less mainly the packaged foods and PET bottles. The solid waste shall be generated only from the covers of basic grocery items and kitchen waste.

(a) Site drainage and sewage. At each campsite, the pit latrines and sewage shall be located at least 30 m from watercourses. The sewage treatment on-site, and proper management of worker camps should minimize the risk of contamination of surface. Washing of clothes and dishes directly in streams shall be prohibited to prevent pollution in case there are downstream users.

(b) Awareness. The biggest cause of improper waste management is due to lack of awareness on waste and waste management. The Project will conduct

awareness meetings and campaigns through posters or talks to make workers aware of the 4R's: Reduce, Reuse and Recycle and Responsibility.

(c) Site inspections. Monitoring of waste management at all sites will include visual inspections of the camps and work sites. This will be conducted by the Environmental officers.

(v) Safety issues at the work sites

Occupational Health and Safety covers all personnel working under the project and will be in line with the General Rules and Regulations on Occupational Health and Safety (OHS) in Construction, Manufacturing and Mining and Service Industries.

The Occupational Health and Safety program will aim to ensure that the workplace is safe and healthy by: addressing the hazards and risks at the workplace; outlining the procedures and responsibilities for preventing, eliminating and minimizing the effects of those hazards and risks; identifying the emergency management plans for the workplace or workplaces; and, specifying how consultation, training and information are to be provided to employees at various workplaces.

a) Nomination of a Health and Safety Focal Person: Within each site the Contractor must nominate a Health and Safety Focal Person who will function as the focal person/representative for all health and safety matters at the workplace, be responsible for maintaining records of all accidents and all health and safety issues at each site, the number of accidents and its cause, actions taken and remedial measures undertaken in case of safety issues. He will be the link between the contractor and all workers and submit grievances of the workers to the contractor and instructions/directives on proper health care and safety from the contractors back to the workers. He will also ensure that all workers are adequately informed on the requirement to use Personal Protective Equipment and its correct use.

b) Minimizing hazards and risks at the workplace.

To ensure safety at all work sites, the following will be carried out:

(i) Installation of signboards and symbols in risky and hazardous areas, to inform workers to be careful;

(ii) Ensuring that materials are all stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse;

(iii) Removing all scrap and waste material from the immediate work area as the work progresses. All excavated earth must be stockpiled at least 2 feet from the pit to avoid material such as loose rocks from falling back into the excavated area and injuring thoseworking inside excavated sites;

(iv) Where scaffolds are required, ensuring that each scaffold or its components shall be capable of supporting its own weight and at least 4 times the maximum intended load applied or transmitted to it. The platform/scaffold plank shall be at least 15 inches (46cm) wide and 1.5 inches thick. The rope should be capable of supporting at least 6 times the maximum intended load applied or transmitted to that rope. Pole scaffolds over 60 feet (5.6m) in height shall be designed by a registered professional engineer and shall be constructed and loaded in accordance with that design

(v) Use only trained staff to construct, install and repair all electrical equipment toprevent risks of electrical shocks and electrocution;

(vi) Install fire extinguishers and/or other fire-fighting equipment at every work site to prepare for any accidental fire hazards.

c) Provision of Personal Protective Equipment

Risks to the health and safety of workers can be prevented by provision of Personal Protective Equipment (PPEs) to all workers. Personal protective equipment like safety gloves, helmet, mufflers etc. will be provided during the mining period and during the maintenance work. This will be included in the construction cost for each Contractor. Depending on the nature of work and the risks involved, contractors must provide without any cost to the workers, the following protective equipment:

(i) Helmet shall be provided to all workers, or visitors visiting the site, for protection ofthe head against impact or penetration of falling or flying objects.

(ii) Safety belt shall be provided to workers working at heights (more than 20 ft) such asstringing and conductor installation;

(iii) Safety boots shall be provided to all workers for protection of feet from impact orpenetration of falling objects on feet;

(iv) Ear protecting devices shall be provided to all workers and will be used during theoccurrence of extensive noise.

(v) Eye and face protection equipment shall be provided to all welders to protect against sparks;

(vi) Respiratory protection devices shall be provided to all workers during occurrence of fumes, dusts, or toxic gas/vapor;

(vii) Safety nets shall be provided when workplaces are more than 25 feet (7.5 m) above the ground or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors or safety belts is impractical;

(viii) First aid facilities will be made available with the labor gangs and doctors called in from nearby towns when necessary.

ix) The safety and emergency procedures manual will be kept. Necessary training regarding the safety aspects of the personnel working at the project site will be provided.

d) Record maintenance and remedial action

The Project Management will maintain a record of all accidents and injuries that occurat the work site. This work will be delegated by the contractor to the site supervisor and regularly reviewed every quarter by project management. Reports prepared by the contractor shall include information on the place, date and time of the incident, name ofpersons involved, cause of incident, witnesses present and their statements. Based on such reports, the management can jointly identify any unsafe conditions, acts or procedures and recommend for the contractor to undertake certain mitigative actions to change any unsafe or harmful conditions.

e) Compensation for Injuries and Death

Any casualty or injury resulting from occupational activities should be compensated as per the applicable law. Where compensation is sought by the injured party, proper procedures for documentation of the case will be followed, including a detailed report on the accident, written reports from witnesses, report of the examining doctor and his/her recommendation for treatment.

Each individual contractor will be responsible for ensuring compensation for the respective workers.

(vii) Possible social instability

Another concern with an influx of workers includes possible social instability (poor mingling of workers from outside the district, with local communities, although locals have increasing experience with worker influxes and seem to handle them with equanimity. There is also the risk of spreading communicable diseases to host communities.

Although the number of foreign workers for the mine shall not be huge, the following management measures shall be taken up to eliminate or at least to minimize the impactsof worker influx to social instability:

a) Awareness of the Code of Conduct for workers

The Project management will undertake awareness programs through posters, talks, and meetings with the contractors to clarify the rights and responsibilities of the workers regarding interactions with local people (including communicable disease risks,such as CORONA/HIV/AIDS), work site health and safety, and to make workers aware of procedures to be followed in case of emergencies such as informing the focal health person who in turn will arrange the necessary emergency transportation or treatment.

The Contractor will be required to instruct the site supervisor on the code of conduct and ethics for foreign workers. All workers are required to respect the values, traditions, culture and law of the country and respect all regulations and rules. No worker will be allowed to enter areas restricted for foreigners without specific permits.

Management of health concerns in the camps

All workers living in temporary camps will also face health concerns in the camps suchas risk of communicable diseases and poor air quality. The provision of community kitchens will ensure that workers do not have to be exposed to emissions from individual kitchen. To address health concerns of workers, the contractor must institutionalize procedures to deal with emergencies such as sudden illness or accidents.

First aid kits must be made available at all times throughout the entire mining operations period. This is very important, because all work sites are quite far from the nearest BasicHealth Unit. In addition to the first aid kits, the following measures should be in place:

(i) Provisions of a vehicle on standby from the Project Office/Contractor, or provisionsto hire vehicles during emergencies to take the severely injured/sick workers to the nearest Hospital for immediate medical attention;

(ii) Communication arrangements, such a provision of radios or mobile communicationfor all work sites, for efficient handling of emergencies, will be made;

(iii) The designated focal health persons' contact number will be posted at the work site for speedy delivery of emergency services. The focal person should know what medical facilities are available at the Hospital.

Management of impacts on cultural and religious sites

It is expected that there will be no impact on Cultural and Religious sites because during design stage extra care was taken to ensure that religious structures/ public property were avoided. However for extra precaution, efforts should still be made toreduce the level of disruption where possible. To achieve this, the CCL shall:

i) Determine the location of all sites that are of local social or cultural importance (temples, shrines, meeting places, etc should not be disturbed.

ii) Consult all affected communities in advance to inform them of the purpose, nature, duration, extent and timing of all work in and around their village, and explain to them the purpose of the Project and its activities along with the workplan and schedule of activities;

iii) Consult the custodians of all social and cultural facilities on the proposed alignment and plan the work to avoid sensitive times (such as key dates in the religious calendar, festivals etc);

iv) No disturbance near the cultural heritage sites.

Air Quality Management

The following measures shall be taken up to mitigate the impacts on air quality during mining phase:

(i) The fugitive dust generation at each excavation sites shall be suppressed by sprinklingwater periodically.

(ii) Those trucks carrying coal shall be covered while transporting. This shall help prevent the dust particles being blown away by the wind;

(iii) Risks to the health and safety of workers can be prevented by provision of PPEs to all workers;

(iv) Leave a covering of grass and/or other naturally occurring low-growing vegetationwhere possible along the mines to reduce dust;

(v) Avoid burning waste vegetation and instead leave this material in situ after cutting, to rot down gradually, and discourage re-growth whilst it is decomposing;

(vi) An Ambient Air Monitoring Program to monitor Air quality and noise levels will be implemented as part of the overall plan.

Management of Noise generation

To minimize disturbance to the community and the potential increase in ambient noise levels, the Contractor shall be mandated to meet the noise level standard prescribed by National Environment Commission. The impact of noise level on the community shall not be adverse in the case of mines as the project site is located way away from the villages and settlements. Moreover, the forest belt itself shall serve as a buffer and attenuate the noise level.

The workers shall be mandated to wear PPE including ear muff during work at site to prevent occupational diseases. Further, the standard noise exposure limit.

Management of Aesthetics

Visual impacts are generally considered significant where they affect large numbers of people and tourists. The main negative impact on visual aesthetics in the project area will occur during mining, as a result of clearing and site preparation works. This will stop when the mining is completed. The visual

impacts here will notbe significant because the mining will be aligned adjacent to the already existing mines. Also, at some locations, the forest itself will provide a good natural screen to hide the mine from the highway.

During mining, dumping of excavated material down the hill may impact the aesthetics of the area. Therefore, management of waste shall be carried out appropriately as explained under soil conservation and management Plan.

Occupational Health and Safety

The Occupational Health and Safety program will aim to ensure that the workplace is safe and healthy by: addressing the hazards and risks at the workplace; outlining the procedures and responsibilities for preventing, eliminating and minimizing the effects of those hazards and risks; identifying the emergency management plans for the workplace or workplaces; and, specifying how consultation, training and information are to be provided to employees at various workplaces. The mitigation measures detailed earlier will be followed to minimize hazards and risks at the workplace and ensure the health and safety of workers. The contractor shall be mandated to abide by the Occupational Health and Safety Rules, Regulation on Occupational Health Safety and Welfare and Occupational Health and Safety for Construction Industry.

The contractor shall:

(i) Ensure health and safety of all employees and any person at the workplace;

(ii) Improve working condition that are hazardous to health and safety;

(iii) Provide and maintain PPE in good condition and ensure they are used by the employees

(iv) Provide to the employee the information, instruction and supervision.

(v) Forest Conservation

Compensatory Afforestation

The loss of trees will be addressed according to the current guidelines in Jharkhand, with compensatory planting of trees in an area that is twice the size of the area cleared, allowing for up to 40% damage or mortality.

To undertake Compensatory Afforestation the project shall develop mutually agreeable proposal covering project activities for financing and execution. The Chatra Territorial Divisions will be implementing the programme.

The project will focus on deforested areas in and around the project site, but it will not be restricted to project areas if enough sites are not available; it will extend to other degraded areas, landslide prone areas, or areas where the muck excavated is disposed and terraced.

The compensatory afforestation shall be carried out as an integrated afforestation program which would include soil conservation, fencing, protection, awareness, monitoring and evaluation along with maintenance for at least five years period. A properly planted tree or shrub is more tolerant to adverse condition and requires much less management than the one planted incorrectly. Successful tree growth involves proper planning, proper site preparation, selection of plant species, plantation methodology and plantation maintenance.

The best time for plantation would be early spring or autumn during which weather conditions are cool and allow plants to establish roots in the new location.

During the monsoon, the sapling shall be exposed to stress from hot weather and extreme rain soon after their plantation when the saplings are in their juvenile stage and during winter extreme cold will stress the seedling. Hand planting shall be adopted for planting saplings. Holes will be dug large enough (not to shallow and not to deep) with the shovel or hoes, for accommodation of root system, will be backfilled by the soil and compost, if required, and watered.

The saplings shall be planted as soon as possible after receiving from nursery to avoid reduced survival rate. Should the plantation be done later, the stocks shall be stored in cool, dark places to minimize loss of root moisture.

Organic mulching shall be done which helps not only to control weed but also helps retain moisture around the plant and provide nutrient as they decay. However, care shall be taken that the mulches are few centimetres away from the tree trunk to avoid trunk rotting.

Biodiversity Conservation

It is expected that no significant irreversible change in local biodiversity will occur as a result of the project. No specific unique wildlife habitats will be affected by the project,as the mining will not create any large barriers to wildlife and bird movements. While the mining does not involve any significant wildlife habitat and is not expected to cause any net loss of species. Any disruption of wildlife behaviour will be temporary, and animals (including birds) will be able to move around or over mining sites. Still there is always the risk that avifauna vulnerable or endangered species may be affected due to reduction in habitat size, disturbance in their daily movements, and will be at risk from poaching.

However, the following measures aim to minimize project impacts on rare, endangered or threatened species (if any) and for overall habitat management:

a. Ensure Minimal Land clearing and Removal of Vegetation by working closely with the Department of Forest to ensure that that there is no rampant clearing or felling of forest in and around work sites. Also, only those trees identified and marked by the Department of Forest will be felled and removed from the site;

b. Provide funds to the Department of Forest to conduct repeated surveys in the forest areas to determine the distribution and population of Rarer and Endangered Bird Species (to be prioritized by Forestry Office), and to conduct ecological studies to determine the precise habitat requirements, feeding, breeding and impacts on species distribution from habitat fragmentation;

c. Seek the assistance of the Chatra Forest Division, Jharkhand Biodiversity Board, to conduct Biodiversity surveys in and around the project site and create permanent Monitoring Plots to look at the trend in Fauna and Avifauna and the change in use of habitat;

d. As much as possible, large trees on the edge of the right-of-way should not bedisturbed or damaged, as these are favored habitat of the birds. As with other project areas where trees will be cut, the potential loss of bird and wildlife habitats can be countered by planting suitable trees at other locations which are currently degraded (habitat enhancement in those areas).

e. Allow the vegetation along the alignment to grow back to at least 2 meters height, which will provide cover for most wildlife that need to move through the right-of-way;

f. Collaborate with Jharkhand Wildlife and biodiversity Conservation Programs.

Mitigation and management of clearing impacts for forest fauna

Reducing habitat loss – Natural forest avoidance and rehabilitation of unused clearings

Avoiding sensitive habitat or not mining is often an impractical mitigation technique as human population have increased the need for transport, energy and other infrastructure. Rehabilitation of cleared patches is relatively easy to colonies as these are smooth surfaces without much of the hard surface as compared with the roads and other linear projects where surface becomes hard due to movement of the heavy vehicles and machineries.

Maintaining canopy connectivity

Retention of tree canopy is thought to ameliorate many impacts of clearings. This includes reducing changes in microclimate, vegetation structure and composition, and fauna composition. It is also thought that this reduces the barrier effect for many species. Erosion, weed invasion, and feral species are also reduced in the process. Economic gains are expected from reduced maintenance, and also reduced pollutants due to lack of any human activity post mining activities. Safety issues related to falling branches mean canopy connectivity can be maintained along the mine periphery by the fires fighting squad and quick response team.

Minimizing clearing width or mortality

There is a trade-off between mortality risk and the barrier effect, related to mining. Small widths and minimal clearing maximize remaining habitat and canopy cover, but can also increase mortality. On most low use of the forest patches, minimizing clearing width is thought to provide a net positive impact due to increased connectivity, with mortality-risk not expected to be a problem for common species. Areas where this may not be the case mining, where rare or threatened species are involved, or where a lifecycle phase is particularly vulnerable to mortality (e.g. where the cleared patch is attractive for warmth, foraging, breeding or for dispersal or migration).

Many of the Project effects associated with wildlife habitat loss will be minimized through implementation of the Project's reclamation plan. The summary of the reclamation plan mitigation recommendations for wildlife and wildlife habitat reclamation include:

- minimize the overall disturbance footprint through mine planning process to avoid critical breeding habitats, nesting and denning sites, and movement corridors to the extent possible;
- preserve remnant forest patches within the development areas where feasible to provide habitat, habitat connectivity and hide cover for wildlife species;
- remnant patches should protect known essential raptor habitat features by incorporating these habitat features where possible;
- maximize the direct placement of salvaged soil to enhance native plant development;
- retain slash and large woody debris in the salvaged soil to provide micro sites for native plant and hide cover for wildlife;
- establish a variety of vegetation species and communities suitable for wildlife, and encourage structural complexity within the forests;
- encourage understory complexity in reclaimed forests by planting native shrubs
- ensure that core security areas are provided for wildlife;
- provide water management program that ensures the surface water quality is maintained; and
- limit sight lines by maintaining mature forest stands as buffers between cleared patches and reclamation areas.

To support the reclamation plan mitigation measures, the following will be implemented to mitigate potential direct and indirect Project effects on wildlife habitat availability:

- Incorporate the existing disturbances into the development and reclamation plans for the project, and other proposed land use activities to the best extent possible so that habitat loss, habitat fragmentation, linear disturbance features, and cumulative habitat loss are minimized.
- Pre-disturbance surveys has been conducted in the development area

prior to mining activities during Project development to determine the occurrence of important wildlife habitat features such as bird nests, mineral licks, bat habitat, active raptor nest sites, and essential raptor habitat features that could indicate the presence of species at risk.

- Protect all important wildlife habitat features in areas of suitable wildlife habitat (on the edge of the Project footprint boundary) appropriate setback distances (or buffer zones) will be considered.

- Clearing and equipment use/storage/cleaning in undisturbed areas within and adjacent to the Project footprint will be avoided.

- Vegetation adjacent to high-activity corridors (e.g. access roads) will be retained to reduce the extent of noise and visual sensory disturbances to the extent possible.

- Where appropriate, vegetated buffer zones (100 m or minimum of 30 m; pending topography constraints) will be maintained between Project infrastructure and streams to the best extent possible.

- As the presence of artificial lighting can potentially affect bird and bat use of nearby habitats, The utility company has developed a visual impact mitigation plan that reduces stray and non-essential artificial lighting to minimize wildlife effects.

Sensory disturbance from the active site will be further mitigated through the use of mufflers on all internal combustion engines to shield noise generated from equipments during daylight hours.

Habitat Connectivity and Movement Habitat loss and fragmentation reduce habitat connectivity and thereby can affect daily and seasonal movements and dispersal ofwildlife species. Wildlife may move into or through habitats that are physically disturbed but are unlikely to reside there, and they are also prone to sensory disturbances (acoustic or visual). As identified in the Project, the potential barriers to wildlife movement associated with the Project include:

- Loss of vegetation and landscape alteration from mining activities;

- Vehicular traffic activity associated with the access road and other activities;

The reclamation plan outlines mitigation measures that will be implemented during progressive reclamation (i.e. reclamation that will occur over the life of

the operations and into closure) that will minimize the impact of the Project on wildlife movement.

The following general wildlife mitigation measures will be implemented to minimize potential disruption to daily and seasonal wildlife movements:

- Will be strategically placed in locations that will maximize wildlife use (e.g. presence of well used trails, suitable habitats, and terrain features such as valleys and depressions that act as natural crossings);
- additional pre-disturbance surveys have been conducted to identify important wildlife habitats and trails along the access road;
- natural underpasses using topography are preferred; and
- Surface water management ponds and ditches located in undisturbed areas of the Project footprint will be designed to allow wildlife to move around or cross safely.

Measures to control dust and other air emissions (e.g. watering of roads and use of dust suppressants, minimizing engine idling, etc.) within the Project footprint will be implemented to minimize effects on adjacent wildlife habitats while transporting the construction materials and other equipments for mining.

Project-specific mitigations targeted to carnivore species have been incorporated into the reclamation planning. Many of these will also support habitat connectivity for migratory birds, raptors, and species at risk, and include:

- minimize the overall disturbance footprint through the mine planning process;
- preserve remnant forest patches in the development areas to provide essential habitat, habitat connectivity, and hide cover for wildlife species;
- retain slash and large woody debris in the replaced soil landscape;
- plant native shrubs early in the reclamation process to initiate hiding cover;
- establish mixed wood forest stands and high density coniferous tree stands;
- provide understory complexity in the reclaimed forests by planting native shrubs such as alder and willow to provide security cover for the carnivores and their prey;
- maximize the amount of ungulate habitat;

- prior to final reclamation, disrupt disturbances and sight lines by mounding surface soils, piling brush; and
- Limit sight lines by maintaining mature forest stands or by planting high density species with conical crown stands to act as buffers between mines, project disturbance boundaries and the reclaimed mine areas.

Additional mitigations that are specifically targeted to bears and bear habitat will also support other carnivores and migratory birds: Maintain a 100 m undisturbed forested buffer around project area and other corridors;

- leave patches of residual forest within and adjacent to the project footprint; and
- Commence planting areas with plant species favorable to bear forage, and by planting shrub and tree species that provide suitable cover.
- For migratory birds, additional relevant mitigations include:
- retain slash and large woody debris in the salvaged soil to provide microsites for native plant and hide cover and perches for wildlife; and
- Ensure project areas promote the re-establishment of woody species and are on a trajectory for reforestation.

Targeted mitigation measures involving amphibians and amphibian habitat include:

- conduct monitoring to identify other habitable ponds and to identify habitatrequirements and constraints;
- construct trial breeding ponds;
- reclaim upland habitat adjacent to reconstructed breeding ponds; and
- Avoid habitat destruction and alteration outside of the defined Project footprintto the best extent possible.

Mitigation measures specific to bat species include:

- avoid direct and indirect impacts to known, primary maternity roosts should any such roosts be located/identified;
- Where possible, tree clearing will be planned to avoid the May to August bat summer season.

Mortality Risk Wildlife mortality risk may increase as a result of increased traffic, wildlife encountering equipment, or elements of the Project footprint, and wildlife being attracted to Project facilities or humans. Plans are already being implemented to reduce this level of access and with the approval of this Project, the levels will be reduced considerably more. Mitigation measures that will be implemented to reduce wildlife mortality risk include:

- All access to the project area will be controlled, no uncontrolled access will be permitted. Common operational practices will include:
    - Prohibiting hunting, harassment, or feeding of wildlife; and
    - Implementing a strictly enforced zero tolerance policy on the use offirearms.

A detailed Waste Management Plan will be developed and implemented prior to mining and operational activities to minimize the attraction of wildlife. The utility company will follow the Best Management Practices for camps, fences, and barriers as described Management Practices for Camps, and ensure all waste is stored in wildlife- proof containers and disposed of properly. Some of the waste management and wild life awareness guidelines that will be implemented include:

- Ensuring food waste, refuse, and other attractants are securely contained in enclosed and approved wild life-proof containers and/or facilities (e.g. hard- sided buildings, fenced compounds, and bear-proof transfer station) prior to transportation to a disposal facility to prevent access by scavenging wild life;
- Providing adequate signage to inform employees of the location and proper use ofwild life proof storage containers/facilities;
- Ensuring waste storage containers/facilities are not filled beyond capacity;
- Ensuring regular inspection and maintenance of waste storage containers/facilities is carried out;
- Ensuring measures contained in the management plan are diligently followed by all employees and contractors;
- All on-site staff will receive wild life awareness Training; and
- Warning signs will be installed to advice staff of locations where problem due to wild life has been reported.

Preliminary Wildlife Monitoring Program: Wildlife monitoring will be used to monitor the effects of the Project on wildlife species at risk or species of management concern during operation of the Project and post-closure. In particular, the effects of the Project on wildlife, including disturbance, mortality, and movement will be monitored. Monitoring will consist of a systematic monitoring program along with incidental observations. The wildlife monitoring program will serve a number of important functions including:

- Verifying impact predictions and monitoring the effectiveness of mitigation measures;
- Improving the utility company's understanding of the effects of Project operation on wildlife within the surrounding area to enable the implementation of adaptive management practices when required; and
- Ensuring compliance with the terms and conditions of the Operating Approval and Project environmental standards once the Project has been approved.

Important considerations in selecting monitoring procedures include minimizing observer influence and ensuring that monitoring activities do not create added disturbance to sensitive wildlife species. In addition, it is important that monitoring efforts are focused on parameters that are directly related to effects mitigation and that provide opportunities to improve mitigation performance over time. For these reasons, the wildlife monitoring program will initially focus on the following, but will not be limited to:

- Continuing with and expanding the use of wildlife monitoring as a low-disturbance, passive monitoring approach to quantitatively measure changes in use of preferred habitat types by larger species such as mammals and other wild animals.

Monitoring breeding birds, raptors, water birds, bats, and amphibians using sensitive species inventory guidelines and recommendations from recovery strategies as reclamation progresses over the landscape.

Implement a wildlife sighting program for Project personnel and contractors to document wildlife occurrences within the Project footprint during the operations to document wildlife movements. This information can be used for monitoring wildlife use/crossings of access roads to identify major wildlife crossing areas for signage placement, improve employee/contractor wildlife awareness, and assist with monitoring the effectiveness of mitigation measures (i.e. avoiding wildlife- vehicle collisions).

- Construction monitoring to ensure timing windows, setbacks, and other mitigation measures are followed.

- Monitoring wildlife use of Project-related linear features (e.g. railway loop, Road line, pipelines, drainage ditches, and ponds) during operation.

- Monitoring wildlife crossings to determine the efficiency of the structures atmaintaining wildlife movements

- Monitoring the effectiveness of any access control measures (e.g. gates) on roads and other linear features. Monitoring and documenting all human-wildlife interactions that occur within the Project footprint.

Post-closure wildlife monitoring linked with the reclamation monitoring program and any other related environmental monitoring programs, continuing until all permit conditions are satisfied and the AER releases the Project site.

Chapter-4

Interventions to be done by the User Agency

Mining will have adverse impact on the wild life and local ecosystem as large number of trees will be cleared for the mining. Mining projects create disturbances mostly during the construction phase. Later on due to regular maintenance by the Department plants are not allowed to grow beyond a certain height but canopy gets maintained. To mitigate the negative impact of the mines it is proposed to have a wild life mitigation plan that will reduce the impact of the mines on the wild life. Various activities have been proposed under five major components that are being mentioned below.

The different interventions that have been proposed are based on the impacts that have been assessed during the field visit and subsequent discussion with the community and feedback from the forest officials. Interventions proposed are segregated under five major heads.

Interventions being implemented by the user agency, which may not be directly part of the plan but it can be part of the overall mitigation plan. Like soil conservation plan has been approved separately but it impacts the wild life mitigation plan:

- Proper mitigative measures to minimize soil erosion and choking of streams areimplemented.
- Drought hardy plant species are planted and seeds are sowed to arrest soilerosion.
- Water conservation measures and arresting of Silts through Construction ofcheck dams, contours tranches

Chapter-5

Interventions to be done by Department through DFO

Chatra and its adjoining areas have been known for the scenic beauty of forest and its resources. Development has resulted in competing land uses and often forest land is needed for carrying these developmental activities. Mining is one of them. It is needed for development to take place but it has fall out on wild lives. To compensate and maintain the floral and faunal biodiversity wildlife mitigation plan has been proposed which will be implemented by the Division under the guidance of the DFO.

Mitigation measures proposed:

The project has proposed certain mitigation measures which will help in mitigating negative impact of the project and these includes-

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The project has proposed certain mitigation measures which will help in mitigating negative impact of the project and these includes-

Component-1 – Increasing the local biodiversity in forest and non forest area

- **Forest Restoration by method of Silviculture and gap filling plantation-** Widespread deforestation and declining condition of the Jharkhand's forests has resulted in environmentally, economically and aesthetically impoverished landscapes.

  Forest restoration by method of silviculture and gap feeling plantation on land area of 400 ha cost about 346.46 lakh over the period of 10 years.

- **Afforestation on degraded land, hill, blank patches:** Deforestation and degradation of forests and protection forests belts contribute to land degradation

in many regions of Jharkhand. Over the last decades, land affected by soil erosion increased by about 10000 ha annually.

The plan proposes to work on the degraded land with a cost of Rs. 361.00 lakh in an area of 150 ha with afforestaion on these degraded lands and blanks created under the protected forests.

- **Bamboo plantations:** Bamboo is known as an ancient grass with woody timber. Bamboo has many uses, mainly in construction (flooring, roofing designing, and scaffolding), furniture, food, biofuel, fabrics, cloth, paper, pulp, charcoal, ornamental garden planting, and environmental characteristics, such as a large carbon sink and good phytoremediation option, improving soil structure and soil erosion.

  Bamboo plantation in 50 ha will be done at a cost of Rs.71.54 lakh.

- **Salt licks:** Salt licks are deposit of mineral salts used by animals to supplement their nutrition, ensuring enough minerals in their diets. A wide assortment of animals, primarily herbivores use salt licks to get essential nutrients like calcium magnesium, sodium and zinc.

  Salt licks will be created at a cost of Rs. 1.6 lakh/Yr for 10 yrs making it a cumulative cost of Rs.16.00 lakh.

- **Wildlife Habitat Improvement (Water Holes):** The influence of wildlife management with the goal of maintaining wildlife population and the entire biodiversity at maximum level and maximum ecosystem utilization depend heavily on the knowledge of mineral elements in the nutrients requirement of animals. Salt licks are deposit of mineral salts used by animals to supplement their nutrition, ensuring enough minerals in their diets.

  Cost of 20 Water holes which will be created at a cost of Rs.0.8 lakhs/yr for for 2 years, amount to about 16.00 lakhs.

- **Provision for water tanker for wildlife and forestry with lifting pump, driver, POL and maintenance:** Despite of all efforts from the department and taking all measures to ensure water availability for the animals sometimes due to deficient rain fall and higher temperature, water becomes scarce and hence provision for water tanker has been made under plan.

It will be done at a cost of Rs. 59.00 lakhs for 10 Yrs.

- **Conservation Measures for bird species: conservation measure for SCS (species of conservation significance) (woodland, grassland, water and migratory bird):** Many bird species migrate in order to survive. However, migration is a perilous journey and involves a wide range of threats. Only a small number of birds are actually threatened by natural events. Sad but true, human activities are the source for most dangers migrating birds are exposed to. And as diverse as people and their habits in different countries are, so are threats the birds face.

  Provision of Rs. 25.00 lakh has been done for this activity.

- **Contour Cutting + Soil water Conservation as per the PCCF Development order 36 date 18/08/2019 having 100 man /day per hectare for a total area of 200 ha(@Rs 350 * 55 workers * 200 ha):** The forest area in the command of the mines has been degraded due to various reasons and natural regeneration has been affected due to less water availability and drier soils probably. Making contour trenches will help in arresting the runoff and increasing the soil moisture regime. It will also reduce erosion as it will reduce velocity of the runoff water.

  Provision of Rs. 70.00 lakh has been done for this activity.

- **Checkdam Pakka 10 in numbers each costing 10 lakhs:** A check dam is constructed across drainage ditch, or waterway to counteract erosion by reducing water flow velocity. In contrast to big dams, check dams are implemented faster, are cost effective, and are smaller in scope.

  Provision of Rs. 100.00 lakh has been done for this activity.

- **Loose boulder check dam in Nallas:** Loose Boulder Structures (LBS) are one of the most important drainage line treatments. As the name suggests, LBS is made up of loosely arranged boulders so as to arrest excess erosion and water loss during the rainy season.

  Provision of Rs.20.00 lakh has been done for this activity.

- **Creation of Ponds 5 in Numbers @6 Lakhs:** Ponds are the hidden gems all kinds of people love to come across. Its ecological benefits may go unnoticed because it is such a small body of water.

  Provision of Rs. 30.00 lakh has been done for this activity.

- **Earthen Check dam 5 in numbers @6 Lakhs:** An earthen check dam is a loose stone and earth structure that serves to retain surface and sub-soil flows of water on gently-sloping land. Earthen check dams also function to prevent soil erosion.

.1. Provision of Rs. 30.00 lakh has been done for this activity.

- **Maintenance and repair of pakka and Earthen Checkdam, LBCD and ponds mentioned above in Sl. No. A.9, A.10, A.11, A.12:** Structures that will be created under the project, will require maintenance and repair over time due to siltation and damage caused due to various factors. For maintaining these structures provisions has been made under the plan so that these structures remain sustainable and in use by communities and wild animals as well, when constructed close to forest.

.1. Provision of Rs. 62.50 lakh has been done for this activity.

- **Linear Plantation along Rivers, canals, Roads total plants 5000:** As the state continues to grow so is the total length of roads. New roads are being constructed by the central and state government to give pace to the development interventions in the state. To make roads stabilize and reduce erosion, plantation will be done along the roads.

.1. Provision of Rs. 42.75 lakh has been done for this activity.

2. Measures for Forest Protection, Anti-depredation and wildlife protection

- **Deployment of 10 Home Guards @ 20000 per months:** Keeping people to guard different places like check nakas, forest exit points and also to keep vigil on the animal movements forest guards will be deployed on these places.

  Provision of Rs. 240.00 lakh has been done for this activity.

- **Logistic and deployment cost of trackers:** To make the deployment effective logistics like dresses, sticks and torches and other instruments will be needed so that they can perform their duties with responsibility and accountability. The cost for the same will be borne by the project.

  Provision of Rs. 72.00 lakh has been done for this activity.

- **Cost of mobile set.(@Rs. 10000*10=100000 considering life 5 years) and recharges:** To keep connectivity in place among the people deployed project will provide mobiles with facilities for recharge to be borne by the project.

  Provision of Rs. 4.50 lakh has been done for this activity.

3.Capacity building and procurement of anti- depredation items

- **Provision for Crackers and other items:** Crackers and marshals have been in use by the department and communities to drive away the wild animal once they come close to villages. It keeps the casualties at minimum and helps communities to counter elephant raiding and attack by other animals.

  Provision of Rs. 20.00 lakh has been done for this activity.

- **Snakes Catching Equipments:** Despite the fact that most of the snakes found in the forest are non poisonous people die due to snake bite from the fear. It will be important to distribute snake catching equipments to the persons having skill to catch snakes. Training to catch snakes will also be important

  Provision of Rs. 5.00 lakh has been done for this activity.

- **Training to trackers/watchers:** Wild animals generally come out of their safe zone during wee hours to nearby water bodies and fringes of villages in search of food. This makes them susceptible to have confrontation with humans and result in subsequent man-animal conflict.
  Provision of Rs. 15.00 lakh has been done for this activity.

- **Rewards for information:** Wildlife tourism creates both positive and negative impacts. Economic benefit is the most important of these (Adhikari et al., 2005). Bio-physical impacts are more serious than others such as socio-economic. There will be provision to reward the informer who provide inputs about poaching, hunting, animal trafficking, tree cutting and other wildlife crimes.

  Provision of Rs. 20.00 lakh has been done for this activity.

- **Animal Rescue and treatments:** Animal welfare describes how an animal is coping mentally and physically with the conditions in which it lives. This includes activities relating to population control, habitat management, humane handling, and when necessary, humane killing.

  Provision of Rs. 40.00 lakh has been done for this activity.

- **Payment towards cost of establishing wild animal rescue team:** Despite of huge technical advantage and many sophisticated gadgets which help in tracking the wild animals, the rescue of the wild animals are mostly done through the human efforts.

  Provision of Rs. 127.20 lakh has been done for this activity.

- **Construction of machans along Paddy fields:** Elephant raiding is common during the paddy seasons and construction of machans will help in locating animals fast and taking precautionary measures for protection of crops and human life as well. This will also help in thrashing paddy after harvesting.

  Provision of Rs. 8.00 lakh has been done for this activity.

4. Fire Prevention and Protection of Habitat

- **Fire line creation for 50 km @ Rs. 30500 per km * 50 km:** This one is taking place in forests, where the latest fire seasons have been raging with unprecedented ferocity– which was already a record year for fires.

  Provision of Rs. 30.50 lakh for 2 years has been done for this activity.

- **Maintenance cost of fire line having 20 mans day per km every year @Rs. 350.00 per day *20 person* 50 km*10 years:** Firebreaks in a strict sense are linear discontinuities where the vegetation is absent or reduced to a low herbaceous layer. These breaks must be located at forest / urban interfaces or on ridges for a better effectiveness.

  Provision of Rs. 35.00 lakh has been done for this activity.

- **Construction of 2 watch tower cum temporary shelter with solar and water facilities @20.00 Lakhs:** In Jharkhand, there are forest areas that are sensitive to fire in the first degree. As a result of forest fires, which is one of the biggest environmental disasters on forest resources, hectares of forest area is damaged annually. One of the important elements of combating forest fires is early detection.

  Provision of Rs. 40.00 lakh has been done for this activity.

- **2 watchers at each tower ie total 2 watchers:** To man the watch towers two watchers will be posted at each of the towers and will keep a vigil on the activities under the view of the area.

Provision of Rs. 50.40 lakh has been done for this activity.

Forest fire: Fire is the most potential threat to the flora and fauna of the area. Incidences of fire may happen due to various reasons and it cost very heavy for the forest and wild life residing in the forest. To protect forest from fires following measures has been proposed –

5. **Forest Fire Management Squad:** It requires to be placed an equipped team for controlling and reducing forest fire incidences. Fire tracer will be hired for a period of 5 months from February to June every year by the department as these are the months when forests are more prone to forest fire.

Provision of Rs. 52.50 lakh has been done for this activity.

6.**Forest Fire Fighting Equipment**: In order to equip the fire fighting squad it is proposed to provide the following equipments like Fire Blower, bush cutter and fire fighting suit etc

- Cost of mobile set @ Rs. 10000*6(two times in 10 year) and recharge =4.00 lakhs
- Cost of fire fighting suit @ Rs 7000 per person (considering life 5 years)=1.40 lakhs.
- Cost of rented vehicles @50000 per months * 6 months per year cost about 30.00 lakhs
- Purchase of fire blower @ Rs. 60000*10 blowers and maintenance @0.50 per year cost about 16.00lakhs
- Running and maintenance of fire blower and cutting @ Rs. 30000 per blower per year * 10 blower = 30.00 lakhs
- Purchase of brush cutter @Rs. 30000 * 10 = 3.00 lakhs

5. Livelihood improvement and capacity building to local people

- **Farming of Medicinal Plants, Duckery, fishery, honey bee keeping, mushroom cultivation etc. @ 10 Lakhs for 5 years:** Jharkhand forests are rich in bio diversity with lots of herbs with medicinal value. Some of them can be cultivated and grown commercially for betterment of communities and traditional practitioners as well. Along with it additional nonfarm based livelihood options like duckery, fishery and others will be promoted with proper training and market linkage.

  Provision of Rs. 50.00 lakh has been done for this activity.

- **Distribution of Sal plates making machine and other equipments:** Traditionally women stitch raw sal leaf plates which are less remunerative and take lot of time. This has lesser demand in the market and puts a lot of drudgery on

women. To make it more efficient and remunerative sal leaf plate making machines will be installed with the women SHG for creating NTFP based livelihood systems.

Provision of Rs. 20.00 lakh has been done for this activity.

- **Bamboo craft making:** Bamboo is a versatile input and is used as building material, paper pulp resource, scaffolding, agriculture implements, weaving material, plywood and particle board manufacture, basketry, furniture, pickled or stewed bamboo shoots, medicines, etc. Resource management and technical improvements can convert this fast-growing grass into a durable raw material for construction purposes and a wide range of semi-industrialized products.

Provision of Rs. 25.00 lakh has been done for this activity.

Capacity building to local people in fringe villages

- **Signages Installation: -** For the correct destination in the forest some signal to be deployed so that it helps while someone gets lost.

Provision of Rs. 12.00 lakh has been done for this activity.

- **Solar street light @ Rs. 20000 per solar light for 100 lights:** Ease in walking during evening hours and rainy days About 96% of the respondents mentioned that they find it easy to walk during evening and night hours in the village street. The ease in walking during evening and night hours is due to better illumination.

Provision of Rs. 20.00 lakh has been done for this activity.

- **Providing Grain bins @ Rs. 2000*500 bins:** Providing grain bins will help in preserving food items during elephant raiding. These bins can be of metals or of concrete. These can be very helpful in elephant affected areas.

Provision of Rs. 20.00 lakh has been done for this activity for 2 years.

- **Long range rechargeable touch lights @ Rs. 2000*150 torch:** Strong lights keep the wild animal away from human habitations. Long range rechargeable torch lights can help as a cost-effective means for keeping the animals away.

Provision of Rs. 6.00 lakh has been done for this activity in two years.

- **Training and capacity building of JFMC @ Rs. 20.00 Lakhs:** JFMC are vital link between communities and the department. They are crucial for flow of information from villages to the department. Their capacity should be built for taking various precautionary measures and taking initiatives for protection, preservation and propagation of forests.

  Provision of Rs. 20.00 lakh has been done for this activity.

- **Seed money for implementation of micro plan for JFMC @ Rs. 5.00 Lakhs per JFMC for 10 JFMC with focus of flora of medicinal and other ecological importance:** Capacity building lone will not serve the purpose and committees should have some financial resource available with them for taking initiatives. Seed money will help the committees to meet urgent expenses and it can be later on again refund back to the seed fund for keeping it intact and in fact growing.

  Provision of Rs. 50.00 lakh has been done for this activity.

- **Provision of feeding trough for cattle in villages:-** For feeding the cattle feeding trough is given which helps in proper and spill free and a good hygenic place for cattels.

  Provision of 60.00lakhs is proposed for this activity

Capacity building of forest department for implementing ,monitoring and supervision of plan

- **Cost of Digital cameras and drone:** For implementation and monitoring digital camera and drone will be needed. Drones help in keeping track and also take a photo for the threats caused to animals due to habitation and loss of habitations due to clearance.

  Provision of Rs. 28.00 lakh has been done for this activity.

- **Cost of night vision binocular, GPS:** Night vision binoculars and GPS will be necessary for tracking animals during night. It will help to warn villagers during night and also help to find the injured animals.

  Provision of Rs. 20.00 lakh has been done for this activity.

- **Provision for camera traps:** Camera traps provide data on species location, population sizes and how species are interacting.

Provision of Rs.30.00 lakhs proposed for this activity.

- **Provision for 6 motorcycle @ Rs. 1.5 lakhs per motorcycle:** For fast easy and cost effective movement of the front line workers from forest motorcycles are best. These machines can move on narrow paths and can have access to remote locations. Inured human can also be taken to first aid facilities very fast.

  Provision of Rs. 9.00 lakh has been done for this activity.

- **Maintenance of motorcycle:** Maintenance cost of this motorcycle is important, So that there should not be any breakdown in the time of emergency and to keep it in running condition.

  Provision of Rs. 7.20 lakh has been done for this activity.

- **POL for six motorcycle:-**Provision for 6 rented vehicles for the officers on visit @Rs. 100/liters ,30liters/months per vehicles.

  Provision of Rs. 21.60 lakh has been done for this activity

- **Vehicles for monitoring on rent (with driver, diesel and fuel):** A vehicle should be available for the purpose of monitoring of the workers

  Provision of Rs. 84.00 lakh has been done for this activity

- **Vehicles for implementation on rent (with driver, diesel and fuel) for RFO:** At the range office a vehicle will be hired for the movement of the RFO and it will also have provision for diesel and driver along with maintenance.

  Provision of Rs. 72.00 lakh has been done for this activity.

- **4 unskilled JFMC members DFO/RFO for patrolling to augment work force @Rs. 8500 per months:** Sometimes due to lack of adequate number of staff with no specific skills needed department suffers a lot and find it hard to respond to calls by villagers during emergency. Hence provision of four unskilled manpower has been made under the plan.

- Provision of Rs. 50.40 lakh has been done for this activity.

- One vehicle for HO at Van Bhawan.:- one vehicle for HO. For the movement.
  A provision of 65.20 lakh which include a vehicle and its maintenance cost For the period of 10 years.

- Drone based surveillance system:- The surveillance drone is nowadays an essential technological system for ensuring the safety of goods and people in many situations. Its speed of deployment and its precise observation make the drone a decisive operational asset during surveillance missions.

  Provision of Rs. 36.00 lakh has been done for this activity.

- One wacky talky system with amplifier:- Walkie talkies don't play music, text, access social media or take photographs but still have the upper hand when you need to communicate in areas without a mobile or GPS signal. That's because they work off single frequency wireless signals which means that all is not lost if you find yourself off the beaten track.

  Provision of Rs. 40.00 lakh has been done for this activity.

GIS and remote sensing for implementation and Monitoring

- **RS & GIS software and accessories:** A high configuration gaming laptop or desktop with RS and GIS software will be procured for supporting the monitoring team and for documentation of the work done under the proposed wild life management plan.

  Provision of Rs. 15.00 lakh has been done for this activity.

- **Remuneration to GIS expert @Rs.35000 per month * 12 months:** Working on GIS software is a highly specialized job and requires a person with skill set of operating the software and also getting interpretation out of the data gathered from the software.

  Provision of Rs. 42.00 lakh has been done for this activity.

- **One computer operator @Rs. 20000/month * 12 months * 10 years:** Further one computer operator will be needed for supporting the office of the DFO. He will be responsible for keeping the soft copy of the documents related to the project.

  Provision of Rs. 24.00 lakh has been done for this activity.

- **Setting up wildlife Monitoring center at Hazaribag:** The proposed mitigation plan will be monitored by the CF and RCCF. The CF office will be supported with a monitoring center for the proposed wild life implementation plan.

Provision of Rs. 5.00 lakh has been done for this activity.

- **Monitoring cell at DFO office:** With all facilities at the DFO office it will be responsible for monitoring of the implementation of the mitigation plan. The measures mentioned above will be part of the whole set up for monitoring at DFO's office.

  Provision of Rs. 5.00 lakh has been done for this activity.

Awareness promotion about Medicinal Plants and protection of endengered species

- **Short Film Preparation @2.00 Lakhs * 3 years:** The plan has made a provision of 8 lakh rupees for shooting documentary film for the works done under the mitigation plan. Each year carried out activities will be documented and filmed to create a documentary on the overall programme.

  Provision of Rs. 6.00 lakh has been done for this activity.

- **Pamphlet Distribution and Nukkar Natak etc in local language for awareness @1.00 lakh per year:** The folk culture and nukkad nataks have always been part of creating awareness among the communities. The literarute in local language is also a powerful tool for communication. For the two measures the plan has made provisions and will be done at the village level.

  Provision of Rs. 10.00 lakh has been done for this activity.

- **Celebration of world environment Day, wildlife week etc:** Celebrating important days across the year will keep communities involved and will help in creating awareness at all levels. Secondly doing it in the schools and other public places will help in creating a ripple effect of the programme.

  Provision of Rs. 15.00 lakh has been done for this activity.

- **Wall Painting, Sologan, Poster etc:** Wall paintings and slogans are a tool to create awareness. It also helps in making villages look better through nice local paintings.

  Provision of Rs. 5.00 lakh has been done for this activity.

Nature Interpretation Centre

- **Construction of smriti van:** To create interest and scientific temperament among public especially students, it is proposed to build and maintain a nature interpretation centre. The location is to be decided by the DFO Chatra South at the time of implementation. A sum of **Rs 77.00 lakhs** is provided for construction of the interpretation center on wildlife / nature conservation & Environment.

- **Equipping Smriti van:** To display and showcase the importance of Wildlife a mini library, audio Visual Display System (Multimedia System with LED TV) will be equipped inside the Interpretation Centre to run Wildlife and Nature Related Documentaries. An expenditure of **Rs. 40.00 lakhs** will be made for equipping the center.

- **Live hedge fencing with Entrance Gate**: To secure the complex an expenditure of **Rs. 10.00 lakhs** will be incurred towards providing live hedge fencing with entrance gate.

- **Aesthetic Plantation/ Medicinal Garden:** To improve the aesthetics of the centre and to attract youth landscaping plantation will be done at a cost of **Rs. 20.00 lakhs**.

- **Manpower:** 2 unskilled persons is to be recruited to maintain the interpretation center. The remuneration of unskilled person will be @Rs. 12545 per month. Total cost of remuneration is **Rs. 30.10 lakhs** to be provided by user agency on demand note raised by DFO- Chatra South.

- **Running Expenditure:** To pay the electricity bills etc., a provision of **Rs.30.00 Lakhs** at the rate of Rs.3.00 Lakh per annum is made.

- **Providing Solar Panel Set:** A DG Set will be provided at the Centre as a backup power at the cost of **Rs. 15.00 lakhs**.

Contingency amount

Contingency and escalations: A contingency reserve will be maintained throughout the project time period so as to compensate for any accidents or loss which might take

place at that period of time.

Wildlife monitoring is conceived as the surveillance of the natural environment or any of its components. This could focus on a certain species, its population, an ecosystem, human factors involved and the relationship and impacts among them.

To pursue useful results, all monitoring must guarantee a correct design and subsequent data analysis. Wildlife monitoring provides information to involved stakeholders, not losing its true essence: usefulness for wildlife management.

Financial outlay:

The total financial outlay for the proposed mitigation measures stands at Rs. 2950.50 Lakhs for 10 years of operation of the plan.

Fund Providers:

The Project proponents or more specifically, CCL would be responsible for providing all funds towards the implementation, monitoring, evaluation and review of this Wildlife Management Plan.

Monitoring Committee:

A committee shall be formed under Chairmanship of DFO of the respective division. Other members of committee would be concerned ACF, concerned Range Officer and other staff apart from two representatives of User Agency. Other members would be included as decided by the DFO.

Chapter-6:

Detailed Cost Sheet for Project and Project Impact Area

The estimate has been determined based on the rates of the current year and then to accommodate the escalation a provision for 20 % has been kept. The base estimate has been prepared using a variety of different techniques depending on the level of scope definition and the size and complexity of the project. As the design progresses and more details are known, project components become more detailed. The base estimate is also dependent on the estimated project schedule.

Public Consultation

To ensure people's concerns and feedbacks about the project are incorporated in the project design and to promote public understanding about the project developments and its implications. Public consultation and information dissemination are treated as a two way process through which the information is passed on to public and their feedback is sought to understand their issues. Consultations during implementation stage helps to facilitate a smooth resettlement of the PAFs thereby enabling speedy implementation of the project.

The overall goal of the consultation programme is to disseminate project information and to incorporate PAFs views and feedbacks in the preliminary project design and Resettlement Action Plan. The specific objectives of the consultations are to:

(i) Improve project design aspects and lead to fewer conflicts and delays in implementation;

(ii) Facilitate development of appropriate and acceptable entitlement options;

(iii) Increase long-term project sustainability and ownership;

(iv) Reduce problems for institutional coordination;

(v) Make the resettlement process transparent; and

(vi) Increase effectiveness of sustainability of income restoration strategies and improve coping mechanisms.

Stakeholders are those who have a direct interest in project development, directly or indirectly affected due to project and whose participation needs to be ensured in consultations at various stages. For consultation and participation primary and secondary stakeholders are to be identified. The following are the major stakeholders:

(i) All Project Affected Persons (PAPs) and Households, Beneficiaries of the Project, including representatives of Vulnerable Households;

(ii) Elected representatives, Community leaders of PAPs, representatives of CBOs

(iii) Designated staff of Amrapali -OCP Unit and from the project affected villages

Annexure 11

Office of Divisional Forest Officer,
Chatra South Forest Division, Chatra

E-mail : dfo-chatrasouth@gov.in Phone : 8987790213

Letter No. 2042 Date : 15/10/2024

To,

The General Manager,
Amraplai-Chandragupt Area, Tandwa, Chatra.

Subject :- Charging of an lump sum amount of the project cost towards the cost of implementation of the Soil and Moisture Conservation plan against 431.59 Ha of Forest Land in respect of Stage-I obtained vide File no. 8-48/2008-FC-(Vol) of Amrapali OCP.

Ref. :- Your letter No. 500 dated 14.10.2024.

Sir,

Through above-mentioned letter, a request has been made that, as par MoEF&CC, GoI guideline dated 7th June 2022, in cases where it is not possible for the State to submit the compliance due to delay in preparation of such plan, a lump sum quantum of project cost may be realized from the User Agency and submitted along with the Stage I compliance. Accordingy, it has been requested to raise a demand of indicative amount equal to 0.5% of the project cost for implementation of Soil & Moisture Conservation Plan as mandated under In-principle approval of the project.

Through above-mentioned letter, Minutes of 399th CIL Board meeting held on 11th Feb 2020 has been attached, wherein, at para 4.5 the total capital investment of Expansion Project of Amraplai OCP 25 MTY has been recasted to be 5136.15 Crores.

Therefore, it is requested to deposit the indicative lump sum amount of Rs. 25.68 Crores (0.5% of the project cost) in CAMPA Account for Soil & Moisture Conservation Plan. The amount should be deposited to CAMPA fund only through e-portal (https://parivesh.nic.in) against 431.59 ha of forest land in favor of Chatra South Forest Division alongwith an undertaking for depositing additional amount, if so determined, as per final approval of the Soil and Moisture Conservation Plan.

Sent for necessary action.

Your Faithfully

15/10/24

Divisional Forest Officer,
Chatra South Forest Division, Chatra

CENTRAL COALFIELDS LIMITED

A Mini Ratna Company
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP, HONHE, 825321
PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Coal India Limited
A Maharatna Company
www.coalindia.in

Annexure-12

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (9)

CCL undertake that **"**All the demands raised by DFO Chatra South have been transferred/deposited in CAMPA account only, through e-portal (https://parivesh.nic.in/).".

Project Officer
(Amrapali Project)

CENTRAL COALFIELDS LIMITED

A Mini Ratna Company
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP, HONHE, 825321
PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Coal India Limited
A Maharatna Company
www.coalindia.in

G20 भारत 2023 INDIA

Annexure-13

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (11)

CCL undertake that **"**The all the activities will be carried out as per approved Mine Plan Plans".

Project Officer
(Amrapali Project)

CHAPTER - 1

Background

1.0 Purpose

CCL had submitted a proposal to concern department for the release of 431.59 Ha of forest land for Amrapali Opencast project to MoEF Government of India through DFO, South Division. Chatra

Stage-I FC granted by MoEF&CC Delhi vide No.-8-48/2008-FC-(Vol) dt. 21.12.2023.

As per condition no. 11 Following activities, as per approved plan / schemes, shall be undertaken in the lease area by the User Agency under the supervision of the State Forest Department. Approved scheme/plan shall be submitted to the Ministry along with compliance of Stage-I approval: Para I, II, III and clause no. 8 & 9 of the said letter, the user agency has to comply with,

1. Mitigative measures to minimize soil erosion and choking of stream shall be implemented within a period of three year with effect from the issue of Stage II clearance in accordance with the approved Plan in consultation with the State Forest Department;
2. Planting of adequate drought hardy plant species and sowing of seeds, in the appropriate area within the mining lease to arrest soil erosion in accordance with the approved scheme;
3. Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme;
4. Stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than 280; and
5. No damage shall be caused to the top-soil and the user agency will follow the top soil management plan.

So, CCL has requested CMPDI (HQ) to prepare the necessary scheme for fulfilment of the above condition vide their letter No. CGM (P&P)

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10/1681-83 dated 17.05.2024. Accordingly, CMPDI (HQ) has taken up job with job no. 090310041

1.1 Consultation with forest officials

A. formal meeting between CCL (CGM.E&F & his team) and PCCF cum Executive Director of forest department. Jharkhand has been held on 21 08.2024 in the office of later to discuss for the fulfilment of the compliance of Stage-I FC granted by MoEF&CC Delhi vide No.-8-48/2008-FC-(Vol) dt. 21.12.2023. regarding the release of 431.59 Ha Forest land for Amrapali Opencast Project. On the basis of above meeting, forest department has given some suggestion and guidelines for the fulfilment of the condition set by MoEF&CC Delhi.

1.2 Scope of Work

Study of soil erosion especially from the overburden area with the help of GIS and preparation of a detailed scheme with sketches and drawings along with cost estimate to minimize/prevent the soil erosion and water pollution, arises due to surface runoff and choking of streams in and around the mine lease area of the Amrapali OCP project

1.3. Objective of the scheme-

Prevention of Barki and Chundru River and their tributaries from being chocked and mucky along with protection of the surrounding land areas from being eroded due to high velocity of surface run-off, protection of the fertility of the land due to soil erosion owing to the proposed Amrapali OCP Project for the benefit of the local habitants, animals and plants to get good quality of land and clean water in sufficient quantity. It will also help to enhance the ecological balance and will take care of the natural ecosystem

1.4 Project History

Amrapali Project is situated in North Karanpura Colafields under Central Coalfields Limited, it is one of the new coal projects in the area. Presently project is still in virgin state.

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CHAPTER - II

Project Profile

2.0 General

Amprapali Project is situated in North karanpura Colafields of Central Coalfields Limited and lies in Chatra District of Jharkhand State. Due to anticipated demand of medium Coking coal grade, it is proposed to start Amrapali OCP to produce coal at the rate of 10.0 Mty. per annum and linked with Barh STPC.

2.1 Location:-

The Project falls in part of five villages and forest area. The villages are - Urshu, Binglat, Kumarang Kalan, Kumarang Khurd & Honne in Tandwa block of Hazaribagh district of Jharkhand State.

a) Latitudes - $23^0 51'31"$ N & $23^0 53'38"$ N
b) Longitudes - $85^0 00'05"$ E & $85^0 02'07"$ E
c) Topo sheet No.– 73E/1, 73A/13
d) Company – C.C.L
e) District – Chatra
f) State – Jharkhand.

2.1 Surface Communication: -

2.1.1 Road - The proposed project is approachable by a 12 KM long fair weather Kutcha road from Tandwa Village. Tandwa village is connected to Khalari by a 20 KM metallic road in the south. It is connected with Hazaribagh also by a 50 KM long metal road via Barkagaon.

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Amrapali-Chandragupt Area

2.1.2 Railways- Nearest railway stations is Khalari Railway Station, 25 km away. This railway station is situated on Gomoh – Barkakna loop line of Eastern Rly.

2.1.3 Airways- Nearest Air service is available from Ranchi that is about 90 Km. away from the project.

2.1.4 Distance of important place

a) G.M. Office, N.K. Area 22 KM

b) Ranchi - 85 km. (Takes 3.0 hr. by road)

c) Hazaribagh -- 65 km (2.5 hr. by road)

2.2 Topography : -

The Amrapali Block is characterized by gently undulating topography with depression and sand stone ridges. The general slop of the area is either towards South or towards the respective river/nala. Most of the small channels crossing the area, flow from North to South and finally join either Barki river or Chundru River. The maximum and minimum elevation of the block is +497 m and +440 m respectively.

2.3 Drainage

Main drainage of the block is controlled by the Barki River flowing along the eastern boundary of the project and Chundru nala, tributary of Barki River, flow along the western side of the boundary.

Excess surface run-off of the surrounding area is carried away by these River/Nalas and finally merges with Damodar river near Piparwar.

During summer season all the rivers, nalas and most of the wells become dry. Water table goes down up to 12.0m. In rainy season water table varies from 1.52 m to 3.04 m below GL.

2.4 Climate

Tropical climate is prevailing in this region with three main seasons namely winter, summer and rainy season, which pass through extreme conditions. Each season spreads over three months. April to June is summer season, July to

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September is rainy season having generally 73 rainy days and average rainfall is 1200 mm and December to February is winter season. Summer days are very dry, scorching heat and dusty day, temperature soar to about 47^0C while winter nights are very chilly cold and temperature goes down to as below as 3^0C and rainy season have heavy rain fall. Some times total rain fall is around 2000 mm annually and creates havoc in the regions.

Prominent wind direction in summer is from north to south,

2.5 Boundaries of Mine

Northern Boundary

Northern Boundary has been fixed along the incrop of seam-I (B)/(IB+IM+IT) Combined.

Eastern Boundary

The eastern surface boundary has been fixed leaving a surface barrier of 60m from Barki River.

Western Boundary

The **western surface boundary** has been fixed leaving a surface barrier of 60m from Chundru nala.

Southern Boundary

The Southern floor boundary has been fixed along the FRL of 340m (on seam I (B)/(IB+IM+IT)Combined floor), corresponding to a maximum depth of 135m.

2.6 Geology of Amrapali Block

Amrapali opencast mine has been planned from two contiguous blocks, Amrapali and Kishanpur to exploit coal up to a depth of around 135m keeping seam-I Bottom as base seam & I Middle +Bottom/I Top+ I Middle +I Bottoms where the I Bottom seam combines with upper seams to form the composite seam .The base seam I Bottom has been proved in Amrapali block up to a depth of 255 m and up to 225 m depth in Kishanpur block respectively .

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2.6.1 GEOLOGICAL AND MINING CHARACTERISTICS

Sl.	Particulars	Unit	Sections	
			Eastern	Western
A.	Thickness of Coal Seams			
1	I (B.)	m	4-8	6-10
2	I (M.)	m	5-7	6-7
3	I (T)	m	3-8	2-4
4	I (C)	m	14-20	-
5	II (B.)	m	1-2	1-2
6	II (T)	m	1-2	1-2
7	III (C)	m	6-10	6-10
8	IV	m	4-6	3-6
B	Thickness of OB & Parting			
1	Top OB	m	5-80	6-70
2	Part. bet.I (B) & I(M)	m	4-16	0-3
3	Part. bet.I (M) & I (T)	m	0-2	0-2
4	Part. bet.I (T) & II (B)	m	5-27	5-31
5	Part. bet. II (B) & II (T)	m	10-14	2-12
6	Part. bet. II (T) & III (Comb.)	m	6-10	6-8
7	Part. bet. III (Comb.) & IV	m	6-9	5-8
C	Quarry Parameters			
1	Dip of the seams	Degree	3-6	6-8
2	Strike length	Km	2.4	2.2
3	Width	Km	1.4	1.4
4	Area of Excavation	Ha.	493.7	337.25
5	Maximum depth	m	135	135

COAL RESERVES

A total of 689.81 mt of net quarriable reserve (486.50 mt from Amrapali Geological block and 203.31 mt from kishanpur Geological block) is available. But only 291 mt of mineable reserve is planned in **Amrapali OCP** up to a depth of 135 m. The balance reserve falling in the dip side of the quarry may be planned for exploitation in second phase subject to techno economical viability of mining.

Sl. No.	Seam	Mineable Reserves (M.tes.)		
		Sections		Total
		East	West	
1	I (B)/I(B+M)/I(B+M+T)	88.47	40.41	128.88

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2	I (M)	3.46	6.75	10.21
3	I (T)/I(T+M)	23.11	23.26	46.37
4	II (B)	12.93	1.81	14.74
5	II(T)	9.05	2.25	11.30
6	III (C)	29.73	18.1	47.83
7	IV	22.28	9.49	31.77
8	TOTAL	**189.03**	**102.07**	**291.1**

OVERBURDEN

A total of 459.68 million Cum(265.95 from eastern &193.73 fromwestern quarry) of overburden is estimated in the Project. Out of this, 41.10 M.Cum. is estimated to be placed as external dump 'A' and remaining would be placed as internal dump 'B' and 'C'.

Sl.No.	Partings	East	West	Total
1	I(B) - I(M)	7.69	26.26	33.95
2	I (M) - I(T)	0.56	15.40	15.96
3	I (T) -II (B)	66.29	18.02	84.36
4	II (B) - II (T)	20.62	26.31	46.93
5	II(T)-III(C)	20.81	15.94	36.75
6	III-IV	15.12	15.52	30.64
7	Top OB	134.86	76.28	211.14
8	**Total**	**265.95**	**193.73**	**459.68**

STRIPPING RATIO

Based on the above figures the overall stripping ratio for the Coal reserves of 291.1 million tones against the total OBR 459.68 MM^3 is 1.58 Cm/ per tone of coal.

Sl.No.	Partings	East	West	Total
1	**Stripping Ratio(m^3/te.)**	**1.41**	**1.90**	**1.58**

DIP:- The dip of formation moves for 3^0-6^0 in eastern quarry and to 6^0-8^0 in western quarry.

COAL QUALITY

The product mix quality of the Amrapali OCP will be grade F (Avg. UHV 2659 K. Cal/Kg & Avg. CV 4038 K.Cal/Kg) with corresponding average ash of 40.61%. With the assumed dilution while mining 0.15m of non-combustible material at roof

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and floor, there will be addition of ash and the weighted average ash of the product mix will be 42.16%. Even with this dilution the Product Mix Quality is likely to be grade-F (UHV around 2447 K.Cal/Kg)

Mining Technology

OB Removal

Considering the mining and geological conditions, the mine is proposed to be worked by dragline and shovel-dumper combination of mining systems. The parting between I(T) & II(B) is proposed to be handled by the dragline $20m^3$ 90m.

The intervening partings will be mined and transported by 8.3 cu.m Hyd. Shovel alongwith RD-85T Dumpers. The Top OB will be mined and transported by 20 cu.m Rope Shovel alongwith RD-170T (EWD) Dumpers.

Coal Winning

Loading and transportation of coal using machines, blast hole drilling in coal and face preparation have been proposed to be outsourced and hence HEMM for coal winning have not been provided in this PR.

2.7 MICRO-METEOROLOGICAL STATUS

(i) Wind Speed/Direction during Summer Season

Generally, light to moderate winds prevail through out the season. Winds were light and moderate particularly during the morning hours. During the afternoon hours the winds were stronger. Wind speed readings are ranging from <1 km/hr. to 14.2 km/hr. The seasonal average wind speed is observed to be 5.4 km/hr. The wind patterns of the season are presented below:

The analysis of wind pattern during the season shows that the predominant wind direction is from North-West with wind frequency of 15.31%. It is followed by North - East with 6.7% frequency. The other observed

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directions are South-West (5.98%), North (4.44%), South-East (4.03%), North-North-East (3.48%), etc.

The calm conditions prevails 45.14%. The wind speeds of 1-5 km/hr and 5-11 km/hr were recorded for 51.38 % and 3.43 % of the total time respectively.

(i) Seasonal Wind Distribution

Location : Core Zone

Period : Post Monsoon

Wind Direction	Wind Velocity (Km/hr) & % Duration			
	< 1	1 – 5	5 - 11	11 - 19
N	45.14	4.03	0.41	-
NNE		3.17	0.31	-
NE		6.34	0.36	-
ENE		0.77	-	-
E		2.08	0.22	-
ESE		0.63	-	-
SE		3.94	0.09	-
SSE		1.13	0.05	-
S		2.17	0.09	-
SSW		1.31	0.05	-
SW		5.89	0.09	-
WSW		0.54	-	-
W		1.99	0.09	-
WNW		0.50	0.04	-
NW		13.81	1.45	0.05
NNW		3.08	0.18	-
CALM	45.14	51.38	3.43	0.05

(ii) Temperature

Temperature values are ranging from 284.0 to 304.5 ^{O}K.

(iii) Relative Humidity

The daily average relative humidity values are in the range of 34 to 96 %.

(iv) Cloud Cover

Mostly clear sky is predominant during the study period.

(v) Atmospheric Pressure

The average atmospheric pressure value has been found to be around 750 mm Hg.

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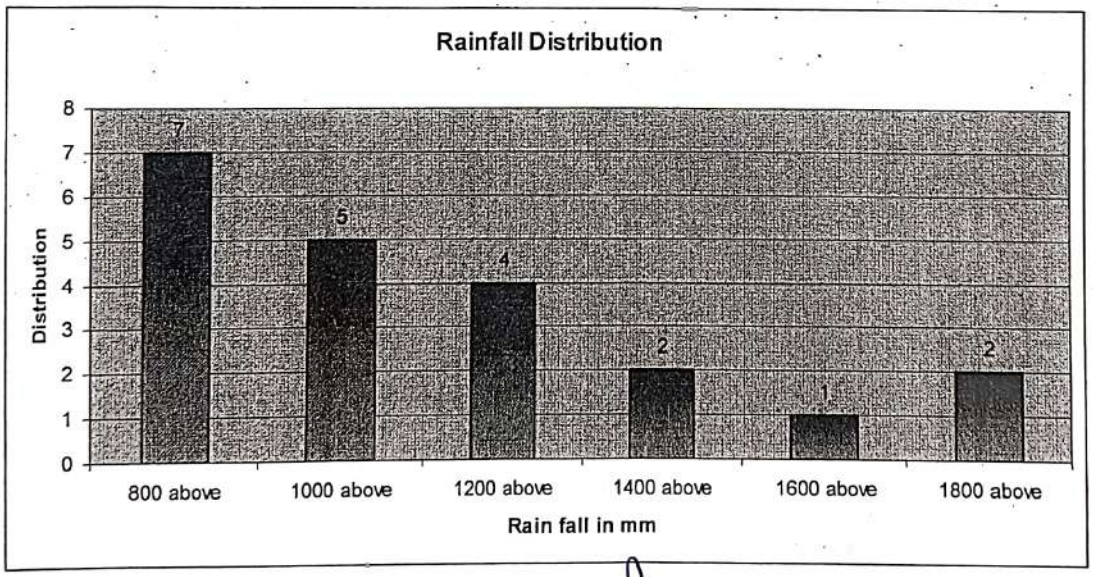
(vi) Rainfall

Normal average rainfall of the region is about 1050 mm. Nearly 80% of total rainfall occurs in rainy season (15 June to 15 September). Maximum rainfall recorded in 24 hr. is 151mm in 2009. Average rainy days occurred in a year is about 75 days and out of those, 60 days occurred in rainy season. The daily average rainfall during the rainy season is 9.33 mm.

Table

Table showing the percentage distribution of rainfall in 21 years

Sl. No.	Annual Rainfall in mm		Number of Years	Percentage of Distribution
	From	To		
1	0	200	Nil	Nil
2	201	400	Nil	Nil
3	401	600	Nil	Nil
4	601	800	Nil	Nil
5	801	1000	7	33
6	1001	1200	5	24
7	1201	1400	4	19
8	1401	1600	2	10
9	1601	1800	1	5
10	1801	2000	2	10



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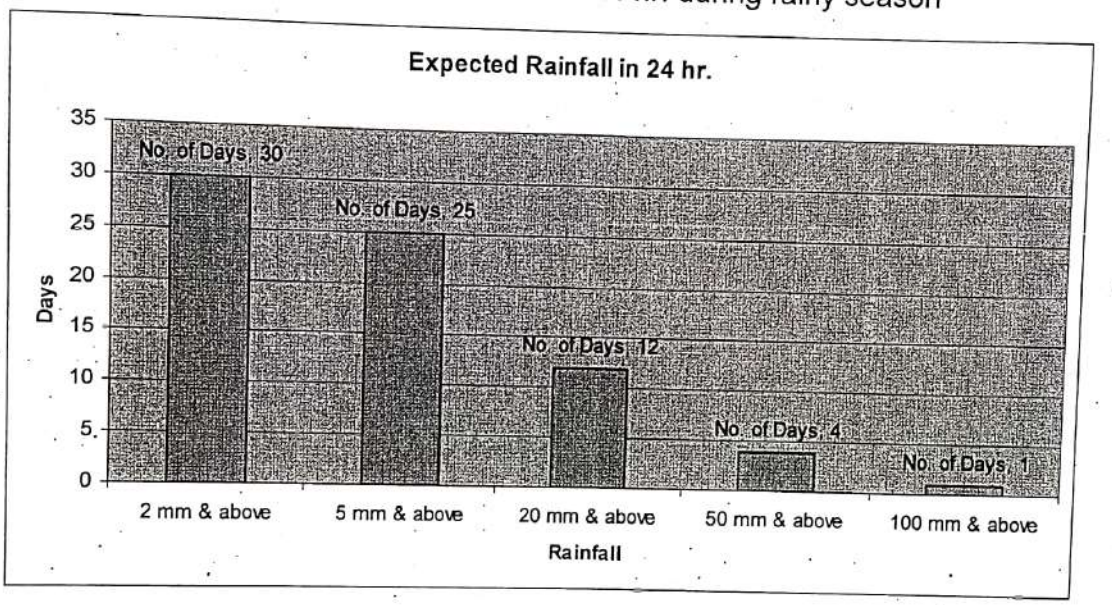
Chances of rainfall in 24 hr. during rainy season

Table

Sl no.	Rainfall in 24 hr	Chances of rainy days	Percentage
1	2.5 mm to 5mm	30	41.6
2	5 mm to 20mm	25	34.7
3	20 mm to 50mm	12	16.7
4	50 mm to 100 mm	4	5.55
5	100 mm and above	1	1.39

* Rainfall less than 2.5 mm are not taken as rainy day

Chart presentation of chances of rainfall in 24 hr. during rainy season



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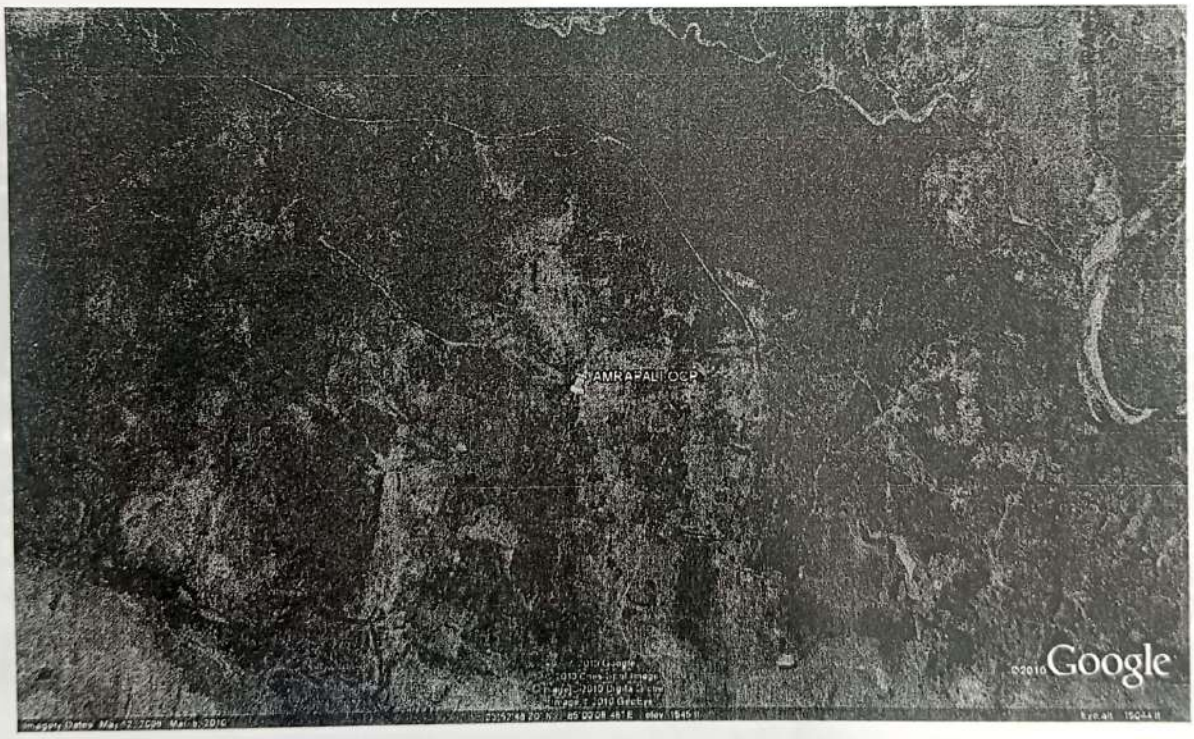
2.8 Land Cover

Satellite data imaginary taken from IRS-P6/LISS-III; Band# 2, 3, 4, 5; Path#106, Row#55 and used as primary data source for the study.

Satellite Imaginary of core zone

Area of Land use/cover class in core zone of Amrapali OCP of CCL			
Land Use/cover Class		**Area**	
Level -I	***Level -II***	***Area in Km²***	***%***
(1) Settlement	Urban/rural	10.10	3.21
(1) Vegetation Cover	(i) Dense Forest	36.82	11.40
	(ii) Open Forest	46.74	14.54
	(iii) Scrub	58.13	18.81
(2) Agricultural Land	(i) Crop Land	113.41	36.09
	(ii) Fallow land		
(3) Wasteland	(i) Waste Upland	29.16	9.28
(4) Mining area	(i) Sandy Body	3.32	1.08
(5) Water bodies	(i) Water bodies	17.6	5.60
Total:		**3.410**	**100.00**



Location of Amrapali OCP

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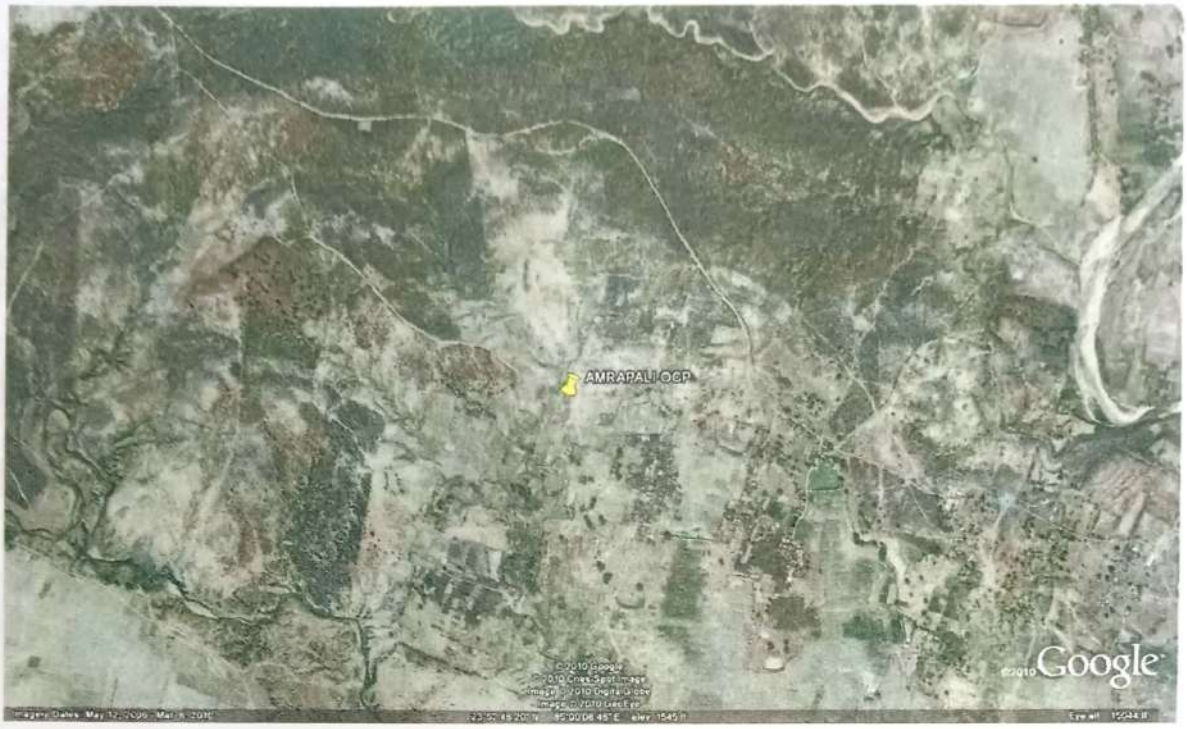
Google Image of Amrapali OCP



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CHAPTER – III

Soil Erosion

3.0 - General

Soil erosion has affected land all over the world from small residential landscaped properties to large forests and deserts. Due to action of rain and wind, some portion of soil gets eroded and transported naturally and at the same time disintegration of rocks goes on naturally at some places to form the soil. This is continuous processes which naturally balance between the erosion and formation of soil.

Soil erosion is described as soil particles being shifted around due to the devastating impact of

- Rainfall
- Wind and
- Ice melts

It is a natural process but in most cases, human activity speeds up the process. Description of different types of soil erosion has been enumerated below in which above agencies have the major role:-

3.1 Rain Fall Erosion

The investigation has shown that most of the soil erosion done by water is due to the impact of the falling rain-drops. The erosion capacity of surface runoff is small and it acts only as a partner.

The water erosion process starts as soon as the rain starts. The two principal erosive agents that become active during the rain storm are:

(a) Falling rain drops.

(b) Flowing run-off.

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a) Falling rain drops - When a rain drop strikes the soil surface, it breaks down the clods and the aggregates of the soil and thus, the soil particles are torn loose from their moorings in the soil mass. The energy of the falling water is applied from the above and is utilized in detaching the soil particles, while the energy of the surface runoff is applied parallel to the surface and is make used of in transporting the dislodged soil particles.

The erosion caused by rain storms is also known as ***Splash-Erosion-Process***.

Splash-Erosion

Another important fact which we must mention here is that, the amount of erosion from hilly catchments is always more than that from flat catchments (provided all other conditions remain the same). This is, because, when a rain falls over the flat area, the incoming splash balances the out going splash; while when the rain drops strike the sloping land surfaces, a major proportion of the splash moves down. Hence, relatively larger quantities of soil is transported when catchments is sloping than the catchments is flatter.

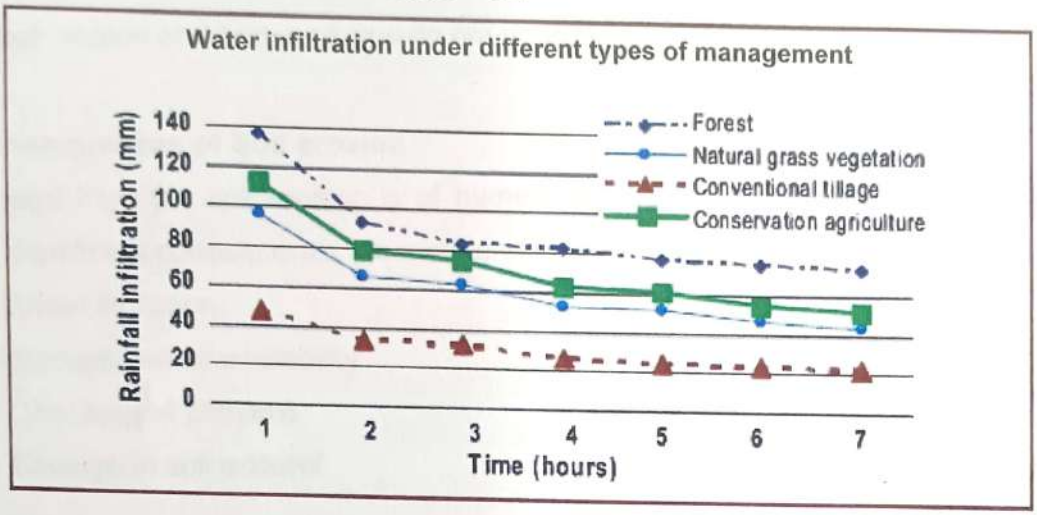
b) Flowing run-off - The fraction of the rainfall which does not infiltrate (soak into) the soil will flow down slope under the action of gravity; it is then known as runoff or overland flow.

If rain continues, the increasing depth of water will eventually increase. Overland flow that is released in this way is likely to flow down slope more quickly and in greater quantities (i.e. possess more flow power as a result of its kinetic energy), and so may be able to begin transporting and even detaching soil particles.

Where it does so, the soil's surface will be lowered slightly. Lowered areas form preferential flow paths for subsequent flow, and these flow paths are in turn eroded further.

Following chart shows infiltration capacity under different type of management.

Table – 3.1



3.2 Wind Erosion -

Soil erosion by wind may occur wherever dry, sandy or dusty surfaces, inadequately protected by vegetation, are exposed to strong winds. Erosion involves the picking up and blowing away of loose fine grained material within the soil. Damage from wind erosion is of numerous types. The most serious and significant by far, however, is the change in soil texture caused by wind erosion. Finer soil fractions (silt, clay, and organic matter) are removed and carried away by the wind, leaving the coarser fractions behind. This sorting action not only removes the most important material from the point of productivity and water retention, but leaves a more sandy, and thus a more erodable soil than the original.

Wind erosion mainly depends upon the type of storm, speed and duration.

3.3 Ice erosion

Snow and glacier melt occur only in areas cold enough for these to form permanently. Typically snowmelt will peak in the spring and glacier melt in the summer, leading to pronounced maximum flow in rivers affected by them. The

summer, leading to pronounced maximum flow in rivers affected by them. The determining factor of the rate of melting of snow or glaciers is both air temperature and the duration of sunlight. In high mountain regions, streams frequently rise on sunny days and fall on cloudy ones for this reason.

Soil erosion due to ice melting is not applicable in this region because it is a tropical region and temperatures do not go down to freezing point.

3.4 Consequences of Soil erosion

Damage from the soil erosion is of numerous types however the most serious and significant consequence are mentioned below-

1) Water Pollution
2) Improper water availability
3) Chocking of Streams
4) Change in soil texture/

3.4.1 Water pollution- Water is the most essential requirement after air for survival of any kind of life and needs more or less some quantity of water. It holds the pivotal position in the total environment, so that its availability is in optimum quantity, it can protect all aspects of the environments and if availability is less or more than requirement then quality of all aspects of environments gets endangered. Water is made available by the nature in good quantity and quality in the form of rain water, under ground water and through river, Nala, ponds etc. This water gets affected due to disturbance in the nature by means of man's activities associated with construction, mining activities, etc.

Mainly two types of actions cause water pollution.

a) Mixing of foreign substance with natural water causing physical and chemical changes.

b) Interception or diversion of full or part of water from any source.

The operation of mining and allied activities of this project would have impact on water quality through generation of waste water in the surrounding area in many

ways. The source of such a polluted liquid effluent has their impact on water quality and these are discussed elaborately in EMP report.

3.4.2 Improper water availability- The less the soil is covered with vegetation, mulches, crop residues, etc., the more the soil is exposed to the impact of raindrops. When a raindrop hits bare soil, the energy of the velocity detaches individual soil particles from soil clods. These particles can clog surface pores and form many thin, rather impermeable layers of sediment at the surface, referred to as surface crusts. They can range from a few millimeters to one cm or more; and they are usually made up of sandy or silty particles. These surface crusts obstruct the passage of rainwater into the ground reservoir and reduce the water holding capacity of the earth with the consequence surface runoff increases and causes more soil erosion. These eroded soil transported and settled at depressed land, pond, stream/nala, etc and reduce the capacity of its. More over, due to low infiltration rate ground water reservoir does not get full recharge. So overall water holding capacity of the area get reduced to large extent and resulting in the shortage of water in the region during the dry time.

The increased speed and volume of the surface runoff generate at this places create flood like situation any where in down stream side. Thus create improper water availability in the region.

3.4.3 Choking of Streams - Rainfall water which does not infiltrate into the soil starts to flow downhill under the action of gravity. Initially, run-off moves down the slope as a thin diffused film of water which has lost virtually all the kinetic energy which it possessed as falling rain. Thus, it moves only slowly, has a low flow power, and is generally incapable of detaching or transporting soil particles.

If rain continues, the increasing depth of water will eventually increase. Overland flow that is released in this way is likely to flow downhill more quickly and in greater quantities (i.e. possess more flow power as a result of its kinetic energy), and so it may be able to begin transporting and even detaching and picking up the soil particles. When speed of runoff is decreased, the carrying capacity of the

runoff get reduced, subsequently sedimentation take place, causing the chocking the stream. Following are the main area where maximum soil erosion takes place.

a) **Runoff from OB Dump** – Initially over burden materials would be dumped externally in this project. OB material would consist of broken stones, shales, coal and finer particles. The surface run-off from the embankment would be polluted with suspended and dissolved solids. These polluted run–off would ultimately drain into near by river through small channel and will pollute its water and choke the stream if allowed/left untreated

Runoff from OB dump

b) **Runoff from Construction Site-** During the construction phase of the project, large area of land would be de-vegetated and degraded on account of site preparation for construction of roads, buildings and etc. The runoff from these areas would carry large quantity of suspended solids, which can pollute and choke the natural drains, such as first degree nala, Kajri nala, and finally Bakri River only in the initial phase of construction.

C) **Runoff from Coal Dump-** The project has been so planned that coal dumps will not be created. But, if there may be situation when coal dumps may be unavoidable. Surface run–off from these dumps would be polluted with coal particles and other suspended particles which will finally pollute the Barki River if unattended.

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D) Runoff from built up Areas - Surface runoff from built up areas i.e. building, roads, roof tops etc. may not be highly polluted, but even then run–off may have high concentration of suspended solid i.e. sand, silt and coal particles.

Above run-off, besides the soil particles, also carries the municipal garbage, petroleum, pesticides, fertilizers, pebbles, etc and discharge it in the next order stream, river and is transported well away from the point of origin and finally merge in sea.

However, sediment may also be deposited within the rill or gully or beyond the rill or gully's and confines in a depositional fan, at locations where the gradient slackens. Thus, it chokes the water ways. Here it may be stored for a variable period of time, possibly being reworked by tillage activity, until a subsequent erosion event of sufficient size to re-erode the stored sediment. It may then be re-deposited further downstream.

3.4.4 Change in Soil Texture - The most serious and significant effect of the soil erosion, by far, is the change in soil texture caused by wind/water erosion. Finer soil fractions (silt, clay, and organic matter) are removed and carried away by the wind, leaving the coarser fractions behind. This sorting action not only removes the most important material from the standpoint of productivity and water retention, but leaves a more sandy soil and thus a more erodible soil than the original. Successive removals eventually create such a soil condition wherein plant growth is minimized and erodibility is greatly increased. Damage results both from the water erosion and the consequent dust storms. Control becomes more and more difficult. In the extreme, the sand begin to drift and form unstable dunes which encroaches on better surrounding lands. Throughout recorded history, huge agricultural areas have been ruined for further agricultural use in this manner

3.5 Estimation of Soil Erosion

Erosion is a natural geomorphic process occurring continually over the earth's surface and it largely depends on topography, vegetation, soil and climatic

variation and, therefore, exhibits pronounced spatial variability due to catchments heterogeneity and climatic variation

Soil erosion is a three stage process:

(1) Detachment,

(2) Transport, and

(3) Deposition of soil.

Different energy source agents determine different types of erosion. There are five principal sources of energy that affect the erosion such as wind, water, gravity, chemical reactions and anthropogenic, such as tillage. Soil erosion begins with detachment, which is caused by breaking down of aggregates by raindrop impact, sheering or drag force of water and wind. Detached soil particles are transported by flowing water (over-land flow and inter-flow) and wind, and deposited when the velocity of water or wind decreases by the effect of slope or ground cover. Three processes viz. dispersion, compaction and crusting, accelerate the natural rate of soil erosion. These processes decrease structural stability, reduce soil strength, exacerbate erodibility and accentuate susceptibility to transported by overland flow, interflow, wind or gravity. These processes are accentuated by soil disturbance (by tillage, vehicular traffic), lack of ground cover (bare fallow, residue removal or burning) and harsh climate (high rainfall intensity and wind velocity).

Above problems can be circumvented by describing the catchments into approximately homogeneous sub-areas using Geographic Information System (GIS). In this study, the remote sensing and GIS techniques (through Satellites Imagine and interrelated software) were used for derivation of spatial information, catchments describing, data processing, etc. Various factors of Universal Soil Loss Equation (USLE) were generated and overlaid to compute spatially distributed gross soil erosion for the area using 11-year rainfall data. The concept of transport accumulation was formulated by using the GIS for generating the transport capacity. Using these formulae, the amount of sediment rate from a particular sub-area is indicated.

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Following three formulae have been used for estimation of soil erosion in this project. This formula uses the **USLE, WET and SMCP** equations.

1). USLE (Universal Soil Loss Erosion)

2). WET (Watershed Erosion Tool)

3). SMCP (Soil Management & Conservation Practice)

Factors included in these equations are collected, studied and reviewed using the Geomatic Information System (GIS) and data, plan and information gathered from the field and others sources. Following are the data source required in the above equations.

3.5.1 Data Source

The following data are used in the present study:

- **Primary Data** Satellite data [IRS-P6/LISS-III; Band# 2, 3, 4, 5; Path#106, Row#55] was used as primary data source for the study. The raw satellite data was obtained from NRSA, Hyderabad, on CD-ROM media.

- **Secondary Data**

Secondary (ancillary) and ground data constitute important baseline information in remote sensing, as they improve the interpretation accuracy and reliability of remotely sensed data by enabling verification of the interpreted details and by supplementing it with the information that cannot be obtained directly from the remotely sensed data. The following secondary data were used in the study:

(i) Survey of India topographical map –73 E/6 and on special DVC Topo sheet no. 47 (6"= 1 mile).

(ii) Vicinity map supplied by CCL showing village, road and drainage etc.

(iii) Present Land use Plan supplied by CCL

(iv) Proposed Landuse Plan supplied by RI-III, CMPDI.

(v) Cross section of nala and OB dumps given by project.

(vi) Meteorological Data and etc

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3.5.2 Area under consideration for soil erosion calculation

Amrapali OCP is a new project and still in green field state. A Project report for Amrapali OCP of 12.0 Mty has been prepared and sanctioned. Soil erosion for present condition and proposed condition will be different. So assessment for soil erosion shall be done as per the plan envisaged in the sanctioned project report.

a) Following table shows the **proposed land use** plan of the AmrapaliOCP which is to be used for the different activities.

Table-3.5.2(B)

Sl.No.	Item	Forest Land(Ha).	Non - Forest Land (Ha)	Total Land (Ha)
1	Quarry	577.90	283.46	861.36
2	Nala Diversion	2.85	0.25	3.10
3	W/S, S/S Office etc.	14.56	-	14.56
4	Colony including approach road*	2.00	44.70	46.70
5	On Dump	41.20	47.96	89.16
6	CHP	20.33	-	20.33
7	Haul Road	30.00	4.00	34.00
8	Embankment / Garland Drains	0.67	6.68	7.35
9	Diversion of Public road	0.67	7.58	8.25
10	Safety Zone	134.32	162.27	296.59
11	Total	824.50	556.90	1381.40
12	Less Forest in Safety Zone	(-) 134.32	-	(-)134.32
13	Total	690.18	556.90	1,247.08
14	Rly Siding	102.90	76.10	179.00
15	Total including Rly Siding	793.08	633.00	1426.08

3.5.3 Division of the Area

In above land use plan, whole has been differentiated in following three zone for the purpose of calculation of soil erosion.

1) Infrastructure and Colony area
2) External & internal OB Dump and Active OB dump area
3) Green Land, safety zone and

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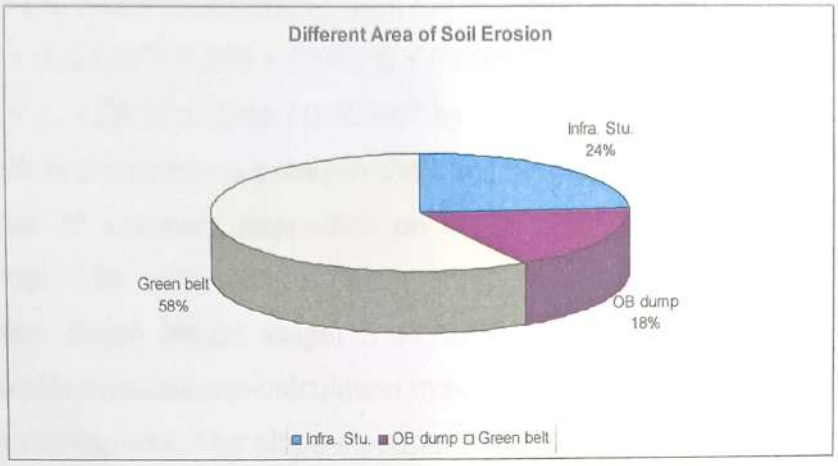
Soil erosion of the above zone would be calculated with the appropriate methods which are described below.

Chart shows the % land area of the different zone considered for soil erosion.



3.5.3 The general formula of USLE is given below

The USLE equation is: **A = R * K * LS * C * P**

Where,

A = Predicted soil loss (tons per acre per year)

R = Rainfall and runoff factor

K = soil erodibility factor

LS = slope factor (length and steepness)

C = Crop and cover factor

P = Preservation practice factor

A - The tons of soil lost per acre per year. The value "A" is usually compared to a value "T". T is the amount of soil loss that is considered "tolerable". Each soil series has a value T listed in the soil survey.

R - Rainfall and runoff factor. R is based on the total erosive power of storms during an average year and depends on local weather conditions.

Calculation of R factor is the summation of daily erosive factor (y).

Where in (y) = 3.2353+1.7890 ln (x)

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K - Soil erodibility factor. Depend on texture, structure, and organic matter. The k-factor was generated from detailed-reconnaissance soil map (1:100,000) and assigned values according to soil texture as studied by GIS.

LS – L factor and S factor are combined into one factor.

The LS- factor is generated from the following equation:

$LS = (L/22.1)^m (0.065 + 0.045\ S + 0.0065\ S^2)$, Wischmeir and Smith (1978)

$LS = (L_s / 22.1)^n \times (Sin\beta / 0.0896)^m$ by Moore & Wilson (1992):

L - Length is the distance between the beginning of water runoff on the land and location of sediment deposition on the land or runoff enters a well-defined channel. The slope length factor computes the effect of slope length on erosion. Slope length longer than 1000 ft are not used in this interactive calculator because the calculation may not be reliable.

S - Slope steepness. The slope steepness factor S computes the effect of slope steepness on erosion.

C - Cover factor. Compares cropping practices, residue management, and soil cover to the standard clean fallow plot. C-factors for different management practices are developed based on their observed deviation from the standard, which is clean till with continuous-fallow conditions.

P - Preservation practices implemented into the management system. It is the soil loss with contouring and /or strip cropping, or terracing to that with straight row cropping / planting up-and-down slope (*i.e.*, parallel to the slope).

This method is most suitable for moderate slope and slope length but for large area. It may be used in both barren and covered land. So this formula is used for determination of soil erosion for natural ground which has low slope and having low cover.

So, soil erosion from infrastructures sites, which has low slope and low cover have been done by using the USLE formula.

a) Following table gives the assessment of soil erosion from the infrastructures sites and township of the **Proposed** Amrapali OCP.

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Table-3.5.3(B)

Sl no	Land consider for erosion	Runoff factor R	Soil erodibility factor K	slope factor LS	Cover factor C	Ave. soil erosion t/a/y	Method
1	All Infra structures	515.17	0.265	0.75	0.025	2.54 t/a/y	USLE
2	Colony	515.17	0.178	0.402	0.046	1.49 t/a/y	USLE

3.5.4 SMCP (Soil Management & Conservation Practice)

This SMCP calculator determines erosion or detached sediment by considering following factors.

i) The first factor is the size or area of the site of interest.

ii) The second factor involves the idea of raindrop impact energy. When a raindrop falls from the sky and hits the ground, the surface soil adsorbs the energy. Erosion occurs when the energy is powerful enough to detach soil. The amount of energy the rainfall of a particular storm depends upon the frequency of the storm and the location. Certain areas of the country frequently have higher energy storms than other areas.

iii) A third factor is the soil texture. Just as soil texture influence water infiltration, it also impacts how easily soil can be detached.

iv) A fourth factor is the influence of the arrangement of the land surface or the topography of the site of interest. The steepness and the length of distance down the slope both will affect erosion.

v).The final factor is land cover. Erosion level depends on how much of the bare soil is vulnerable to raindrop impact. The erosion calculator will show how each of these factors affect the erosion.

This method is most suitable for steep slope but small length. So this formula is used for determination of soil erosion from external dump and embankment which has steep slope and small length.

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a) Following table gives the assessment of soil erosion from external dump and embankment which has steep slope but small length of the **proposed mines**.

Table -3.5.4(B)

Sl no	Type of dump	Width of slope in ft	Slope length of Dump in ft				Slope of each tier in degree			Ave. soil erosion of each tier t/a/y			Total soil erosion t/a/y
			Total	1st tier	2nd tier	3rd tier	1st tier	2nd tier	3rd tier	1st tier	2nd tier	3rd tier	
1	Proposed Internal cum ext. Dump 'A'	16500	280	80	120	80	50	45	48	5.7	10.2	5.9	8.92
2	Proposed Internal cum ext. Dump 'B'	9000	280	80	120	80	50	45	48	5.7	10.2	5.9	8.92
3	Active dump	500	250	50	120	80	50	45	48	6.0	10.4	5.7	9.22

Input Data

Scenario:	Baseline
State:	Jharkhand
Climate Station:	Hazaribagh
Management:	Stepper Poor Soil condition
Soil:	ADATON(SIL)
Slope Shape	S-shaped(40%)
Slope Length (ft):	100
Slope Width (ft):	7000
Average Annual Precipitation (in/yr)	**53.3**
Average Annual Runoff (in/yr)	**5.4**
Average Annual Soil Loss (ton/A/yr)	**10.2**
Average Annual Sediment Yield (ton/A/yr)	**9.8**

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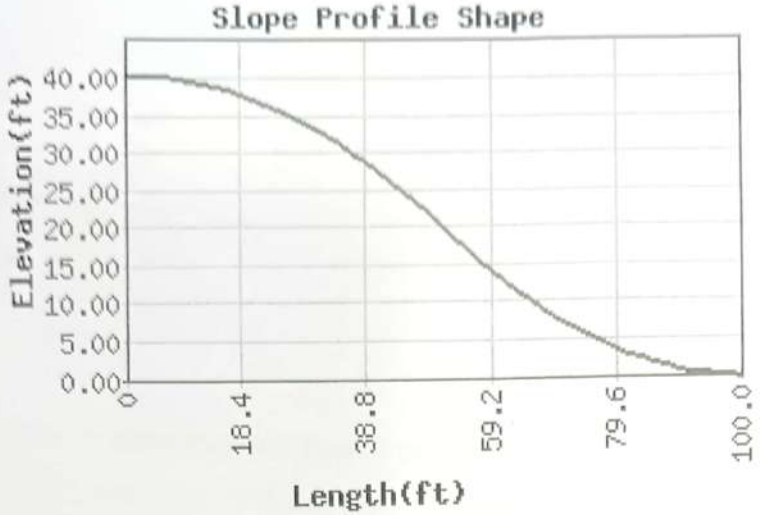

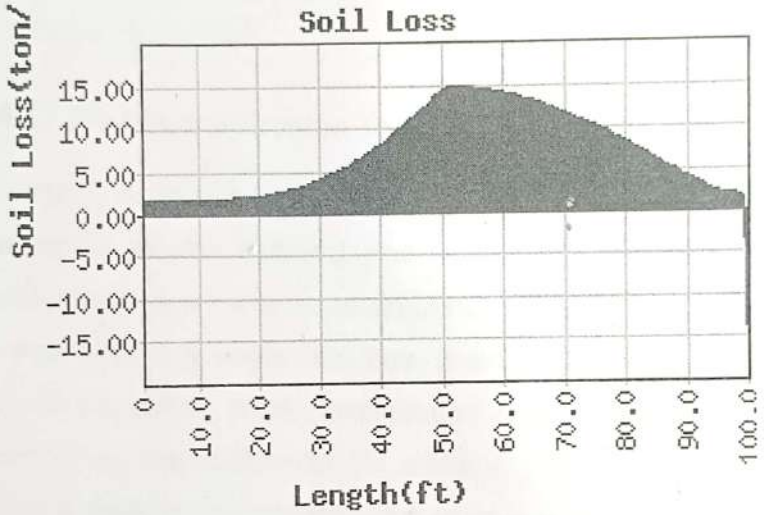

Main WEPP Text Output Summary

A. AREA OF NET SOIL LOSS

** Soil Loss (Avg. of Net Detachment Areas) = 10.2 t/a **
** Maximum Soil Loss = 15.1 t/a at 51.0 ft. **

Area of Net Loss ft.	Soil Loss MEAN t/a	Soil Loss STDEV t/a	MAX Loss t/a	MAX Loss Point ft.	MIN Loss t/a	MIN Loss Point ft.
0.0- 99.0	10.2	4.8	15.1	51.0	1.6	99.0

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B. AREA OF SOIL DEPOSITION

** Soil Deposition (Avg. of Net Deposition Areas) = -19.1 t/a **
** Maximum Soil Deposition = -19.1 t/a at 100.0 ft. **

Area of Net Dep ft.	Soil Dep MEAN t/a	Soil Dep STDEV t/a	MAX Dep t/a	MAX Dep Point ft.	MIN Dep t/a	MIN Dep Point ft.
99.0- 100.0	-19.1	0.0	-19.1	100.0	-19.1	100.0

Results Interpretation: Based on the previously inputted of parameters and a 20 year simulation, soil loss was determined. The results in the above table and the following figures represent the output of the WEPP calculation. The top figure presents the slope profile, while the bottom figure indicates were on the slope soil is eroded or deposited.

3.5.5 WET (Watershed Erosion Tool)

The erosion calculations are based on the WEPP model, developed by a group of scientists at the National Soil Erosion Research Laboratory. The WEPP erosion model is a continuous simulation computer program which predicts soil loss and sediment deposition from overland flow on hill slopes, soil loss and sediment deposition from concentrated flow in small channels, and sediment deposition in impoundments. In addition to the erosion components, it also includes a climate component which uses a stochastic generator to provide daily weather information, a hydrology component which is based on a modified Green-Ampt infiltration equation and solutions of the kinematic wave equations, a daily water balance component, a plant growth and residue decomposition component, and an irrigation component. The WEPP model computes spatial land temporal distributions of soil loss and deposition, and provides explicit estimates of when and where an watershed or on a hill slope that erosion is occurring so that conservation measures can be selected to most effectively control soil loss and sediment yield.

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In this model, following parameters are required as input data in the WET computer programming calculator for soil erosion.

1) Field length
2) Field width
3) Slope size
4) Steepness of slope
5) Type of soil
6) Region as per rainfall
7) Management system

This method is most suitable for both steep & flat slope of short or long length but should have some type of land cover it may be wooded, residential and agricultural. So this formula is used for determination of soil erosion from the green land, green belt / safety zones.

a) Following table gives the assessment of soil erosion from green land & safety zone which has large area with some covers of the **proposed OCP mines.**

Table.3.5.5(B)

Sl. no	Item	Area in Acre	Region	Soil Texture	Land Cover	Steepness of soil	Length along slope	Ave. soil erosion t/a/y	Method
1	Green land & safety zone	733	Rocky Mts	Silty	Light Wooded	Moderate	Long	0.59	WET

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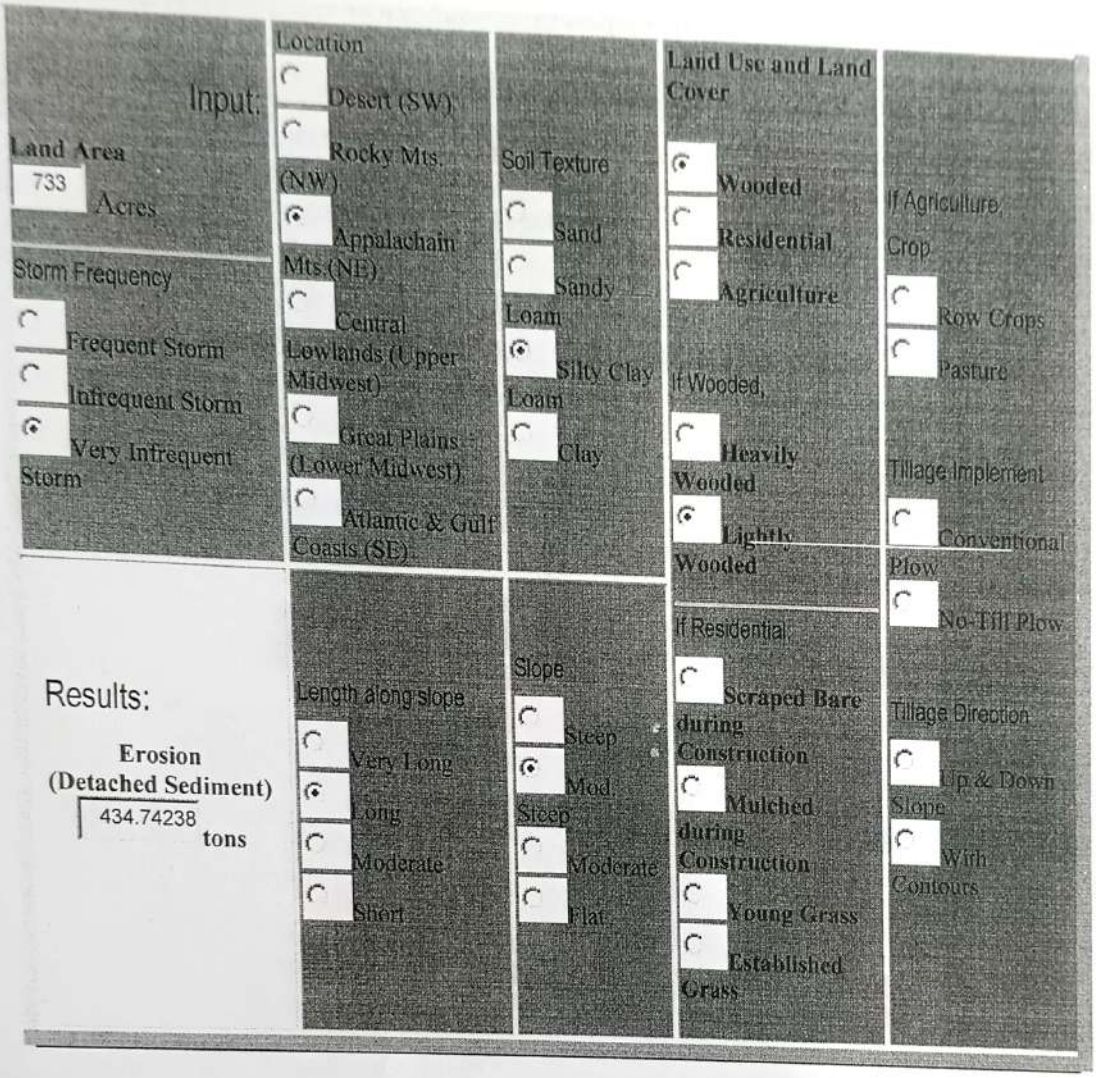
Input Data and Result Of WET calculator



3.6 Final assessment for soil erosion

a) Following table shows the predicted amount of soil erosion of different land use before and after prevention measures of the **existing AmrapaliOCP**.

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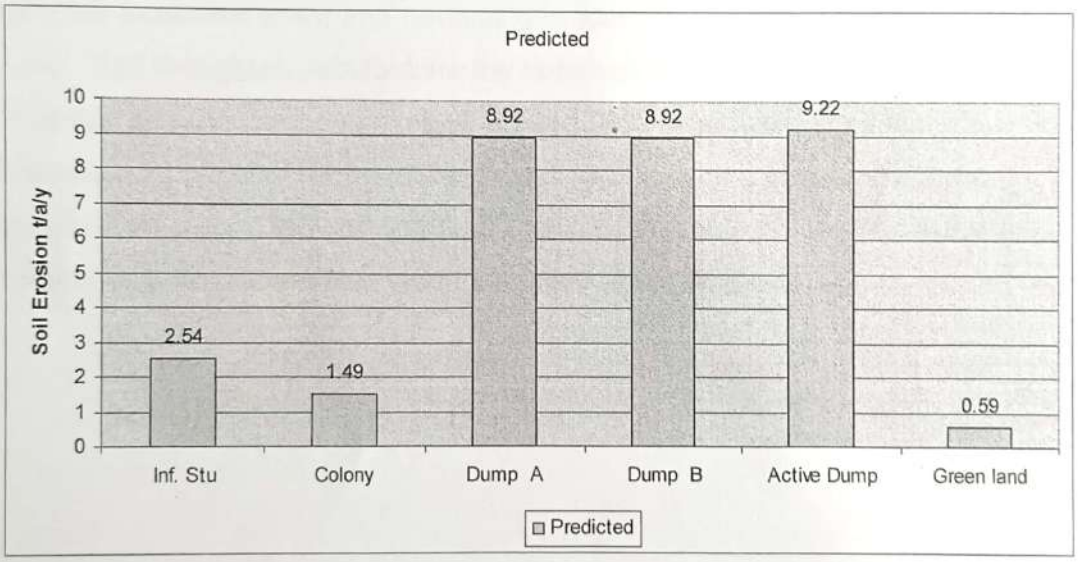
Table- 3.6(A)

Sl no	Area Under use	Characteristic of land	Ave. soil erosion t/a/y without PP	Method
1	All Infra structures	Low slope & low cover	2.54	USLE
2	Colony		1.49	
3	Proposed Internal cum ext. Dump 'A'	Very steep slope & small length	8.92	SMCP
4	Proposed Internal cum ext. Dump 'B'		8.92	SMCP
5	Active dump		9.22	SMCP
6	Green land & safety zone	Large area and with some cover	0.59	WET

Following chart shows side by side predicted and prevented soil erosion in t/a/y



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Result Interpretation

Prediction for soil erosion form the Amrapali OCP is done by using the USLE equation SMCP and WET model. All model were used on most suitable land use conditions such as;-

USLE equation was used for soil erosion calculation for the land patches of infrastructures sites.

SMCP model was used for soil erosion calculation for the dumps and embankments

WET model was used for soil erosion calculation for the Greenbelt and safety zone.

Result come out for different land use area of existing condition is between 0.59 to 9.22 t/a/y which is between the normal ranges of soil erosion of respective type of soil.

It is observed that only 10 to 25% of total eroded soil gets lost (carried away out side the leasehold area) and remaining eroded soil deposited where the slope is easy. Soil loss graph substantiate the observation.

This soil erosion can be minimized around 90% by providing optimum cover and suitable arrangement such that baffle wall, guiding channel, gully plug, etc.

In our case about 95% of soil loss can be prevented by providing the proper treatment such that sedimentation pond/tank, gully plug weir, etc.

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CHAPTER – IV

Control measures

4.0 General

Surface runoff causes the water pollution as well as the soil erosion problem. The principal environmental issues associated with runoff are the impacts to surface water, groundwater and soil erosion through transport of water pollutants to these systems. Ultimately these consequences translate into human health risk, ecosystem disturbance and aesthetic impact to water resources. Some of the contaminants, in our context, that create the greatest impact to surface waters arising from runoff are petroleum substances, coal particles, inorganic substances, soil, etc. These surface runoff translated into overland flow and surface water flow and deposited the soil and others pollutant there. These depositions badly affect land quality and carrying capacity of the river/nala.

4.1 General Concept of Control measures for:-

1) **Water Pollution**
2) **Soil Erosion**
   - **(A) Soil erosion due to surface runoff**
   - **(B) Soil erosion due to blowing wind**

4.1.1 General Concept of Control measures for Water Pollution - Opencast mining has various type of water pollution source which degrade the quality of water of nearby river/nala and under ground water reserve.

a) Basic approach to control the surface runoff water is to differentiate the mine into "clean" area and "dirty" area zone for the purpose of surface run-of. "Dirty" area run-off is water coming from stockpile, reclamation area, open cut mining areas etc. and therefore normally it requires treatment prior to discharge. "Clean" areas run-off is water, which passes through the undisturbed areas & green belt areas and it is prevented from entry to "dirty" areas by the means of diversions channel, guide berm, etc and allowed to discharge the water into nearest natural drain directly because it does not need treatment. Regular monitoring is done to check the pollution level.

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b) All the industrial unit would be designed on the basis of zero discharge system. The liquid effluent generated at different industrial sites such as washing stations, workshop, CHP, stock yard, etc would have the high concentration of suspended solid, oil & grease. These effluents will be treated inside the individual unit treatment plants. Treated water will be used at suitable places. No effluent is let to go outside.

c) Municipal effluents are not allowed to discharge on either land or inland water sources without having the proper treatment or else it can pollute land & streams. Every housing unit or in group will be provided septic tank and the outflow is led to soak pit. Other municipal effluent will be routed through sedimentation tank.

The quality of effluents should conform to standards laid down in IS 4764 (Tolerance limit for sewage effluents discharged into inland surface water & IS 2490 – tolerance limit for industrial effluents discharged into inland surface water). All effluent shall be tested on quarterly basis.

4.1.2 Broad Concept of Control measures for Soil Erosion

Soil erosion occurs when wind or water washes away the topsoil from an area of land. Soil erosion is natural phenomena, but it quickly becomes problematic when people begin construction works and cutting down the vegetation cover. So it is very important to prevent soil erosion. Erosion of soil is basically depending upon the speed of surface flow / wind speed and vegetation and others type of covers.

Appropriate soil erosion control measures of different sources are recommended below to limit the soil erosion to a minimum extent.

(A) Soil erosion due to surface runoff

List of sources that are responsible for soil erosion, their characteristic and volume have been discussed in previous chapter. Overland flow that is released is likely to flow downhill more quickly and in greater quantities (i.e. possess more flow power as a result of its kinetic energy), and so this flow of water become able to begin transporting and even detaching soil particles. Where it does so,

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the soil surface is lowered slightly. Lowered areas form preferential flow paths for subsequent flow, and these flow paths are in turn is eroded further and transported up to a location where the speed of flow down to carrying capacity. These depositions creates the obstacle in the way of spontaneous water flow causing large area submergence, cutting the sides of channel besides the degradation of water quality in the surrounding nala.

In view of the above, basic approach in deciding the appropriate soil erosion control measures, are as follows –

The amount of soil erosion that occurs in an area depends upon two factors: the speed at which water and wind travel across it, and the presence of vegetation cover there. Since we have no control over the speed of the wind, how heavily it rains, or the currents in the nala / river, so we need to concentrate on the factor we can control are-

(i) Surface cover (vegetation & pavement cover) and
(ii) Breaking the speed of overland flow.

Plant life protects topsoil in many ways. It prevents heavy rains from beating down on land and knocking the topsoil loose. It prevents the soil from drying out as quickly, thereby protecting it from being blown away by strong winds. The roots of the plants hold the soil in place, so it is not washed away as easily. Soil erosion is inversely proporsnate to soil cover and the speed of the runoff. A 60 % of land cover would result in 85% reduction in soil erosion and further breaking the speed of surface runoff up to the scouring speed by means of baffle wall and any other arrangement would result in further reduction of soil erosion by 45%. So in this combination 94% reduction in soil erosion can be achieved.

Control measures for surface runoff generated at different zone are discussed below.-

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i) Soil Erosion from Construction site

Presently no major civil or any other type of construction works is going on in the project. In future, if any construction work starts, the following preventive measures would be taken up to reduce the opportunity of soil erosion/water contamination arises at construction site.

- Site to be taken for construction at different time horizon should be clearly marked.
- Vegetation removal and breaking of earth would be controlled and confined to site which is immediately required for construction.
- Catch Drain will be provided around the township/construction sites during construction period to intercept water flowing out.
- Surface Run off from construction site would be channelised to sedimentation lagoon. The clear overflow water from lagoon will flow into near by natural streams
- Site for storage of rubbish, excavated earth etc. would be identified and drainage arrangements will be provided around these and connected to sedimentation lagoon to avoid pollution of natural streams.
- As soon as construction is over, all sites would be vegetated & planted with trees.

ii) Soil erosion from OB Dumps –

Newly formed and barren OB dumps are the main culprit for the soil erosion particularly active and new OB dumps. Soil of the OB dump is easily eroded by both wind and water because it is in un-vegetated and in loose conditions. Following preventive measures can reduce the chances of soil erosion/water contamination arises at overburden sites.

- First of all a Gabion wall of 1.25 m to 1.75 m height, depending upon the prevailing condition, of stone boulders all around the OB dump would be constructed. This measure will check the soil of OB dump from the spreading out beyond the Gabion wall.

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- Garland Drains will be provided along the gabion wall of size 1.5m (width) x 1.0m (depth) to check the surface run-off coming out from the OB dump. This drain is to convey the intercepted run-off water into sedimentation lagoon. This measure will prevent the surface run-off to carry out the eroded soil beyond the sedimentation tank.
- A sedimentation tank of sufficient size (5% of total runoff or 10th highest rainfall in 24 hr which ever is more) will be constructed so as having the at least one hour detention period most of the time. This act will arrest at least 90% of suspended soil particles that flow out with surface run-off.
- Over flow effluent from the sedimentation tank would be allowed to discharge in the nearby natural stream. A series of gully plug will be provided if speed of discharge water is above the scouring speed of soil. This will protect the stream bed and side from being scoured. Thus, there could be more than 95% reduction in soil erosion.
- Quick growing grass and vegetation cover would be done on the part of inactive dump all along the inclined and top portion of the dump. This will protect the soil particle from being detached due to action of rain fall and hard wind blowing. Thus, there would be reduction in soil erosion.
- Quick growing grass and vegetation would be planted on the route of water ways. This will act as a speed breaker for flowing water and provide the extra.

Photo showing the toe wall

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inter-granular bounding strength between the soil particles and thus will prevent soil erosion

- Trees will be planted in three rows all around the OB dump. First row trees will be of short height, second row trees will be of medium height while third row trees will be of long height. These measures will break the velocity of wind and will prevent the soil erosion and spreading of dust.
- Garland drain and all flow channels should be cleaned regularly specially before the onset of the monsoon.

iii) Run off from Coal Dumps –

The project has been so planned that coal dumps would not be created. If unavoidable, baffle walls and garland drains would be provided around the coal dump to intercept the surface runoff coming out from it and also to collect runoff from the surrounding area. This drain will convey the intercepted water into sedimentation lagoon. Over flow from the sedimentation lagoon will be discharged into the natural drainage system.

A series of gully plug will be provided if speed of discharge water is above the scouring speed (>1.5km/hr in this condition) of soil.

iv) Run off from built up areas

Open drains would be provided along the roads, workshop, township and other service buildings. These drains will collect the water from built up area which is not much polluted except the normal suspended particles, garbage, silt and sand. This water would be diverted into sedimentation tank and then to natural drains to convey into Barki River.

A series of gully plug will be provided if speed of discharge water is above the scouring speed of soil.

v) Mitigation Measures for remaining area

Area would be divided in two zone, clean area zone and dirty area zone. Clean area zone comprises the un-broken zone where is not any type of activities are

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earmarked and having green land. In dirty area zone, all infrastructures and activities are located. Both the area would be separated by garland drain or water guide channel so that water flowing out from each zone could not be mixed-up.

If speed of overland flow, crosses through these zone is more than scouring speed (0.5m to1.5m per second) than series of small baffle wall would be constructed. Height of baffle wall should be 5.0 to 10.0 cm, more than the depth of the overland flow and width should be equal or more than the width of surface run-off. So, the surface run-off passes through over these baffle walls will reduce the speed of flow and will be resulted in the settling down of suspended particles. Water coming out from the clean zone area will be allowed to pass through the nearby natural streams directly after breaking down the speed less than the scouring speed of soil with the help of use of series of gully plug.

Dirty area zone is further divided into aggressive and non-aggressive area. Aggressive zone contains completely broken area such as quarry area, coal stockyard area, CHP area and other industrial area. Non-aggressive zone comprises of all administrative buildings, industrial buildings, road, etc.

Photo shows the bund/waffle wall arrangement

Water flowing out from the non-aggressive zone will be guided to sedimentation tank. Effluent from here will be allowed to meet the natural local streams after

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breaking down the speed of the scouring speed of soil with the help of series of gully plugs.

Surface run-off coming out form the aggressive zone would be treated individually as mentioned in the above para as "Mitigation Measures". Over flow effluent from these sedimentation tanks would be sent into the large sedimentation pond. Effluent from here will be allowed to meet the natural local streams after reducing the speed below scouring speed with the help of series of gully plugs.

Final effluent will be checked regularly as per monitoring programme. If any deficiency is found then suitable rectification will be done.

All the vacant land would be vegetated with quick growing grass, bushes and small and medium size trees. Medium size trees would be planted all around the all administrative buildings, infrastructures buildings, coal storage site. Avenue plantation and strip plantation will be done all along the roads and in the colony area. Finally all the drainage system will be cleaned regularly and more frequently in monsoon season. All sedimentation tanks must be cleaned before the onset of rainy season.

(B) Control Measures for Soil Erosion by wind

Damage from wind erosion is of numerous types. The dust storms resulting there are very disagreeable and the land is robbed of its long term productivity. Crop damage, particularly in the seedling stage, by blowing soil is often a major concern. Subsequent yield and quality losses are incurred and, in the extreme, tender seedlings may be completely killed. Often sufficient soil is removed to expose the plant roots or un-germinated seeds, and these results in complete crop failure. Sands begin to drift and form unstable dunes which encroach on better surrounding lands

Wind erosion depends upon the type of storm, speed, duration and type of vegetation covers. It is studied that wind speed less than 20km/h has not much impact on soil erosion.

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In above attributes, we can only control the speed of wind and vegetation cover. Wind speed can be reduced by erecting the some obstacles in the path of wind. Planting of trees would be most suitable obstacle for breaking the wind speed and it also enhance the vegetation cover upon the soil. These plantations also reduce the evapotranspiration by 20% and help to maintain the soil moisture contents. Bonding affect between the soil particles increased due to increase in moisture contents and it resist the erosion force.

So the best arrangement would be the two rows of tall trees surrounded by two rows of low trees, making up a 10-metre strip. Space between the trees should be covered by grass, crops bushes or hedges. It is particularly important to repair the breaches in a hedge to keep the wind from pouring through at these points (the Venturi effect) and considerably reducing effectiveness.

Soil erosion by wind becomes significant when speed of wind increases to 20km/h means 6m/sec. In our region, wind speed hardily (3 or 4 times per year) increases to above limit. So there is no major problem of soil erosion caused by wind blow.

4.1.2 Mitigation Measures for River/Nala

First of all only treated water would be allowed to enter the river/nala. Initially one weir of height 1.5m would be constructed on the Barki River after the leasehold area near the south-East corner of the project. This weir would serve our dual purpose; firstly it will stop further transportation of soil, secondly it will serve as the rain water harvesting lagoon. Most important, it will facilitate the

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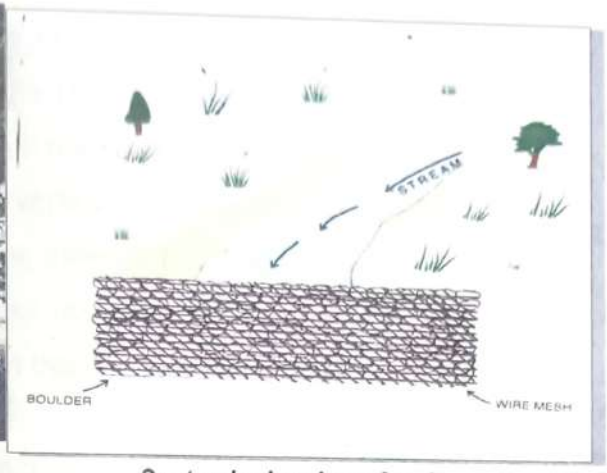
Photo showing the permanent weir



Systemic drawing of weir

local habitants to utilize the water for domestic or agricultural purpose. The detail design and specification of the weir would be provided separately after the clearance of this report, if CCL desire so.

4.1.3 Project Specifics

i) OB Dump;- A combined external and Internal OB dump has been proposed, top of the OB dump is 510m. A Gabion wall of 1.5 m height will be constructed all along the external part of the OB dump A B & C as shown in the drawing. For Dump A, It start from the northern side of the OB dump, goes all along the eastern and southern side of the OB dump. For Dump B, It start from the northern side of the OB dump, goes along the western side till the dump touches the surface. It dump would prevent the dump materials form spreading outside the Gabion wall. A garland drain of size 1.5mx1.0m will be constructed side by side to the gabion wall. It would intercept all the surface water coming out from dump.

Retrieve (inclined) drain will be provided at inclined face of the dump at every 100m as shown in the drawing. Top surface of OB dump will have transverse and longitudinal slope of 1:50 spreading outward so as rain water can be evacuated easily. Berm of 15 to 20 cm will be provided all round the top of OB dump. This will prevent the water form spillage on inclined face of dump. All benches will have drain and inward slope of 1:50 as shown in plan

Total seven sedimentation tanks/ponds of 8.0m x 6.0m x 1.6m (5% of total average runoff or 10th highest average rainfall of 24 hr. or 50% of the average highest rainfall in a day which ever is more in of last 20 year) size will be constructed for external OB dump between the Bokaro river and OB dump as shown in the plan. This lagoon would store all the water coming from garland drain for atleat an hour in normal condition. Overflow from this lagoon would be allowed to meet the local stream after providing three or four gully-plug.

No sedimentation lagoon is required for internal dump because water comes in garland drain would be allowed to discharge in the quarry void directly.

iii) **Industrial Area:-** Garland drain of size 1.0mx0.75m will be constructed all round of the industrial area i.s Workshop, CHP, Coal stock, etc as shown in drawing. This drain will intercept all the runoff coming out from the area and lead to sedimentation tank/ lagoon as shown in the drawing of size (6.0m x 3.0m x1.5m). Overflow from this lagoon would be allowed to meet the local stream after providing three or four gully-plugs.

iv). **Remaining Area:-** Total lease area of the project is 1426 Ha. More than half area is quarry area. External OB dump concede 89 Ha. land and envisaged at north-east and north-west corner of the project. Colony exists at other location. CHP, workshop and coal stock area is proposed at northern side of the project. Area left for green belt and safety zone is about 297 ha. and would be more or less unbroken. This area would need special attention because it is a large area and have large undulation. Majority of this land lies at northern side of the project between the lease hold area and quarry boundary. This area falls in the cleaned area zone and will be separated from dirty zone area by providing garland drain/berm/guiding channel as shown in the plan.

Barki river passes along the western side of the project while Chundru nala passes along the western and southern boundary of the project.

Surface runoff generated from the clean zone would be allowed to pass in this river through local stream after providing three or four Gully plug in the stream.

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Surface run-off from dirty zone will be guided to sedimentation lagoons. Two sedimentation tanks/ponds of 8.0m x 6.0m x 1.6m (5% of total runoff or 10th highest rainfall in 24 hr which ever is more) size will be constructed, first at north-east corner and second between the haul road and guiding channel as shown in the plan. Over flow from this tank would be allowed to meet the nearby natural streams. Two or three Gully plugs would be provided in the stream.

v) **Nala:-** One weir/ check dam of 2.0 m height would be constructed in the down stream (100m to 200m) side of the existing Barki River. After the judging the performance of this weir and requirement, another weir may be constructed. These weir/ check dam will serve many purposes: firstly, it will prevent the flowing out the soil erosion further down side, secondly it will serve as rainwater harvesting lagoon and finally and most importantly it will serve as the storage of water for the villagers during the lean season for domestic and agricultural purposes. A typical cross-section has been given but actual size can be determined only after the detailed survey.

4.1.4 Final Soil Erosion after Prevention measures

Quantity of soil erosion from the lease hold area has been predicted in previous chapter by the suitable methods.

Appropriate preventive measures as mentioned above are applied and final soil erosion quantity has been predicted and tabulated below.

Table- 4.1.4

Sl no	Area Under use	Characteristic of land	Ave. soil erosion t/a/y without PP	Prevention measures	Prevention factor	Ave. soil erosion t/a/y with PP	Method
1	All Infra structures	Low slope & low cover	2.54	60%cover with grass trees & others	0.16	0.41	USLE
2	Colony		1.49			0.24	

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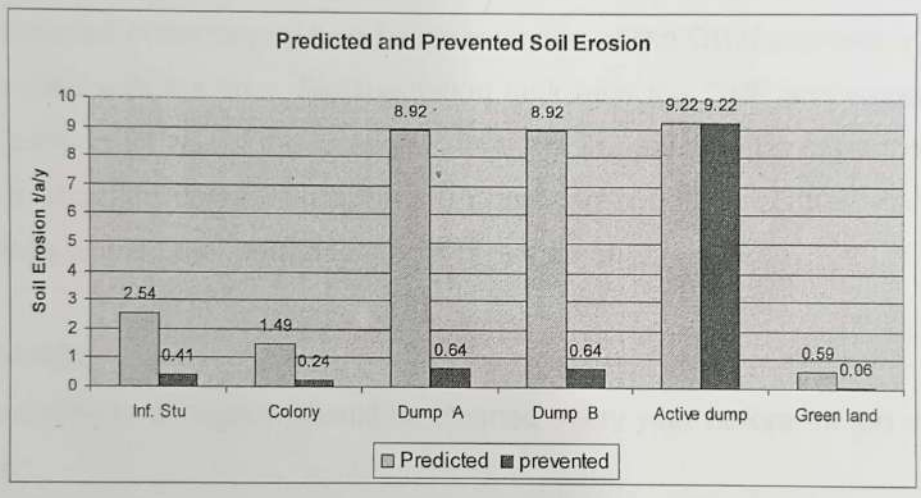
3	Proposed Internal cum ext. Dump 'A'	Very steep slope & small length	8.92	60%cover with grass trees & terrace at top	0.16*0.45 = 0.072	0.64	SMCP
4	Proposed Internal cum ext. Dump 'B'		8.92			0.64	SMCP
5	Active dump		9.22	Non	1.0	9.22	SMCP
6	Green land & safety zone	Large area and with some cover	0.59	Const. of baffle wall & more vegetation	0.25*0.4 = 0.10	0.06	WET

Following chart shows side by side predicted and prevented soil erosion in t/a/y



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CHAPTER – V

Cost Estimate & Conclusion

5.1 Construction

It is propose to construct gabion wall using the stone boulder and iron wire as toe wall along the OB dump. It would be cheaper and effective to serve the purpose because of its flexibility and easily repairable. Permanent Garland drain will be constructed with brick masonry all along OB dumps and coal stock yard. Temporary garland drain would be constructed along the quarry as shape of the mine is going on changing. All the storm drain along the road or colony will be of permanent type. Sedimentation lagoon near the OB dumps and in the dirty zone will be constructed of temporary type because shape of the OB dump and quarry will be changing with the time. Sedimentation tank near the CHP and workshop may be of permanent type if the location is final. Baffle wall may be of earthen or masonry construction depending upon the prevailing condition at that time. All the gully plugs would be of permanent type construction.

5.1.1 MAINTENANCE

- Sedimentation tank /lagoon should be cleaned every year before the on set of monsoon.
- All garland dam, storm drain, baffle wall should be cleaned and repaired if necessary.
- Due to continuous changing of shape of quarry, additional garland drain, storm drain, baffle wall should be constructed when and where ever required.
- Fishery work should be started in the sedimentation tank / recharged pits to keep the water clean and it will also make a source for income.
- Water analysis of recharging pit and nearby well should be done periodically, so as quality of water can be assessed.

- Vegetation should be done regularly at open spaces, on the way of surface run off, nearby area and other suitable places

5.2 Cost-

Total cost required is 586.3lakh for this scheme. This amount may changes at the time of construction time due to prevailing condition and situations.

Table- 5.2

Rs. in Lakhs

Sl.no	Particular	Quantity	Cost	Remarks
1	Cost of garland drain along dumps and quarry.	7500 m	60	It will be constructed departmentally using the HEMM
2	Cost of storm drain along roads and buildings.	1000 m	5.0	
3	Weir/Check dam of length 50m & 75m	2 no	150.0	
4	Gabion/toe/retaining wall	7000 m	140.0	
5	Sedimentation tank/lagoon(Temp.)	7 no	3.5	It will be constricted departmentally using the HEMM
6	Guiding channel / baffle wall(Temp.)	2500 m	7.5	
7	Cost of gully plug	60 nos.	0.30	
8	Cost of plantation over OB dump, embankment and development of green belt	150	150.0	
9	Cost of grassing over embankment, OB dump	100 ha.	60.0	
10	Cost of arboriculture/ vegetation	Road side	10	
	TOTAL		**586.3**	

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5.1 Conclusion-

a) Soil erodibility is an estimate of the ability of soil to resist erosion, based on the physical characteristics of each soil.

b) Soil erodibility is directly proportional to intensity of rainfall, speed and quantum of surface flow and inversely proportional to residue cover.

c) Result comes out for different land use area of existing condition (without prevention measures) is between 0.59 to 9.22 t/a/y. After applying the prevention measures, it comes between 0.06 to 0.64 except the active OB dump. This is between the normal ranges of soil erosion in this type of soil.

d) It is observed that only 10% to 25% of total eroded soil gets lost (carried away out side the leasehold area). Soil loss graph substantiate the observation.

e) This soil erosion can be minimized around 90% by providing optimum cover and suitable practice.

f) In our case about 95% of soil loss can be prevented by providing the proper treatment such that sedimentation pond/tank, gully plug weir, etc.

g) Prevention of soil erosion scheme is prepared on the assumption that breaking the speed of surface run-off and higher the vegetation cover will prevent the erosion.

h) The amount of water received during the monsoon season (15, June to 15, September) is important since this is the period of maximum rainfall. Conversely, rainfall received during the other seasons is less significant as it does not generate large surface runoff, consequently cause negligible soil erosion.

i) Lease hold area is differentiated into 'Clean & Dirty" zone

j) Generally, soil with faster infiltration rates, higher levels of organic matter and improved soil structure have a greater resistance to erosion.

k) Sand, sandy loam and loam textured soils tend to be less erodible than silt, very fine sand, and certain clay textured soils.

l) Tillage and cropping practices which lower soil organic matter levels, cause poor soil structure, and result to increases in soil erodibility

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m) Past erosion has an effect on a soils' erodibility for a number of reasons. Many exposed subsurface soils on eroded sites tend to be more erodible than the original soils because of their poorer structure and lower organic matter.

n) Maximum soil erosion occurs from newly dumped overburden waste and it reduced to 50% in each subsequent year.

5.2 LIMITATIONS

The above formula and model used for prediction of soil erosion by overland flow resulting from rainfall. These formula and model are based on the research done in foreign countries and it is still in nascent stage. The model may not be valid under extreme values of the parameters considered in the equation. So result may be diverge in our prevailing conditions

All the data and information used in the model is either supplied by project administration or the planning department of CMPDI. Shape & size of the mine has been changing continuously so the result may change accordingly.

There may be several other factors, in addition to those that are not considered above, that could play a significant role in soil erosion.

Some factors, such as land configuration and management practices are depends on the project authorities hence it may cause a deviation in estimated soil erosion values under certain conditions.

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Amrapali-Chandragupt Area

Annexure-14

ICICI Bank

Date – November 21, 2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Central Coalfields Ltd has made the below mentioned payment from their Current Account maintained with Our Bank-

Sl No.	Beneficiary Name	Amount	Beneficiary A/c no	Bene IFSC	UTR	Date of Transaction
1	JHARKHAND CAMPA	25,68,00,000.00	150725817211931	UBIN0996335	ICICR22024112106344101	21-11-2024

It is clarified that this information is furnished in strict confidence and without any risk and responsibility on our part or on the part of any Bank's officials in any respect more particularly either as guarantor or otherwise.

This certificate is issued at the specific request of the said customer.

Regards,

Authorized Signatory
ICICI Bank Ltd
Ratu Road Ranchi – 834001

Project Officer
Amrapali Project
Amrapali Dhanbad Gupt Area

ICICI Bank Limited
Modi Heights, Shop # 05 & 06
Opp. All India Radio Station,
Ranchi- 834001,
Jharkhand, India

Website www.icicibank.com
CIN.: L65190GJ1994PLC021012

Regd. Office : ICICI Bank Tower,
Near Chakli Circle,
Old Padra Road,
Vadodara 390 007, India.

Office of Divisional Forest Officer,
Chatra South Forest Division, Chatra

E-mail : dfo-chatrasouth@gov.in Phone : 8987790213

Letter No. 2042 Date : 15/10/2024

To,

The General Manager,
Amraplai-Chandragupt Area, Tandwa, Chatra.

Subject :- Charging of an lump sum amount of the project cost towards the cost of implementation of the Soil and Moisture Conservation plan against 431.59 Ha of Forest Land in respect of Stage-I obtained vide File no. 8-48/2008-FC-(Vol) of Amrapali OCP.

Ref. :- Your letter No. 500 dated 14.10.2024.

Sir,

Through above-mentioned letter, a request has been made that, as par MoEF&CC, GoI guideline dated 7th June 2022, in cases where it is not possible for the State to submit the compliance due to delay in preparation of such plan, a lump sum quantum of project cost may be realized from the User Agency and submitted along with the Stage I compliance. Accordingy, it has been requested to raise a demand of indicative amount equal to 0.5% of the project cost for implementation of Soil & Moisture Conservation Plan as mandated under In-principle approval of the project.

Through above-mentioned letter, Minutes of 399th CIL Board meeting held on 11th Feb 2020 has been attached, wherein, at para 4.5 the total capital investment of Expansion Project of Amraplai OCP 25 MTY has been recasted to be 5136.15 Crores.

Therefore, it is requested to deposit the indicative lump sum amount of Rs. 25.68 Crores (0.5% of the project cost) in CAMPA Account for Soil & Moisture Conservation Plan. The amount should be deposited to CAMPA fund only through e-portal (https://parivesh.nic.in) against 431.59 ha of forest land in favor of Chatra South Forest Division alongwith an undertaking for depositing additional amount, if so determined, as per final approval of the Soil and Moisture Conservation Plan.

Sent for necessary action.

Your Faithfully

15/10/24

Divisional Forest Officer,
Chatra South Forest Division, Chatra

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A Maharatna Company
www.coalindia.in

CENTRAL COALFIELDS LIMITED

A Mini Ratna Company
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP, HONHE, 825321
PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Annexure-15

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (13-I)

CCL undertake that "The demarcation of safety zone (7.5-meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration by erecting adequate number of 6 feet high RCC boundary pillars inscribed with DGPS coordinates with barbed wire fencing and deploying adequate number of watchers under the supervision of the State Forest Department".

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Annexure-16

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (13-II)

CCL undertake that "The Boundary of the safety zone of the mining lease, adjacent to habitation/roads, should be properly fenced"**.**

Project Officer
(Amrapali Project)

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Annexure-17

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (13-III)

CCL undertakes "maintain a safety zone as green belt around mining lease and to ensure dense canopy in the area, regeneration will be taken up in this area under the supervision of the State Forest Dept"**.**

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Annexure-18

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (13-IV)

CCL undertakes "safety zone is maintained as per the prescribed norms.

Project Officer
(Amrapali Project)

Annexure-19

DESILTATION PLAN FOR PONDS UNDER AMRAPALI MINES

CCL Amrapali Mines

SUBMITTED TO- DFO CHATRA SOUTH FOREST DIVISION

Desiltation Plan in the catchment area of Amrapali Mines

Waterbodies are an essential part of our ecosystem. These support a diverse range of aquatic life, play a crucial role in maintaining the water cycle, and provide an invaluable source of freshwater for communities in the command of the structure. Due to growing mining activities, population, urbanisation and industrialisation, these traditional water bodies have been subjected to various deteriorating factors and often have reduced to a dumping ground for waste materials.

The impact of decaying waterbodies is not only limited to the aquatic life that resides within them, but it also affects the surrounding environment and the communities that depend on them. Neglected waterbodies become breeding grounds for disease-carrying insects, reduce the water-holding capacity of the land, and affect the quality of air that we breathe. Moreover, they are also a threat to public safety, especially during monsoons, when water levels rise and often cause flooding in nearby areas.

Therefore, it is essential that mining companies take steps to restore these waterbodies and improve their health. The restoration of waterbodies has a significant impact on the ecology, aquatic life, and the community. It helps in maintaining the water cycle, improves air quality, and provides a habitat for diverse aquatic life.

Not only that but restoring waterbodies can help to mitigate the impact of climate change by reducing the risk of flooding and erosion, increasing the storage capacity of water bodies, and promoting the growth of vegetation. The restoration is a critical step in ensuring the sustainability and resilience of our environment.

The desiltation of water bodies have been initiated as a condition of forest compliance and waterbodies restoration discussed in this report is a significant step towards this goal. The project aims to restore the health of several waterbodies by removing silt, invasive weeds, and garbage, constructing strong bunds, and planting diverse plant species. Through these efforts, the project will not only improve the ecological health of the waterbodies but also create a positive impact on the surrounding communities.

This desiltataion plan is being prepared in compliance with the –

As per FC Stage – I condition no. 15 of Amrapali OCP mines, Amrapali OCP authorities have also to prepare and implement de-siltation plan of ponds and other water bodies falling within 5-kilometer radius of coal block.

The objective of the restoration is to clean, purify, and restore waterbodies, adopting a holistic approach that addresses all elements of an ecosystem such as soil, hydrology, flora, and fauna.

Importance of desiltation plan

- Serves as a sink for carbon storage
- Reduces the risk of floods
- Reduces the levels of phosphorous and nitrogen in waterbodies
- Controls excessive growth of microphytes
- Prevents encroachment
- Prevents pollution and spread of diseases
- Preserves lakes to its original glory

The project has been successful in achieving its objectives, resulting in increased water capacity, improved water quality, and biodiversity, providing nesting sites for several birds that flock in and around the ponds. The project has also had a significant impact on the surrounding communities, replenishing the groundwater table, and positively impacting the lives of thousands of residents.

The restoration project aimed to address several Sustainable Development Goals, including 14, 15, 6, 8 and 3.

By restoring the waterbodies, the compliance will help strengthening of the bunds and constructing live fences by plantations to prevent encroachment and preserve the ecosystem, contributing to SDGs and helping promote sustainable development. Furthermore, the project will promot biodiversity by planting hundreds of different species of trees and plants, contributing to SDG 14 (Life Below Water) and SDG 15 (Life on Land).

The restoration of multiple ponds will also contribute to SDG 6 (Clean Water and Sanitation) by removing silt, garbage, and invasive weeds, and increasing the storage capacity of the waterbodies and also create employment opportunities, contributing to SDG 8 (Decent Work and Economic Growth).

The activity will directly and indirectly contribute to SDG 3 (Good Health and Well-Being) by replenishing the groundwater table, improving the water quality, and providing a healthier ecosystem for local flora and fauna.

Overall, the desiltation activity will successfully address multiple Sustainable Development Goals, contributing to a sustainable future for the local community and environment.

Chapter-1
Introduction and background

Introduction

Adequate availability of water of required quality is pre-requisite for survival and quality of human life. Surface water bodies like lakes, ponds, reservoirs, tanks and rivers were treated as community resource or asset over the centuries. In urban areas also such water bodies played an important role as a source of drinking water, absorption of flood water and a conduit for ground water recharge. They were being nurtured, protected, conserved and managed by the active participation of the local community without any code of conduct or rule. In turn, these water bodies have been catering the local human and livestock populations. The introduction of public water supply and ground water development through tube wells and hand pumps in the modern times, coupled with urbanization and industrialization induced pollution, a tectonic shift in the attitude of the people towards these water bodies has been witnessed. Both locals as well as the government have started neglecting this asset and have stopped caring, nurturing and conserving these community resources. Mushrooming urban, industrial and infrastructure development has further changed the status of these water bodies from community resources to a mere dumping ground or sink for solid wastes, construction debris, domestic sewage, industrial effluents, religious offering etc. resulting in severe degradation in the quality of such resources.

Background:

Central Coalfields Limited (CCL), a subsidiary of Coal India Limited, is a prime producer of coking & non-coking coal in the country. It operates coal mines in the state of Jharkhand. Its operation spread over 2600 km2 in the districts of Ramgarh, Hazaribagh, Bokaro, Giridih, Palamu, Chatra, Latehar and Ranchi. Mining operation spread over six coalfields i.e North Karanpura, South Karanpura, East Bokaro, West Bokaro, Ramgarh and Giridih Coalfields. CCL has been playing a pivotal role in fulfilling the energy needs of the country. This subsidiary of Coal India Limited has planned to produce 84.00 Mt. of coal during 2023-24 and to enhance the production to 135 MTPA by 2025-26 to meet the energy demands of the country.

Amrapali Opencast project is the new coal project of the North Karanpura Coalfields in Tandwa block of Chatra district of Jharkhand state. CCL is proponent of the mine and it is a subsidiary company of Coal India Limited. Coal India Limited is a public sector Undertaking of central government India and functioning under the Ministry of Coal of India. It operates coal mines in the states of Jharkhand. Mining operation is spread over seven coalfields ie East Bokaro, West Bokaro, North Karanpura, South Karanpura, Ramgarh, Giridih & Hutar. Coal production from the mines in the

command area of CCL is about 86.05 million tonnes. There are also 5 washeries working under CCL.

Brief description of the project

Amrapali Opencast Mine is situated in the North Karanpura Coalfield of Jharkhand. Presently, it is a part of Amrapali Chandragupt Area of CCL. The mine was nationalized in 2014, when it was producing about 2.55 MTe. of coal per annum. The Project Report of Amrapali opencast project was prepared in April '2005 for a rated capacity of 12 MTPA of coal at an average stripping ratio of 1.52 m3/te. Extension Project Report for Amrapali OCP (capacity 12.00/25.00 MTPA Normative/Peak capacity) was approved by CCL Board on Oct. 2015.

The mine has been designed to produce coal at the rate of 24.19 MTY on consistent basis throughout life of the mine. The design of the mine is mainly based on lay and deposition of coal seams, intervening partings of the block as estimated in the Geological report and the HEMM productivity norms adopted in CIL mines.

Keeping into account the current state of development in technology and attainment of improved skills of operators and maintenance crew, it will be possible for coal producing company to achieve at about 15% higher, coal production from the targeted by achieving higher availability and utilization of HEMM.

It is therefore, Amrapali OCP may produce coal at the rate of 25.00 MTY in any one or all the year of the life of the mine against nominal mine capacity of 24.19 MTY

Location of the project:

Amrapali Extension OCP falls within Amrapali and Kishanpur geological blocks. It is located in the south-central part of North Karanpura Coalfields and is included in Survey of India toposheet no. F45B1 and F45A13 in Chatra district of Jharkhand. Amrapali Opencast project is bounded between latitudes 23°39' 21" to 23°42'0" and longitudes 84°59'15" to 85°00'24".

The area is connected to Ranchi by State Highway no 7. The distance between Ranchi and the Project is around 90 km. The Khalari railway station on the Gomoh-Dehri-on-Sone loop line of the Eastern Railway is about 40 km from the southern extremity of the KD South block.

The Project Impact Area:

Core zone, also called as leased hold area of mines that is comprises 1298.98 Ha of land. Lease hold/ Core zone area fall in Tandwa Block of Chatra district in Jharkhand state and comprises from the whole or part of following five villages

1) Honhe

2) Binglat

3) Kumrangkala

4) Kumarangkhurd

5) Ursu

Buffer zone comprising the area within a radial distance of 10 km. from periphery of Core zone having 19 villages including 5 villages in core zone and covering a total area about 314Sq Km.

A total of drilling of 8312. 53 meter was done in 158 boreholes in two phases in Amrapali block covering an area of 8.31 Sq KM. The product mixed quality of the proposed OCP will be grade-E & F. The rated capacity for Amrapali OCP has been planned for a 3.0 MTY of ROM. Coal Project report for this project has been prepared by RI-III, CMPDI, Ranchi.

Topography, Natural drainage lines, Presence of water bodies: The topography proposed project is characterized by more or less flat terrain with gentle undulations Maximum elevation of the project area is of 469 metre whereas the minimum elevation is noticed as 420 metre.

The area has good vegetative cover indicating presence of sufficient nutritious soil and the highest point of elevation is about 308 Mts. from MSL.The entire area is part of plateau and the difference in elevation from foot hills to the peak is maximum 30 meters. The river bed of Damodar River represents the minimum elevation which is about 280 Mts above MSL. Few isolated hillocks are also present in the area.

The Damodar River which flows in west direction through the southern boundary of the project area is the main drainage channel of the area. At many places it was observed that the river flows on solid rock which adds to the natural beauty. This river is the perennial source of water in the region. In the drainage system, role of seasonal nalas is of great importance as they arethe channels through which the excess run-off is channelized into the drainage system of the area. In every village such seasonal nalas are found which form the initial framework of drainage system. Some of the nalas met in the villages during survey in the buffer zone which are used by local villagers and wild animals both.

The Amrapali OCP project area is surrounded by forest area where Sal (*Shorea robusta)* is the dominating species with its associates like Asan, Mahua, Kend, Dhaura, Chiraunji, Salai, Bahera, Palash etc. These Sal forests are well stocked having very small degraded patches.

As there are no industries in the area the work force of this village is mainly divided in two categories – Cultivators and Workers. As the area supports fertile agricultural

land, agriculture is the sector which provides employment to both the categories. During lean period, good amount of employment is generated in forestry activities. Rice is the main crop of the area but due to irrigation facilities and good soil fertility the fields are never vacant. This belt is famous for vegetables and every crop right from wheat to pulses to oil seeds are grown. On an average the farmers are able to harvest three crops in one year. About 45% of the entire population are workers.

As coal is available abundantly for cooking purpose the dependency on forests for firewood is very limited which is one of the causes for less degradation of forests. Requirement of small timber and poles is met from the forests. The forests provide various Non-Timber Forest Produce, NTFP, which provide employment as well as additional income to the households. The most important NTFP is mahua flowers and fruits which plays a very important role in the village economy and every household is engaged in its collection during March – April. Next comes the Kendu – leaves or *Bidi Patta,* which are succulent leaves from the bushes of *Diospyros melanoxylon*. From April to mid-June, they provide huge employment opportunity to the marginal workers. In addition to these, Sal seeds, Kusum seeds, Amla, Harre, Bahera, Karanj seeds, Mahulan leaves, Sal leaves and various edible fungus in the rainy season are the main Non-Timber Forest Produce, NTFP, which have their fair share in the village economy.

Traditionally the villagers are in the habit of keeping large herds of cattle, though they are less productive. A household having 15 cows may be getting only 2 litres of milk from that many numbers. Similarly, bullocks are also kept in large numbers. These cattle are simply left to graze in the adjoining forests sometimes without any supervision. Practice of stall feeding is almost absent and sometimes fodder from the forest is brought for goats. For the upkeep of cattle population, the villagers are totally dependent on forests

Chapter-2 – De-siltation scheme & method

Introduction:

Healthy pond ecosystems are critical for achieving several sustainable development goals (SDG) through numerous ecosystem services (e.g., food control, nutrient retention, and carbon sequestration). However, the socio-economic and ecological value of ponds is often underestimated compared to the larger water bodies. Ponds are highly vulnerable to mounting land-use pressures and environmental changes, leading to degradation and loss of the pond ecosystem. The narrow utilitarian use-based conservation fails to recognize the multiple anthropogenic pressures and provides narrow solutions which are inefficient to regenerate the degraded pond ecosystem. The Chandragupta project is strongly dedicated to attaining SDG and circular economy (CE) through aquatic ecosystem conservation and restoration. Considerable efforts have been made by the project to recognize the contribution of pond ecosystem services in attaining environmental goals and targets. Restoration strategies have been reviewed, and a framework for pond restoration and conservation has been proposed. Nature-based solutions (NBS) offer a sustainable and cost-effective approach to restoring the pond's natural processes. Furthermore, linkage between the pond ecosystem and the CE was assessed to encourage a regenerative system for biodiversity conservation.

Need for desiltation:

The pond ecosystem faces challenges due to the physical, chemical and biological pressure, which leads to reduction in impounding capacities and resultant provisioning and eco system services from these storage structures.

- **Physical Pressures**

Temperature: Temperature has a pronounced influence on the biogeochemical cycle of ponds. However, the impact of temperature on the pond ecosystem has rarely been reported. Due to uncontrolled urbanization and impervious surface the urban ponds receive warm water inflow leading to thermal pollution. Warm effluents from the urban heat islands (UHI) largely contribute to the thermal variability in the ponds. Chemical toxicity in freshwater bodies increases with an increase in temperature. Studies suggest that the increased toxicity in freshwater fish species due to an increase in temperature. Warm water favors the eurythermic species excluding the species intolerant to high temperatures affecting the species diversity. Elevated temperature increases the primary productivity in the shallow water bodies causing nuisance algal bloom and reducing the pond hydroperiod. High temperature lowers the dissolved oxygen in surface water through increased respiration rate and reduced solubility of atmospheric oxygen. A temperature change of 7°C reduces the biological processes by 50% in an aquatic environment.

Hydroperiod and Climate Change: Ponds are more susceptible to drying due to changes in hydroperiod than lakes. Hydroperiod indicates the duration of pond inundation in a year is a crucial factor linked directly with pond area. Permanent ponds support far more biotic species than temporary ponds. Ponds with larger surface areas tend to have a longer hydroperiod. Climate extremes such as increased temperature and droughts can lead to abnormal hydroperiod and negatively affects the biodiversity of the ponds. Increased dry spells and increased water vapor demand in the warmer atmosphere adversely affect the hydroperiod of the particularly shallow and small water bodies like ponds. Aquifer exploitation changes the hydrologic regime of the ponds and results in shorter hydroperiod in ponds.

Sedimentation and Soil Erosion: For small ponds, sediment deposition is a serious problem as the rate of siltation is much higher compared to large water bodies and this reduces the useful life of the pond. Apart from geomorphological processes, soil erosion is largely governed by anthropogenic modifications in the catchment such as concrete drainage networks, deforestation, agriculture intensification, road construction, and uncontrolled grazing. High rate of topsoil erosion in project area threatens the ecological dynamics of the receiving water bodies including ponds.

Chemical Pressures:

Nutrient loading and Eutrophication: Nutrient (i.e., nitrogen and phosphorus) availability governs the net primary productivity and influences the biogeochemical processes in the aquatic ecosystem. The primary productivity of ponds is often characterized between mesotrophic and hypereutrophic due to their low dilution capacity and naturally high nutrient concentration. Eutrophicated pond most likely supports species tolerant to anoxic conditions, limiting the species diversity at the local scale, while negatively impacting the regional biodiversity at the pondscape scale.

Emerging Contaminants and Heavy Metals: Road runoff and wastewater, often remains the localized source of emerging contaminants in the aquatic ecosystem. These trace compounds are broadly categorized as Pharmaceuticals and Personal Care Products, agricultural pesticides, heavy metals, surfactants, and polyaromatic hydrocarbons.

Pond Acidification: Freshwater acidification is harmful to various aquatic organisms. Climate warming and changes in water chemistry profoundly affect the pond's pH. The rise in atmospheric carbon dioxide lowers the pH in ponds. Human-induced acidification can be due to atmospheric deposition of carbon dioxide and other inorganic acids or by natural processes and organic acids. The emission of gaseous pollutants such as nitrogen dioxide and Sulphur leads to acid precipitation and subsequent acidification of the ponds. The biodiversity of ponds decreases with an increase in acidification, as the species sensitive to low pH could not survive in the acidifying ponds. Acidity in ponds alters the solubility of metals in water and increases their toxicity as the metals in dissolved state are more toxic in soft water.

Biological Pressure:

Non-Native Invasive Species (Bioinvasion): Bioinvasion is a major ecological disturbance that threatens native biodiversity and ecological processes. Invasive vegetation species with relatively fast growth rates dominate the native species, increase siltation, alter the nutrient cycle, impacts fishery, and lead to serious biodiversity loss. Nutrient-rich shallow ponds are highly vulnerable to aquatic vegetation invasion. Studies suggest the dominance of anchored floating plants (72%) in the pond, affected its water quality, and biodiversity.

Land Use Change and Encroachment: Economic growth associated primarily with an increase in population (200 million to 1,380 million between 1880 and 2020) has led to land use alterations in India (UnitedNations 2019). Flow regime change due to the construction of large dams and weirs reduces the inflow and shrinks the water spread area of ponds, and other wetland ecosystems. Land use change, urbanization paved the way for pond encroachment. Consequently, in India, 15% of the water bodies (mainly ponds and tanks) under minor irrigation scheme-2015 remain unused and non-functional (MoJS, -http://mowr.gov.in/).

Impact of coal mining on water bodies: Coal mining can have various impacts on ponds, check dams, and water bodies in the vicinity. Some of the effects include:

- **Sedimentation and pollution:** Mining operations can lead to the release of sediments, chemicals, and pollutants into nearby water bodies. This sedimentation can decrease the water quality, affect aquatic life, and disrupt the ecological balance of these ecosystems.

- **Water quality degradation:** The discharge of mine water containing heavy metals, acids, and other pollutants can contaminate ponds and water bodies. This contamination alters the pH levels and chemical composition of the water, making it unsuitable for aquatic organisms and potentially harmful for human consumption.

- **Altered hydrology:** Coal mining may alter the natural hydrological cycle by changing the flow patterns of surface and groundwater. This alteration can impact the water levels in ponds and other water bodies, leading to fluctuations that affect their overall health and sustainability.

- **Loss of biodiversity:** Contamination and changes in water quality can harm aquatic flora and fauna, leading to a decline in biodiversity. Some species may not survive or thrive in polluted or altered water conditions, disrupting the entire ecosystem.

- **Physical disruption:** The physical disruption caused by mining activities, such as excavation, land clearing, and the creation of mine pits, can alter the landscape. This alteration may change the natural drainage patterns, leading to the redirection of water flows and potential damage to ponds, check dams, and other nearby water bodies.

- **Erosion and siltation:** Mining activities often result in soil disturbance and erosion, leading to increased sedimentation in water bodies. The deposition of silt and debris can reduce the water-holding capacity of ponds, check dams, and other water reservoirs, affecting their functionality
- **Risk of accidents and spills:** Accidental spills of chemicals used in mining operations or improper disposal of waste materials can lead to sudden pollution events in nearby water bodies, causing immediate harm to aquatic life and water quality.

To mitigate these impacts, it's essential for Amrapali OCP authorities to implement proper environmental management practices, including sediment control measures, water treatment facilities, reclamation efforts, and regular monitoring to minimize the adverse effects of coal mining on ponds, check dams, and surrounding water bodies. Regulatory compliance and responsible mining practices are crucial in mitigating and preventing long-term harm to these ecosystems

Principal of De-Siltation

As mentioned above the reasons which have been identified ranges from physical to biological pressure mainly due to land use change, population growth, urbanization and bio invasion. Though it requires various measures to control the sedimentation and siltation of ponds, the most effective way is the mechanical desiltation of the ponds.

The proposed desiltation plan should not be seen as an isolated approach to the rejuvenation of the existing water bodies but it also has supporting Soil & moisture conservation plan along with the catchment area treatment plan and wildlife management plan which also has components of area treatment and drainage line treatment. All these plans will contribute in reduction of the soil erosion and enhancing longevity of the existing ponds in the area.

A life cycle analysis matrix compared the number of employment generated by the manual silt removal and against the number of days of employment generated by mechanized silt extraction. The aim of this exercise was to assess the most efficient use of the rural labor pool. Though at first glance it may seem that the use of manual labor will no doubt result in the generation of more employment, in the long term this is not the case. The use mechanical diggers results in more downstream, long-term

employment generation rather than seasonal labor. This is attributed to a vastly increased amount of silt which could be dug, creating spreading jobs and covering barren lands for farm land creation.

2.2 Factors Responsible for Siltation: Though many factors govern siltation of ponds but some of them area

1. Normally, the ponds do suffer from siltation due to sedimentation of soil/clay carried into the water bodies due to the inflow of water during rains.

2. Soil erosion may also be attributed as a primary factor responsible for siltation in ponds.

3. Rainfall with high intensity at higher altitudes is the most common reason for soil erosion and hence causes siltation in nearby ponds.

4. Soil erosion also occurs from waste dumps, excavated areas and naturally denuded ground surfaces.

5. Siltation of ponds also takes place due to airborne sand and dust with other vegetative materials falling into the ponds. This adds to the process of siltation. Hence, by this phenomenon, with the passage of time, a new layer of silt accumulates over the older layer of silt and becomes thicker ultimately the depth of the water source decreases and the capacity of water storage reduces. De-silting become inevitable to ensure the availability of more water in the ponds/ for the day-to-day requirements of the villagers.

6. Due to mining activities, dust particles settle on water bodies due to the pluming effect, also adds to sediments in water bodies.

Total 25 villages are falling within 5 kilometers radius of Amrapali OCP. 6 out of 25 village are falling under Chandragupt Project, for which a separate plan has been prepared and currently we are taking only 19 villages under consideration for this plan.

As per FC Stage – I condition no. 15 of Amrapali OCP mines, Amrapali OCP authorities have also to prepare and implement de-siltation plan of ponds and other water bodies falling within 5-kilometer radius of coal block.

Mitigation measures: Opencast mining operations involve the removal of huge quantities of overburden, dumping, and backfilling of the excavated area. These overburden deposits of waste material containing huge quantities of silt. Desilting ponds, water bodies, and check dams near opencast coal mines, such as those within 5-kilometer radius of the Amrapali Opencast Coal Mines in Chatra district, is crucial for several reasons:

- **Preventing sedimentation:** Mining activities often result in the deposition of sediment, silt, and debris into nearby water bodies. Desilting helps in removing these sediments, preventing water bodies from becoming shallow, reducing their storage capacity, and maintaining their ecological balance

- **Preserving water quality:** Siltation can degrade water quality by increasing turbidity, reducing oxygen levels, and altering the chemical composition of the water. Desilting helps in maintaining better water quality, benefiting aquatic life and ensuring a sustainable water supply for surrounding communities.

- **Mitigating flooding:** Accumulation of silt and debris in ponds, check dams, and water bodies can lead to increased flood risks during heavy rainfall or storms. Regular desilting helps in maintaining the original capacity of these water bodies to hold water, reducing the likelihood of flooding in nearby areas.

- **Supporting biodiversity:** Many aquatic species depend on clean and healthy water bodies for their survival. Desilting helps in maintaining the natural habitat and ecological balance, supporting diverse flora and fauna in these ecosystems.

- **Community welfare:** Clean and well-maintained water bodies are essential for the local community's water needs, including irrigation, drinking water, and other daily uses. Desilting ensures a sustainable and reliable water supply for nearby communities.

- **Compliance with regulations:** Environmental regulations often mandate the maintenance and preservation of natural water bodies affected by industrial activities like mining. Desilting activities help companies remain compliant with these regulations and demonstrate their commitment to environmental stewardship.

In summary, de-silting ponds and water bodies near opencast coal mines is essential to maintain ecological balance, support biodiversity, prevent flooding, ensure water quality, and fulfil regulatory requirements, thereby contributing to the well-being of both the environment and local communities.

List of Ponds

A joint field inspection along with officials of Amrapali Coal Mine officials and SIDHAI officials has been carried out in the month of June'2024 during which 35 ponds were identified. Further, one more field visit was made to identified the ponds in the buffer zone in the month of July'2024 during which 08 ponds were identified. A total of 43 ponds were identified out of which 08 ponds are within the mine lease boundary and rest 35 ponds are in the buffer zone. Ponds lying in the buffer zone will be desilted for all practical purposes.

All of the ponds within the mine lease hold of Amrapali OCP have been identified and recorded for the restoration & rejuvenation purpose. Since the impact zones are overlapping and hence some of the ponds have taken under other mining desiltation plans.

Sl. No.	DISTRICT	BLOCK	VILLAGE NAME	REMARKS
1	Chatra	Tandwa	Koed	
2	Chatra	Tandwa	Soparam	
3	Chatra	Tandwa	Raham	
4	Chatra	Tandwa	Naudiha	
5	Chatra	Tandwa	Saradhu	
6	Chatra	Tandwa	Hechabalia	
7	Chatra	Tandwa	Masilong	
8	Chatra	Tandwa	Kundi	
9	Chatra	Tandwa	Kamta	
	Chatra	Tandwa	Binglat	**Mining lease area**
	Chatra	Tandwa	Kumrangkala	
	Chatra	Tandwa	Kumrangkhurd	
	Chatra	Tandwa	Ursu	
14	Chatra	Tandwa	Honhe	
15	Chatra	Tandwa	Serendag	Chnadragupta Impact Area
16	Chatra	Tandwa	Garilong	
17	Chatra	Tandwa	Kishanpur	Chnadragupta Impact Area
18	Chatra	Tandwa	Kabra	
19	Chatra	Tandwa	Tandwa	Chnadragupta Impact Area
20	Hazaribag	Keredari	Bukru	
21	Hazaribag	Keredari	Sijua	
22	Hazaribag	Keredari	Nawakhap	Chnadragupta Impact Area
23	Hazaribag	Keredari	Jordag	
25	Hazaribag	Keredari	Chattibariyatu	

Hence effectively 17 villages have taken for desiltation and 13 villages are in Chatra and 4 villages are in Hazaribag district but all villages are in the jurisdiction of Chatra South Forest Division.

Method of De-siltation

1. Regular de-siltation is being done every two years during the dry season to achieve optimal results, ensuring that the required depth is maintained.
2. The dried silt to be removed manually or mechanically basing on the site condition/ quantity of silt accumulated.
3. Silt accumulation is mainly found in basal area of the pond.
4. De-siltation is scheduled for a pond with an estimated silt thickness ranging from 0.50 to 1.00 feet.

6. The silt so excavated will be placed around the pond in an embankment design at about a width of 3.00 meters at base and height of 1.2 m simultaneously and compacting the soil.
7. On the embankment, plants with gabion facilities shall be planted or grass shall be developed.

35 ponds are slated for rejuvenation, while the 8 ponds within the active mining area will be excluded from the process.

2.5 Thickness of De-silting

A de-siltation thickness of 30 cm has been adopted for the most of the identified ponds, while some of them need more desilting.

2.6 Volume of Desilting

Based on rate analysis, 2024 the estimated volume of desilting of each pond is given below.

CHAPTER - 3 – EXECUTION OF SCHEME

The Plan period of the scheme is 10 years. Ponds identified under active mining area in the starting years of mine operations have been excluded from the list. Therefore, rejuvenation and restoration of pond shall not be practical. De-siltation will be carried out in 35 ponds as shown in the scheme below-

3.1 List of ponds for rejuvenation in the impact zone of the mines

Though these ponds are of various sizes for ease of operation and execution these have been grouped in the five different groups based on the approximate dimension. Accordingly, the estimates have been prepared and budgetary provision have been made.

Sl No	Village	Revenue Block	Dimension in Feet	Latitude	Longitude
1	Soparam	Tandwa	150X150X15	N 23°53' 21.06”	E 84°57' 23.43”
2			200X200X15	N 23°53' 25.53”	E 84°57' 20.98”
3	Koed	Tandwa	150X150X15	N 23°53' 38.12”	E 84°57' 55.7”
4			200X200X15	N 23°53' 18.82”	E 84°58' 7.96”
5	Saradhu	Tandwa	200X200X15	N 23°52' 11.27”	E 84°57' 54.64”
6			500X200X15	N 23°51' 63.95”	E 84°57' 53.43”
7			200X200X15	N 23°51' 47.08”	E 84°57' 50.49”
8			200X200X15	N 23°51' 45.96”	E 84°58' 36.34”
9			200X200X15	N 23°51' 25.33”	E 84°58' 12.67”
10			200X100X15	N 23°51' 22.07”	E 84°59' 26.36”
11			150X150X15	N 23°51' 29.97”	E 84°59' 39.47”
12	Masilong	Tandwa	200X200X15	N 23°51' 01.46”	E 84°59' 10.09”
13			200X200X10	N 23°51' 2.26”	E 84°59' 14.76”
14			150X150X15	N 23°51' 0.96”	E 84°59' 21.59”
15			150X150X15	N 23°50' 53.50”	E 84°59' 24.76”
16	Kamta	Tandwa	200X200X15	N 23°50' 43.94”	E 84°59' 47.52”
17	Raham	Tandwa	200X200X15	N 23°50' 31.96”	E 85°0' 5.55”
18	Tandwa	Tandwa	150X150X15	N 23°51' 15.56”	E 85°01' 48.79”
19			200X200X15	N 23°51' 4.17”	E 85°01' 53.18”
20			200X200X16	N 23° 51'20"	E 85° 01'25"
21			200X200X17	N 23° 51'16"	E 85° 01'48"
22			200X200X18	N 23° 51'04"	E 85° 01'53"
23	Nawakhap	Tandwa	200X200X19	N 23°54'28.00"	E 85° 2'16.00"
24			200X200X20	N 23°54'34.00"	E 85° 2'25.00"
25			200X200X21	N 23°54'31.00"	E 85° 2'26.00"
26	Honhe	Tandwa	200X100X15	N 23°54' 11.42”	E 84°59' 18.95”
27			150X150X15	N 23°53’ 53.79”	E 84°58' 53.86”
28			500X200X15	N 23°53' 34.27”	E 84°58' 54.00”
29	Serendag	Tandwa	200X100X15	N 23°54' 21.98”	E 85°0' 57.87”

30	Naudiha	Tandwa	500X200X15	N 23°54' 44.44"	E 84°58' 17.63"
31			200X100X15	N 23°53' 43.14"	E 84°58' 18.93"
32	Kishanpur	Tandwa	200X200X15	N 23°55'1.94"	E 85°1' 38.55"
33	Pokla	Tandwa	200X200X15	N 23°54' 42.47"	E 85°00' 11.07"
34			200X200X15	N 23°54' 27.19"	E 84°59' 09.77"
35			200X100X15	N 23°55' 18.57"	E 84°58' 41.18"

3.2 Planting of Saplings

1. It is suggested to select saplings of 2-year-old promising seedlings (mainly local species like mango tree, jack fruit etc.).
2. Pits of 45cm x 45cm x 45cm to be dug out for tree planting.
3. Bamboo Gabion to be provided to prevent damage by cattle's.
4. The required fertilizers/insecticides to be provided.

3.3 Grass pitching

Grass pitching on the embankment has been proposed to prevent the soil erosion. It will be done with the ***Stylo thamata*** variety which creates a mat like sheet and is also a very good animal fodder.

3.4 Execution of the Work

The scheme will be executed by the user agency as per this approved scheme. For successful implementation the user agency is to execute and review the work periodically. Its effectiveness to be reported to forest department of CCL annually. With the above provision the local villagers will be benefitted in shape of wage. The water percolation to recharge groundwater will also be enhanced in due course. The local animals/birds will also be getting water in the hard summer.

The Project Proponent will update this plan for the remaining lifespan of the mine, taking into account the ground conditions at that time, before the completion of 10 years.

Proposed Plan for De-siltation of Ponds / Water Bodies:

Method of de-siltation:

- De-siltation of Ponds and water bodies will be taken up at regular interval during dry season best result and required deepening is achieved.
- The silt will be removed manually or mechanically, as the case may be, and depending up on site conditions.

- Silt deposition has been mainly found at basal area of ponds / water bodies.

- During the field survey total 35 ponds / water bodies were found within 5 – kilometre radius of Amrapali Coal Block.

- De-siltation is proposed to be carried out in four cycles. 1st cycle in first year, 2nd cycle in 4th year, 3rd cycle in 7th year and 4th cycle in 10th year.

- The total depth of de-siltation has been considered is 30% of the total depth of pond / water bodies

- The scheme will be implemented by the Tandwa Forest Range in respective JFMC jurisdiction under the supervision of DFO Chatra South Forest Division at the cost of User Agency. The User Agency shall also have one representative from Project Area who will coordinate annual works with RFO Tandwa.

- Work of 1st cycle will be executed as per the estimate attached with this plan. 5% cost escalation every year will be added on current estimated cost. (For 2nd cycle – 15%, 3rd cycle – 30% and 4th cycle – 45%)

Chapter – 4 – financial provision

4.1 Total Estimated Volume of Work (1st Cycle):

The total estimated quantity of silt is 493672.66 Cum that will be removed over a period of 10 years.

4.2 Activities taken into consideration for De-Siltation Work:

Sl. No.	Activities for De-Siltation
1	Survey and Layout
2	Jungle Clearance including weeding out shrubs their removal as per specification and direction of Engineer Incharge.
3	E/W in excavation of foundation trenches as per designed section in all kinds of soil, including moorum soil, soil mixed with kankar, pebbles and boulders upto 300mm size and disposal of the same (beyond 50m away from the toe of dam in the country side) within initial lead of 150M and initial lift of 1.5M all lifts as per specification and direction of E/I.
3 (i)	Extra for earth work in hard soil (vide classification of soil item-B) all complete as per specification and direction of E/I.
4	Earth work in filling Pond embankment / Filling in flood embankment, canal banks (canal discharge above 28 cumecs) as well as special repair of embankment and canal banks in ordinary soil in proper profile (vide classification of soil item-A) obtained from borrow area or any other sources free from logs, roots, or any other ingredients etc. with initial lead of 30M and initial lift of 1.5m including breaking clods to maximum 50mm cube placing the earth in layers not exceeding 225mm thick complete as per specification and direction of E/I.(Mode of measurement sectional measurement shall be of compacted earth). (Approx 66.7% of total volume.).
5	Watering and consolidation of earth laid in 150mm to 225mm layers by manual labour with C.I hammer to achieve minimum 85% of maximum dry density including supply of water and necessary tools and plants with all leads and lifts all complete as per specification and direction of E/I.
6	Fine dressing of the canal banks or embankment and turfing with 75mm thick grass sods, obtained within lead of 150M, including the cost of watering the grass surface till it acquires greenness as per specification and direction of E/I.
7	Extra for each lead of 150M over initial lead of 150M.

5	Watering and consolidation of earth laid in 150mm to 225mm layers by manual labour with C.I hammer to achieve minimum 85% of maximum dry density including supply of water and necessary tools and plants with all leads and lifts all complete as per specification and direction of E/I.
6	Fine dressing of the canal banks or embankment and turfing with 75mm thick grass sods, obtained within lead of 150M, including the cost of watering the grass surface till it acquires greenness as per specification and direction of E/I.
7	Extra for each lead of 150M over initial lead of 150M.

4.3 Cost estimate for De-Siltation Work

WORK PROGRAM & BUDGET:

Dimension of water body/pond	Cost of desiltation per pond	No. of water bodies/ponds	Amount for 1st cycle	Amount for 2nd cycle	Amount for 3rd cycle	Amount for 4th cycle
200X100X15	497000	5	2485000.00	2857750.00	3230500.00	3603250.00
200X200X15	880890	19	16736910.00	19247446.50	21757983.00	24268519.50
150X150X15	558000	8	7386000.00	8493900.00	9601800.00	10709700.00
500X200X15	2E+06	3	4464000.00	5133600.00	5803200.00	6472800.00
TOTAL:		35	31071910.00	35732696.50	40393483.00	45054269.50

BUDGET ABSTRACT:

De-siltation Cycle	Plan year	Amount (in Rupees)	Remarks
1st cycle	1st year	3,10,71,910.00	As per estimate
2nd cycle	4th year	3,57,32,696.50	15% above estimate
3rd cycle	7th year	4,03,93,483.00	30% above estimate
4th cycle	10th year	4,03,93,483.00	45% above estimate
	Grand Total:	Rs. 15,22,52,359.00	

Project Officer
Amrapaii Project
Amrapali-Chandragupt Area

28/10/24
Mukesh Kumar I.F.S
Divisional Forest Officer
Chatra South Forest Division

DFO- Chatra South CF- Chatra RCCF-Hazaribag

Model estimates for different dimension of Ponds for desiltation

S.O.R.	Item of works	Dimension	Quantity		Rate	Amount in INR
1	Survey and lay out		2 MD	2	405	810.00
2 / 5.1.3.2	Site clearance approx 50% of total area	200'X100'	20000 sq.ft. or 1858.061 M2 50% 929.03 M2	929.03	8.85	8221.92
3/5.1.8	E/W in excavation in all kinds of soil mixed with soil, kanker,pebbles and disposal of same beyond 50 m away from the toe of the pond / water bodies as per direction of E/I	200'X100'X4.5' (30% of total depth)	90000 cubic ft or 2548.51 Cum	2548.51	203.58	518825.67
4/7.1.42.1	Fine dressing of embankment and turfing with grass within a lead of 150m including cost of watering as per direction of E/I	(200'X2'X10') + (100'X2X10')	6000 sq. Ft. 557.415 M2	557.415	15.03	8377.95
					Sub Total	536235.53
	Less C.P. (9.09%)				(-)	487974.33
	Add 2% contingency					9759.49
	Grand Total					**497733.82**
	Or Say					**498000.00**

DFO- Chatra South

CF- Chatra

RCCF-Hazaribag

Mukesh Kumar I.F.S
Divisional Forest Officer
Chatra South Forest Division

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

S.O.R.	Item of works	Dimension	Quantity		Rate	Amount in INR
1	Survey and lay out		2 MD	2	405	810.00
2 / 5.1.3.2	Site clearance approx 50% of total area	200'X200'	40000 sq.ft. or 3716.122 M2 50% 1858.06 M2 2	1858.06	8.85	16443.83
3/5.1.8	E/W in excavation in all kinds of soil mixed with soil, kanker,pebbles and disposal of same beyond 50 m away from the toe of the pond / water bodies as per direction of E/I	200'X200'X4' (30% of total depth)	160000 cubic ft or 4530.695 M3	4530.695	203.58	922358.89
4/7.1.42.1	Fine dressing of embankment and turfing with grass within a lead of 150m including cost of watering as per direction of E/I	(200'X2'X10') + (100'X2X10')	6000 sq. Ft. 557.415 M2	557.415	15.03	8377.95
					Sub Total	947990.67
	Less C.P. (9.09%)				(-)	862671.51
	Add 2% contingency					17253.43
	Grand Total					**879924.94**
	Or Say					**880000.00**

DFO- Chatra South

CF- Chatra

RCCF-Hazaribag

Mukesh Kumar I.F.S
Divisional Forest Officer
Chatra South Forest Division

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

S.O.R.	Item of works	Dimension	Quantity		Rate	Amount in INR
1	Survey and lay out		2 MD	2	405	810.00
2 / 5.1.3.2	Site clearance approx 50% of total area	150'X150'	22500 sq.ft. or 2090.31 M2 50% 1045.16 M2	1045.16	8.85	9249.67
3/5.1.8	E/W in excavation in all kinds of soil mixed with soil, kanker,pebbles and disposal of same beyond 50 m away from the toe of the pond / water bodies as per direction of E/I	150'X150'X4.5' (30% of total depth)	101250 cu. ft or 2867.08 M3	2867.08	203.58	583680.15
4/7.1.42.1	Fine dressing of embankment and turfing with grass within a lead of 150m including cost of watering as per direction of E/I	150'X10'X4	6000 sq. Ft. 557.415 M2	557.415	15.03	8377.95
					Sub Total	602117.76
	Less C.P. (9.09%)				(-)	547927.16
	Add 2% contingency					10958.54
	Grand Total					**558885.70**
	Or Say					**558900.00**

DFO- Chatra South

Mukesh Kumar I.F.S.
Divisional Forest Officer
Chatra South Forest Division

CF- Chatra

RCCF-Hazaribag

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

S.O.R.	Item of works	Dimension	Quantity		Rate	Amount in INR
1	Survey and lay out		2 MD	2	405	810.00
2 / 5.1.3.2	Site clearance approx 50% of total area	500'X200'	100000 sq.ft. or 9290.27 M2 50% 4645.14 M2	4645.14	8.85	41109.49
3/5.1.8	E/W in excavation in all kinds of soil mixed with soil, kanker,pebbles and disposal of same beyond 50 m away from the toe of the pond / water bodies as per direction of E/I	500'X200'X4.5' (30% of total depth)	450000 cu. ft or 12742.58 M3	12742.58	203.58	2594134.44
4/7.1.42.1	Fine dressing of embankment and turfing with grass within a lead of 150m including cost of watering as per direction of E/I	(500+200)'X2X10)	14000 sq. Ft. 1300.643 M2	1300.643	15.03	19548.66
					Sub Total	2655602.59
	Less C.P. (9.09%)				(-)	2416598.36
	Add 2% contingency					48331.97
	Grand Total					**2464930.32**
	Or Say					**2465000.00**

28/10/24

DFO- Chatra South

Mukesh Kumar I.F.S
Divisional Forest Officer
Chatra South Forest Division

CF- Chatra

RCCF-Hazaribag

Project Officer
Amrapali Project
Amrapali-Chandragupt Area

CENTRAL COALFIELDS LIMITED

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AMRAPALI OCP, HONHE, 825321
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Annexure-20

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (16)

CCL undertake that "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. Also, the trees should be felled in phased manner as per the requirement in the approved Mining Plan with prior permission of concerned DFO".

Project Officer
(Amrapali Project)

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Annexure-21

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (17)

CCL undertake that "The cost of felling of trees shall be deposited with the help of State Forest Department.".

Project Officer
(Amrapali Project)

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Annexure-22

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (18)

CCL undertake that "Mining will be done 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 Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned 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 Addl. Principle Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed".

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Annexure-23

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (19)

CCL undertake that "The CCL shall comply with the Hon'ble Supreme Court order on re- grassing, and re-grass the mining area and any other areas which may have been disturbed due to mining to restore them to a condition which is fit for growth of fodder, flora, fauna, etc. in a timely manner.".

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Annexure-25

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (22)

CCL undertake that "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".

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Annexure-24

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (20)

CCL undertake that "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 proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under;".

Project Officer
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Annexure-26

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (23)

CCL undertake that "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 coordinates".

Project Officer
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Annexure-27

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (24)

CCL undertake that "The layout plan of the mining plan/ proposal shall not be changed without the prior approval of the Central Government and the forest land shall not be used for any purpose other than that specified in the proposal.".

Project Officer
(Amrapali Project)

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Annexure-28

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (25)

CCL undertake that "The forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approvalof the Central Government".

Project Officer
(Amrapali Project)

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Annexure-29

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (26)

CCL undertake that "No damage to the flora and fauna of the adjoining area shall be caused".

Project Officer
(Amrapali Project)

CENTRAL COALFIELDS LIMITED

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Annexure-30

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (27)

CCL undertake that "Comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project".

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Annexure-31

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project(431.59 Ha).

UNDERTAKING TO POINT NO (28)

CCL undertake that "submit the annual self-compliance report in respect of the above stated conditions to the State Government, concerned RegionalOffice and to this Ministry by the end of March every year regularly".

Project Officer
(Amrapali Project)

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Annexure-32

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (29)

CCL undertake that "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 with by theState Government and user agency".

Project Officer
(Amrapali Project)

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PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Annexure-33

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (30)

CCL undertake that "Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as prescribed in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act, 1980 as issued by this Ministry's letter No. 5-2/2017-FC dated 28.03.2019".

Project Officer
(Amrapali Project)

कार्यालय : प्रधान मुख्य वन संरक्षक–सह–कार्यकारी निदेशक, बंजर भूमि विकास बोर्ड, झारखंड, राँची।

वन भवन, डोरण्डा, राँची, झारखंड, पिन–834002, Email-pccf-ednodal@gov.in

पत्रांक :– दिनांक :–

सेवा में,

क्षेत्रीय मुख्य वन संरक्षक,
हजारीबाग।

विषय :– मेसर्स सी0सी0एल0 की आम्रपाली कोयला खनन परियोजना हेतु कुल 431.59 हे0 वनभूमि अपयोजन प्रस्ताव (FP/JH/MIN/17211/2015) के संबंध में।

प्रसंग :– 1. भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, नई दिल्ली के पत्रांक FNo. 8-48/2008-FC-(Vol) दिनांक 21.12.2023

2. आपका पत्रांक 2070 दिनांक 28.11.2024

महाशय,

उपर्युक्त विषयक संदर्भ में सूचित करना है कि सी0सी0एल0 की आम्रपाली कोयला खनन परियोजना हेतु 431.59 हे0 वनभूमि अपयोजन प्रस्ताव में भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, नई दिल्ली के प्रासंगिक पत्र–1 द्वारा प्रदत्त सैद्धांतिक स्वीकृति में लगाये गये शर्त्तो का अनुपालन प्रतिवेदन आपके कार्यालय पत्रांक 2070 दिनांक 28.11.2024 द्वारा समर्पित किया गया है।

उक्त स्टेज–I के प्राप्त अनुपालन प्रतिवेदन के समीक्षोपरांत प्रस्ताव में निम्नवत् बिन्दुओं पर कमियाँ/पूर्ण प्रतिवेदन अपेक्षित है :–

1. स्टेज–1 के शर्त संख्या–II का अनुपालन अपूर्ण है।
2. स्टेज–1 शर्त संख्या–x का अनुपालन अपूर्ण है। स्टेज–1 का अनुपालन प्रतिवेदन परिवेश पोर्टल पर अपलोड किया जाना अपेक्षित है।
3. शर्त संख्या–xiii का अनुपालन अपूर्ण है। सेफ्टीजोन के एरिया का Boundry Pillring की सूचना अप्राप्त है।
4. शर्त संख्या–xiv का अनुपालन अपूर्ण है। इस शर्त्त के अनुपालन हेतु प्रयोक्ता अभिकरण का वचनबद्वता प्रमाण पत्र अप्राप्त है।
5. शर्त संख्या–xv का अनुपालन में De-Silting Plan के Approval की सूचना अप्राप्त है।
6. शर्त संख्या–xxiii का अनुपालन अपूर्ण है। प्रश्नगत परियोजना में अपयोजित वनभूमि, माइनिंग लीज एवं सेफ्टीजोन के एरिया का Boundry Pillring एवं उसके GPS coordinates की सूचना अप्राप्त है।

अतः अनुरोध है कि उपरोक्त बिन्दुओं पर वांछित पूर्ण अनुपालन प्रतिवेदन अपने मंतव्य सहित यथाशीघ्र इस कार्यालय को उपलब्ध कराने की कृपा की जाय।

विश्वासभाजन,

ह0/–
प्रधान मुख्य वन संरक्षक–सह–कार्यकारी निदेशक,
बंजर भूमि विकास बोर्ड, झारखण्ड, राँची।

ज्ञापांक :– 1073 दिनांक :– 13/12/2024

प्रतिलिपि :– वन संरक्षक, प्रादेशिक अंचल, चतरा/वन प्रमंडल पदाधिकारी, चतरा दक्षिणी वन प्रमंडल, चतरा/मुख्य महाप्रबंधक (पर्यावरण एवं वन), सी0सी0एल0, दरभंगा हाऊस, राँची को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

13/12/24

प्रधान मुख्य वन संरक्षक–सह–कार्यकारी निदेशक,
बंजर भूमि विकास बोर्ड, झारखण्ड, राँची।

11-12

Coal India Limited
A Maharatna Company
www.coalindia.in

CENTRAL COALFIELDS LIMITED
A Mini Ratna Company
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP, HONHE, 825321
PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Ref.:- PO (A)/Forest/2024-25/ 2403 Dated-15.01.2024

To,

Divisional Forest Officer
Chatra South Forest Division

Sub: Compliance to the query raised by ED Nodal, GoJ vide letter no 1073 dated 13.12.2024

Dear Sir,

In reference to subject mentioned above, Point-wise compliance is as under: -

S. No.	Query	Compliance
1.	स्टेज-1 के शर्त सख्या-II का अनुपालन अपूर्ण है।	As per the latest guidelines issued by MoEF&CC on dt 17.12.2024 **(copy enclosed as Annexure -1),** the Central Agencies/PSUs which were granted 'In-Principle' approval stipulating CA over non-forest land before notification of Van (Sanrakshan Evam Samvardhan) Amendment Rules, 2024, shall be allowed to submit compliance of 'In-Principle' approval along with CA proposal over DFL in lieu of NFL. As per the aforesaid guideline, Double degraded Forest land is now being accepted for the purpose of raising CA in lieu of Forest land to be diverted. The related Para v (a) of MoEF & CC guideline is reproduced below: - *With regards to the applicability of the provisions of the Van (Sanrakshan Evam Samvardhan) Amendment Rules, 2024 in respect of proposals of the Central Agencies/PSUs and captive coal blocks of the State PSUs which were granted 'in-principle' approval stipulating CA over non-forest land,*

		the following clarification is given in this regard: *"Proposals, which were submitted by the States/UTs before notification of Van (Samrakshan Evam Samvardhan) Amendment Rules, 2024, along with the proposal of raising CA over degraded forest land (DFL) and were granted 'in-principle' approval stipulating CA over non-forest land (NFL), shall be allowed to submit compliance of 'in-principle' approval along with CA proposal over DFL in lieu of NFL. The Central Government will consider and grant final approval in such cases stipulating CA over DFL".* Accordingly, a demand of Rs 99,36,52,340/- (Rupees Ninety-Nine Crores Thirty-Six Lakh Fifty-Two Thousand Three Hundred Forty only) has been raised by DFO Chatra (S) vide letter no 13 dated 02.01.2025(Copy attached as **Annexure-2)** for raising compensatory Afforestation (CA) over 865 Ha of degraded forest land in lieu of 431.59 ha Forest land of Amrapali OCP. The payment of Rs Rs 99, 36, 52,340/- has been paid in CAMPA A/c vide UTR no. ICICR42025011000001995 dated 10.01.2025. Copy of payment certificate is attached as **Annexure-3**. Duly signed updated Levies format is attached for kind reference as **Annexure 3(A)**. Further to the above, Amrapali OCP, CCL undertakes to pay the deficit amount, if any, in respect of Compensatory Afforestation from the money already realized by State Forest Dept. The undertaking to this effect is attached at **Annexure-4.**
2.	स्टेज-1 शर्त संख्या x का अनुपालन अपूर्ण है। स्टेज-1 का अनुपालन प्रतिवेदन परिवेश पोर्टल पर अपलोड किया जाना अपेक्षित है।	The compliance report has been uploaded on the e-portal (https://parivesh.nic.in/).
3.	शर्त संख्या-xiii का अनुपालन अपूर्ण है। सेपटीजोन के एरिया का Boundary Pillaring की सूचना अप्राप्त है।	**Amrapali OCP undertakes that the** demarcation of safety zone will be done (7.5 meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration will be done by erecting adequate number of 6 feet high RCC boundary pillars inscribed with DGPS coordinates with

		barbed wire fencing and deploying adequate number of watchers under the supervision of the State Forest Department, before the issuance of Site handover (Ref: **Annexure-5).**
4.	शर्त संख्या-xiv का अनुपालन अपूर्ण है। इस शर्त के अनुपालन हेतु प्रयोक्ता अभिकरण का वचनबद्धता प्रमाण पत्र अप्राप्त है।	Amrapali OCP undertakes to implement the R&R Plan as per the approved R&R Policy of Coal India Ltd. (CIL). Undertaking enclosed as **Annexure – 6.**
5.	शर्त संख्या-xv का अनुपालन में De-Silting Plan के Approval की सूचना अप्राप्त है।	De-siltation plan involving list of existing village tanks and other water bodies with GPS co-ordinates located within five km from the mine lease boundary, has been prepared, duly verified by DFO Chatra South and approved by PCCF/HoFF. Copy of approval letter of De-siltation Plan is attached for reference (Ref: **Annexure - 7).**
6.	शर्त सख्या xxiii का अनुपालन अपूर्ण है। प्रश्नगत परियोजना में अपयोजित वनभूमि, माइनिंग लीज एवं सेफ्टीजोन के एरिया का Boundary Pillaring एवं उसके GPS coordinates की सूचना अप्राप्त है।	Amrapali OCP undertakes that, the boundary of the diverted forest land, mining lease and safety zone, 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 coordinates, before the issuance of Site handover. Undertaking enclosed as **Annexure - 8.**

In view of the above submissions, you are requested to kindly consider the compliance and forward the proposal for obtaining Stage- II FC in respect of Amrapali OCP.

Yours faithfully

Project Officer
Amrapali OCP

Project Officer
C.C.L Amrapali O.C.P
A-C Area

FC-11/158/2024-FC

Annexure-I

I/90686/2024

Government of India
Ministry of Environment, Forest and Climate Change
(Forest Conservation Division)
Indira Paryavaran Bhawan,
Aliganj, Jor Bagh Road,
New Delhi: 110003
Dated: December, 2024

To

The Addl. Chief Secretaries of Forests/Principal Secretary (Forests),
All States Governments and Union territory Administrations

Sub: Streamlining of the approval process with regards to compensatory afforestation as envisaged in the Van (Sanrakshan Evam Samvardhan) Rules, 2023 as amended on 20.09.2024 – reg.

Madam/Sir,

I am directed to refer to the above subject and to inform that based on the references received from the Ministry of Mines, and Ministry of Coal, the provisions related to raising of compensatory afforestation, as envisaged in the Van (Sanrakshan Evam Samvardhan) Rules, 2023 as amended on 20.09.2024, have been reviewed by the Ministry and after due deliberations, the Central Government, in accordance with the provisions of section 3C of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 hereby issues the following clarifications:

i. Provisions of Rule 14(1) of the Van (Sanrakshan Evam Samvardhan) Rules, 2023, provides that the non-forest land identified for raising Compensatory Afforestation (CA) is to be notified as Protected Forests before final approval (Stage-II) approval is granted by the Central Government. However, in cases where non-forest land identified for CA has been transferred and mutated in favour of the State Forest Department (SFD), the Central Government may accord final approval keeping in view the fact that provisions of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 become applicable on such lands being entered as forest in government record/record of rights.
ii. In such cases, referred in para (i) above, the non-forest land forest land proposed for CA, shall be notified as Protected Forest under section 29 of the Indian Forest Act, 1927 of local forest Act before handing over of forest land to the User Agency by the State Government. The Nodal Officer, after notification of such non-forest lands, shall upload a copy of said notification on the PARIVESH portal.
iii. For the purpose of rule 13(4)(a) of the States or Union territory Administrations, having forest area more than 33% of their total geographical area, concerned State Government/UT Administrationmay authorise a suitable officer to issue certificate of non-availability of the suitable non-forest land for raising CA.
iv. As per the provisions of the Van (Sanrakshan Evam Samvardhan) Amendment Rules, 2024, projects of Central Government entities/CPSU and captive coal blocks of the State PSUs are eligible for raising CA over degraded forest land which will be double in extent of the forest land being diverted. Accordingly, the State Government/UT shall not insist for providing non-forest land as CA unless in cases wherein the Central Government

Agencies/CPSUs or State Government PSUs with captive coal blocks are forthcoming to provide non-forest land available with them as CA or the State Government/UT Administration is willing to provides non-forest land on such terms and condition which is agreed by the Central Government Agencies/CPSUs or State Government PSUs in case of captive coal blocks.

v. With regards to the applicability of the provisions of the Van (Sanrakshan Evam Samvardhan) Amendment Rules, 2024 in respect of proposals of the Central Agencies/PSUs and captive coal blocks of the State PSUs which were granted 'in-principle' approval stipulating CA over non-forest land, the following clarification is given in this regard:
   a. Proposals, which were submitted by the States/UTs before notification of Van (Sanrakshan Evam Samvardhan) Amendment Rules, 2024, along with the proposal of raising CA over degraded forest land (DFL) and were granted 'in-principle' approval stipulating CA over non-forest land (NFL), shall be allowed to submit compliance of 'in-principle' approval along with CA proposal over DFL in lieu of NFL. The Central Government will consider and grant final approval in such cases stipulating CA over DFL.
   b. Proposals, which were submitted by the States/UTs along with CA proposal over non-forest land and were granted 'in-principle' approval stipulating CA over non-forest land (NFL), can also be allowed to submit compliance of 'in-principle' approval along with CA proposal over DFL provided the non-forest land proposed for CA is not transferred and mutated in favour of the State Forest Department. In such cases, the Central Government or its Regional Office, based on the request of the State/UT Government or user agency, shall amend the condition of in-principle approval to raise CA over DFL on a case to case basis and subsequently the User Agency shall submit the compliance of in-principle for the obtaining the 'final' approval.

In view of the above, the State Government and Union territory Administrations are requested to take into consideration the guidelines mentioned hereinabove while considering the proposals submitted under section 2 of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980.

This issues with the approval of the competent authority.

Yours faithfully,

Signed by
Charan Jeet Singh
Date: 17-12-2024 13:56:41

(Charan Jeet Singh)
Scientist 'E'

Copy to:

1. Director, PMO, South Block, New Delhi
2. Secretary, Ministry of Mines /Coal /Steel/ Power/ Railways/ MoRT&H/ Defence/MHA
3. Secretary, Ministry of Defence, Government of India
4. Principal Chief Conservator of Forests & HoFF, All States Governments and Union territory Administrations
5. Dy Director General of Forests (Central) All Regional Offices of the MoEF&CC

Annexure-2

Office of Divisional Forest Officer, Chatra South Forest Division, Chatra.

E-mail:- dfo-chatrasouth@gov.in Phone:-8987790213

Letter No.:- 13 Date :- 2.01.25

To,

The General Manager,
Amrapali- Chandragupt Area,Tandwa,Chatra.

Subject:- Demand letter for depositing levy for CA Land against 431.59 forest land for Amrapal Open Cast Mining project in favour of M/s Central Coalfield Limited(CCL).

Ref: Office order संख्या–01/यो0ब0–30/2020–21 दिनांक 08.08.2024 of Additional Principal Chief Conservator of Forest Development, Jharkhand, Ranchi, and Letter no. -08 dated - 02.01.2025 of PCCF-Cum-ED, Nodal, Jharkhand, Ranchi, and Your letter no.- Po(A)/Forest/2024-25/2115 dated 17.12.2024.

Kindly refer the letter in the reference where in principle approval has been accorded to the captioned project subject to certain conditions.

A. As per condition No.2 of the said letter,
"The Compensatory afforestation over suitable non-forest land, equal in extent to the forest land being diverted i.e. 431.59 ha shall be raised by the state forest department at the cost of the user agency and the work of compensatory afforestation shall start within two years of issue of order of diversion of forest land."

B. In compliance of the above-mentioned condition of stage-I approval a demand of Rs.**99,36,52,340.00**(Ninety-Nine Crore Thirty Six Lac Fifty-Two Thousand Three Hundred and Forty only) for CA is being raised.

C. Therefore it is requested to deposit the above mentioned amount i.e. Rs.**99,36,52,340.00**(Ninety-Nine Crores Thirty Six Lac Fifty Two Thousand Three Hundred and Forty only) in CAMPA Account. The amount should be deposited to CAMPA Fund only through e-portal (https://parivesh.nic.in) and copy of challan/receipt shall be sent to this office for records.

Sent for necessary action.

Your faithfully,

Divisonal Forest Officer
Chatra South Forest Division, Chatra.

02/01/2025

Project Officer
Amrapali OCP

Annexure-3

ICICI Bank

Date-10-01-2025

TO WHOMSOEVER IT MAY CONCERN

This is to certify that CENTRAL COALFIELDS LIMITED has made the below mentioned payment from their current account 017505009227 with our bank:-

Sr. No.	Beneficiary Name	Amount	Beneficiary accout no	Bene IFSC	UTR	Date
1	JHARKHAND CAMPA	993652340.00	150725817211398	UBIN0996335	ICICR42025011000001995	10-01-2025

It is clarified that this information is furnished in strict confidence and without any risk and responsibility on our part or on the part of any Bank's officials in any respect more particularly either as guarantor or otherwise.

This certificate is issued at the specific request of the said customer.

Regards

ICICI Bank Limited Ranchi Ratu Road, Ranchi-834001 1150

Autrorised Signatory

ICICI Bank-Ltd

Ratu Road Ranchi -834001

Project Officer
Amrapali OCP

ICICI Bank Limited
Tower,
Modi Heights, Shop # 05 & 06
Opp. All India Radio Station,
Ranchi- 834001,
Jharkhand, India

Website www.icicibank.com
CIN.: L65190GJ1994PLC021012

Regd. Office : ICICI Bank
Near Chakli Circle,
Old Padra Road,
Vadodara 390 007, India.

Annexure-3A

Performa to be furnished for remmitence of fund in Ad-Hoc CAMPA(431.59 Ha)

S.N.	Column1	Column 2
1	Name of Regional Office	Ranchi
2	State/District/Forest Division to which the proposal relatedJharkhand/Chatra /Chatra (S)	Jharkhand, Chatra, Chatra South
3	Name of User Agency, name of proposal	CCL, Amrapali OCP
4	Extent of forest area involved in Ha	431.59 Ha
5	Whether original, or extension	Original
6	If extension of lease, please clarify if proposal involves additional forest area, and if so, specify	NA
7	Date of Stage-1 clearance	21.12.2023
8	Extent of CAMPA charges, head wise	
	a) Compensatory Afforestation in Rs.	Rs 99,36,52,340/- has been paid in CAMPA A/c vide UTR no. ICICR42025011000001995 dated 10.01.2025
	b) Penal CA in Rs.	NA
	c) Catchment Area Treatment	NA
	d) Wildlife Management Plan(for safety purpose)	Rs52,65,51,000/- paid vide UTR no. ICICR42024101600000215 dated 16.10.2024.
	e) Additional Charges for diversion area falling under notified/protected area(block plantation 5 times of tree to be felled	0
	f)Net present value in Rs	Rs 53,66,97,256
	h) Penal NPV	Rs 64,50,098/- paid vide UTR no. ICICR42024101600000215 dated 16.10.2024.
	g) Any other Charges/Levies (SMC 0.5% of Project Cost)	Rs 25,68,00,000 vide UTR noICICR22024112106344101 dated 21.11.2024.
	h) Lease transfer fees in Rs.	0
	9) Details of bank draft no, date and amount), head wise against terms indicated in the paragraph & above	Attached
	10) Whether deposited by RTGS, if so, the particulars and date ofremittance	Attached
	11) Bank(Corporation Bank, Lodhi complex/Union bank of India, Sunder Nagarjin which Deposited, with date of Deposition	Corporation Bank, Lodhi Complex, CAF AC Jharkhand A/C no. 037100101025212, IFSC code CORP0000371
	12) Any other remarks	
	DETAILS OF SL NO. 8, 9, 10	

	8(1) Net Present Value (NPV) in Rs	Rs 53,66,97,256
	(a) NPV Paid 1st time in Rs.	Rs 34,73,69,770
	Ref. no. NPV 1st time paid	On dated 31.03.2016, RTGS for Rs 220,50,00,000 to CAF AC JHARKHAND ACCOUNT NO. 037100101025212, IFSC Code CORP0000371 vide UTR No PUNBR52016033110025459 and NEFT for Rs 41,439 to CAF AC JHARKHAND ACCOUNT NO. 037100101025212, IFSC Code CORP0000371 vide UTR No SD 1288460349 was made for thirteen different projects. The NPV payment for Rs. 34,73,69,770 of Amrapali project is a part payment at the rate of 8.03 Lakh per Ha. Area Of Forest Land 432.59 Ha Paid Ist time
	(b) NPV including penal NPV Paid 2nd time in Rs.	Rs 18,93,27,486
	Ref. no. NPV 2nd time paid	UTR no. ICICR42024101600000215 dated 16.10.2024.
	TOTAL PAYMENT	Rs 231,37,00,596.00

Project Officer
Amrapali OCP

Project Officer
Amrapali OCP

Annexure-4

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (2)

Amrapali OCP, CCL undertakes to pay the deficit amount, if any, in respect of Compensatory Afforestation from the money already realized i.e. 99,36,52,340.00/- in instant case after obtaining final approval from competent authority in the state, prior to actual working on the Forest area.

13.01.25

Project Officer
Amrapali OCP

Project Officer
Amrapali OCP

Annexure-5

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (13)

Amrapali OCP, CCL undertakes that demarcation of safety zone (7.5-meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration by erecting adequate number of6 feet high RCC boundary pillars inscribed with DGPS coordinates with barbed wire fencing and deploying adequate number of watchers under the supervision of the State Forest Department.

13.01.25

Project Officer
Amrapali OCP

Project Officer
Amrapali OCP

CENTRAL COALFIELDS LIMITED
A Mini Ratna Company
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
AMRAPALI OCP, HONHE, 825321
PO: KASHIYADIH, DIST: CHATRA (JHARKHAND)

Coal India Limited
A Maharatna Company

G20 भारत 2023 INDIA

Annexure-6

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (14)

Amrapali OCP. CCL undertakes that the R&R Plan shall be implemented 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.

13.01.23

Project Officer
Amrapali OCP

Project Officer
Amrapali OCP

Annexure-7

Office of the Principal Chief Conservator of Forests

Van Bhawan, Doranda, Ranchi - 834 002
Email: pccf-jhk@gov.in, Phone No. 0651-2481909

File no.- 22 पी०-2(2)-02/2022.....

Office order No. 09 **dated** 17/01/2025

Sanction Order for the De-siltation Plan with reference to non-forestry use of 431.59 ha of forest land for Amrapali Open Cast Coal Mining project in favour of M/s Central Coalfields Limited (CCL) in Chatra South Forest Division in Chatra District of Jharkhand-regarding.

The instant De-siltation Plan (referred to as "the Plan" here in after) has been submitted by M/s. **Central Coalfields Limited (CCL)** (referred to as "the User Agency or M/s CCL ") in pursuance of the following condition laid by MoEF&CC under condition no. 2 (i) and 2 (ii) of Stage-1 approval vide letter no. 8-48/2018-FC-(Vol) dated 21.12.2023 for non-forestry use of 431.59 ha in favor of M/s Central Coalfields Limited (CCL).

The aforesaid Terms of Reference laid by the Central Government reads as follows:

Condition no. 2 : **Compensatory Afforestation;**

Condition no. 2 (i) : *"The compensatory afforestation over suitable* ***non-forest land****, equal in extent to the forest land being diverted i.e 461.59 ha, shall be raised by the State Forest Department at the cost of the user agency and the work of compensatory afforestation shall start within two years of issue of order of diversion of forest land."*

Condition no. 2 (II) : *The* ***non- forest land*** *identified for raising Compensatory afforestation shall be demarcated by concrete pillars of suitable size and handed over, free form all encumbrances to the State Forest Department and the same will be notified as protected forest under section 29 of Indian Forest Act, 1927(16 of 1927) or under any other law for the time being in force before the Final/Stage-II approval."*

2. In compliance of the aforesaid condition laid by MoEF&CC, the User Agency M/s Central Coalfields Limited (CCL) submitted a site-specific De-siltation Plan for diversion of forest land proposal of Amrapali Open Cast Coal Mining Project prepared in consultation with the forest officials including DFO Chatra South Forest Division, CF Territorial Circle, Chatra and RCCF, Hazaribagh.

3. In the above stated background, the Regional Chief Conservator of Forests, Ranchi (RCCF, Hazaribagh) vide his letter no. 2191 dated 17.12.2024 and letter no. 2067 dated 28.11.2024 submitted the Plan to the office of the undersigned for its consideration for sanction.

4. In order to examine the plan prescriptions a communication was issued to the Regional Chief Conservator of Forests, Ranchi, vide this office letter no. 3147 dated 23.12.2024 to arrange a Power-Point Presentation of the plan on 26.12.2024 in the conference hall of the undersigned. The presentation was made by the Project proponent in the presence of Regional Chief Conservator of Forests, Hazaribagh and DFO Chatra South Forest Division. Shri Amresh Kumar Singh, G.M. Amrapali, Chandragupt Area, CCL, Shri Om Prakash, Dy. Manager, (Env) CCL and Shri Hemant Kumar, SIDHA, Consultant for preparing the de-siltation plan, were also present during the presentation.

5. After deliberation on various provisions of the De-siltation Plan and the presentation, it was observed that the area falling under 5-Km radius of the block boundary has been considered as impact zone and it is also in the light of FC conditions. A total of 25 villages are falling within 5-km radius of Amrapali OCP and 19 village de-silting is required. A total 43 ponds/water bodies were found in the 5-km radius of the mine lease boundary. The De-Siltation is proposed to be carried out in four cycles. 1st cycle in the year, 2nd cycle in 4th year, 3rd cycle in 7th year and 4th cycle in 10th year. The cost of the proposed 10 year Site-Specific De-Siltation Plan with respect to the activities to be carried out by CCL under the guidance of the DFO, Chatra South Forest Division has been estimated to be Rs. 15,22,52,359.00.

6. The summary of the proposed interventions (component wise) under the Plan is as follows

(i) **Estimate for De-siltation Plan of water bodies/ ponds for Chatra South Forest Division:**

De-siltation cycle	Plan year	Amount (in Rs.)	Remarks
1st cycle	1st year	3,10,71,910.00	As per estimate
2nd cycle	4th year	3,57,32,696.50	15% above estimate
3rd cycle	7th year	4,03,93,483.00	30% above estimate
4th cycle	10th year	4,50,54,269.50	45% above estimate
Grand- Total		**15,22,52,359.00**	

7. The Plan with a total financial outlay of Rs. 15,22,52,359.00 extends over a period of 10 years and shall be utilized by the CCL in consultation with the state forest department through DFO, Chatra South Forest Division in accordance with the Plan prescriptions.

8. Considering the proposals under the plan submitted by the User Agency and recommendation of the concerned forest officers, sanction is hereby accorded to the instant Plan subject to the following conditions:

(i) That the User Agency shall ensure that its officials/contractors and the work force engaged into mining and allied operations under the Project shall not commit or abet any forest/wildlife offence in their area of operation. They will also promptly report any forest/wildlife offence in the area to the nearest forest office/official. Further, they will extend their full cooperation to the forest officials in control/mitigation of any incident, natural or man -made, detrimental to forest and wildlife in their area of operation.

(ii) That the total amount of **Rs. 15,22,52,359.00 (Rupees Fifteen crore twenty two lakh fifty two thousand three hundred fifty nine only)** shall be utilized for the said purpose by the User Agency under the guidance of State Forest Department through the DFO, Chatra South, as delineated under the Plan, strictly in accordance with the prevailing norms under the Jharkhand Sate Forest Department.

(iii) That as regards the funds earmarked against activities to be undertaken by the State Forest Department, DFO, Chatra South Division shall prepare a detailed Annual Plan of Operations (APO) in

the beginning of every financial year in respect of the instant Plan following all the rules, regulations, Schedule of Rates etc. issued from time to time by the State Government/ Forest Department. Regional Chief Conservator of Forests, Hazaribagh shall supervise & closely monitor the progress of the activities undertaken by Divisional Forest Officer, Chatra South Division respectively as per the approved APO & funds released under CAMPA.

(iv) That the Conservator of Forests, Chatra Circle shall supervise all the activities as per directions issued by the Forest Department from time to time.

(v) That the User Agency shall carry out the activities under the Plan strictly as per the duly sanctioned de-siltation plan.

(vi) That the DFO shall ensure that no violation of duly sanctioned Working Plan of their Forest Divisions takes place during implementation of any of the activities involved in this plan over notified and demarcated forest land.

(vii) That the instant Plan is dynamic and be reviewed after 5 years to assess its compatibility with mining and its concurrent reclamation activities and a revised Plan be formulated as per requirement.

(viii) That though adequate provisions have been made towards cost escalation in the plan viz. increase in wage rate/ material cost etc., yet the User Agency shall submit an undertaking to the Divisional Forest Officer, Chatra South Forest Division to the effect that it will bear extra cost of the plan beyond the cost escalation provision owing to increase in wage rate etc. in due course of time as well as consequent upon revision in the plan, if any, as and when given effect to by the competent authority.

9 Since De-siltation will be done by the user agency and it will have benefits to the communities in the command of the ponds that will be De-silted. The work will not have much financial implication but will enhance the effectiveness of the proposed De-siltation. The work that CCL need to do are-

(i) Not introducing any exotic species of grass in the area for grass pitching of the embankments.

(ii) Getting water quality tested on periodical basis and report it to the state forest department.

(iii) Introducing pisciculture in the De-silted ponds for enhancing avenue for income of the communities in commend.

(iv) Assessing change in the ground water table.

(v) Any other development that the DFO may think is necessary for assisting the De-siltation work.

(vi) Periodical reporting of the development on the De-siltation front to the state forest Department.

This has been agreed by the representatives of the Amrapali project and by the state forest department during the discussion on the said intervention.

Sd/-

Principal Chief Conservator of Forests,
Jharkhand, Ranchi

File no.- 22 वि०-2(2)-02/2022/ Memo No. 118 dated 17.01.2025

Copy forwarded to Deputy Director General of Forests (Central), Ministry of Environment, Forest & Climate Change, Integrated Regional Office, Ranchi, Harmu Housing Colony, Ranchi [email: ro.ranchi-mef@gov.in] / Principal Chief Conservator of Forest-cum-Executive Director, Waste Land Development Board, Jharkhand, Ranchi / Additional PCCF, CAMPA along with a copy of the Plan, for information and necessary action.

Sd/-

Principal Chief Conservator of Forests,
Jharkhand, Ranchi

File no.- 22 पी०-2(2)-02/2022/ Memo No. 118 dated 17.01.2025
Copy forwarded to Regional Chief Conservator of Forest, Hazaribagh / Conservator of Forest, Hazaribagh / DFO, Chatra South Forest Division for information and necessary action.

Sd/-
Principal Chief Conservator of Forests,
Jharkhand, Ranchi

File no.- 22 पी०-2(2)-02/2022 Memo No. 118 dated 17.01.2025
Copy forwarded to M/s Central Coalfields Limited (CCL), Ranchi for information and necessary action.

Principal Chief Conservator of Forests,
Jharkhand, Ranchi

Annexure-8

Proposal No: - FP/JH/Min/17211/2015 dated 26.12.2015

Project Name: Amrapali Open Cast Project (431.59 Ha)

Subject: - Undertaking in respect of compliance in respect of proposal for seeking prior approval of the Central Government under Section2(1)(ii) of the Van (Sanrakshan Evam Samvadhan) Adhiniyam, 1980 in favour of M/s Central Coalfields Limited for non-forestry use of 431.59 Ha of forest land for Amrapali Open Cast Coal mining project Chatra South Forest Division in Chatra District of Jharkhand against the Amrapali Open Cast Project (431.59 Ha).

UNDERTAKING TO POINT NO (23)

Amrapali OCP, CCL undertakes that 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 coordinates.

13.01.25

Project Officer
Amrapali OCP

Project Officer
Amrapali OCP