

A minoratna cat-I company

CENTRAL COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
OFFICE OF THE PROJECT OFFICER
VTC BHAVAN, HONHE
AMRAPALI - CHANDRAGUPT AREA

Ref No. GM(AC)/PO(Chandragupt)/23-24/ 219

Date: 18/12/2023

To:

The DFO,
Hazaribagh West Division,
Hazaribagh District.

18/12/23
PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT
AMRAPALI-CHANDRAGUPT AREA, CCL

Sub: Request for compliance of EDS, raised by MoEF&CC with regard to Forest proposal of the forest Land of 699.38Ha of Chandragupt Project of CCL.

Ref: EDS raised by the MOEF&CC, Dated: 22/09/2023

Dear Sir,

Kindly find the compliance to the EDS raised by MoEF&CC dated 22.09.2023 with regard to Forest Proposal of Chandragupt Project of CCL and the details are given below:

S.NO	EDS Stipulated in Forest Clearance	Compliance Status
i)	As Schedule-I species have been reported in the area and DFO also mentioned the fragmentation of wildlife habitat, comments of PCCF (Wildlife) and CWLW Jharkhand on the likely impact of the project on the movement of wildlife in general and elephant in particular needs to be furnished by the State. Further, comments may also be furnished on the adequacy of mitigation measures like Site Specific Wildlife Management Plan or Comprehensive Integrated Wildlife Management proposed for the area.	To be replied by State Government (CWLW Opinion is enclosed as Annexure I& Receiving Letter for WLCP enclosed as Annexure II).

ii)	The authorities in the State Forest Department have recommended preparation of various Plans and their implementation either before or concurrently with the mining operations. Detail of such plans, in tabular form indicating clearly against them, their tentative cost, time required for preparation and duration of implementation, etc. need to be furnished by the State.	To be replied by State Government (Enclosed Undertaking as Annexure-III)
iii)	In online Part-II, it has been reported that the proposed forest land is moderately vulnerable to erosion. Therefore, mitigation measures in this regard needs submission.	To be replied by State Government (Receiving Letter of <i>Soil Moisture Conservation Plan</i> enclosed as Annexure IV)
iv)	Cost benefit Ratio has been estimated as 1:81.92 which is exorbitantly high. The analysis may be revisited by the user agency by applying appropriate economic tools to accurately estimate the various parameters and detailed analysis thereof may be submitted to the Ministry.	The Cost Benefit Ratio has been revisited by considering: 1. The revised NPV rates as per the MoEF&CC guideline dated 06.01.2022 for calculation involved in the cost part. 2. Approximate Cost for Wildlife Management Plan and Soil Moisture Conservation Plan 3. Cost for obtaining NOC of GMJJ land 4. Cost of diversion of existing infrastructure As such, the revised Cost Benefit Ratio comes to 1:51.84. (The report is enclosed as Annexure V).
v)	Detail of safety zone of the mining leases for raising afforestation has not been submitted along with the proposal. Same needs to be submitted along with complete detail of supporting attributes such as afforestation scheme, suitability certificate, KML files, etc.	All along the Coal Block boundary wherever forest patches are intersecting the project boundary, 7.5m of safety zone has been proposed. The area of safety zone comes to 2.9 Ha. The 2.9Ha of safety zone is part of 699.38 Ha of forest land diversion proposal. Compensatory afforestation plan over double degraded forest land has already been identified for 1400 Ha which also includes CA area against the 2.9 Ha of safety zone. The afforestation scheme of entire 1400 Ha along with suitability certificate, KML file of 1400 Ha CA land (which includes 5.8 Ha CA demarcated separately in Damdoya Village against 2.9 Ha safety zone) and KML file of 2.9 Ha safety Zone &CA of Damdoya Village are enclosed in the form of CD as Annexure VI .
vi)	From the purpose-wise breakup of forest land, the following may be ascertained:	

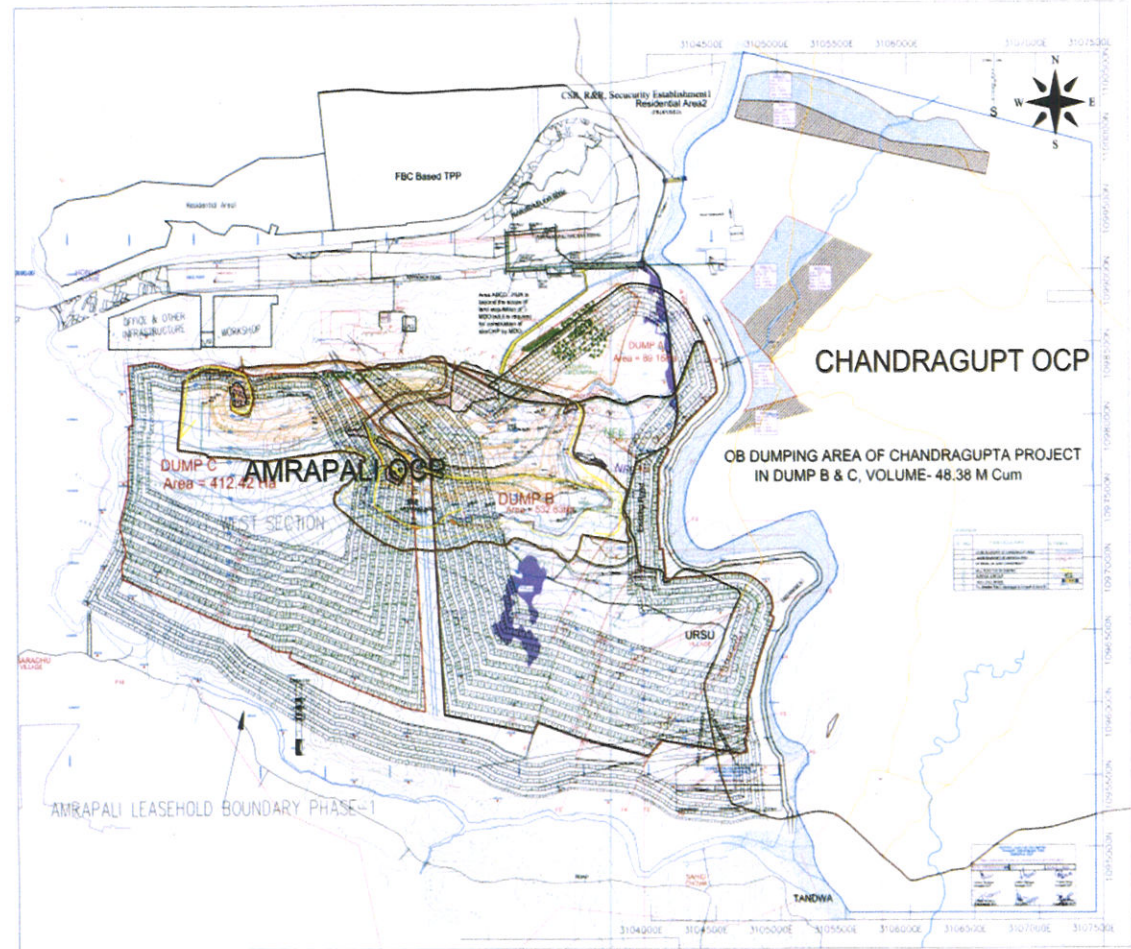
6
PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT
CHANDRAGUPT OPEN CAST AREA CCL

a)	An area of 0.14 ha has been proposed for diversion of Nadi/nalla. The status of feasibility reports for said diversion along with comments of Water Resource Department on the feasibility of said proposed diversion needs to be informed by the State.	<div>1) Chotki stream is a 2nd order and purely a rain-fed stream passing in the north-west of the block from North to south. Diversion of Chotki stream and straightening of the meander notch of Barki River (100 mtrs) are proposed.</div> <div>2) A DPR of Chhotki Stream diversion and straightening of the meander notch of Barki River has been prepared by IIT Roorkee. (The DPR enclosed in the form of CD as Annexure VII). Diversion proposal has been recommended by Chief Engineer (Water Resources Department), Jal Bhawan, Ranchi for issuance of NOC. (The recommendation is enclosed as Annexure VIII).</div>																																																														
b)	An area of 13.94 ha of forest land has been proposed for infrastructure while only 2.3 ha only has been proposed in non-forest land. The State Government may therefore assess the legitimacy of site-specificity of various infrastructural components and possibility to shift non-site-specific components to the non-forest land.	<div>As per the advice of MOEFCC, the land-use proposed in the earlier submitted Form-A has been revised with a view to reduce forest land for infrastructural components. The earlier and proposed land-use is given below:</div> <table><tr><th colspan="5">Earlier Land-Use for Infrastructure</th><th colspan="3">Revised Land-Use for infrastructure</th><th rowspan="2">% Change in Forest Land</th></tr><tr><th>SN</th><th>Component</th><th>Forest Land</th><th>Non-Forest Land</th><th>Total Area (in Ha)</th><th>Forest Land</th><th>Non-Forest Land</th><th>Total Area (in Ha)</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>(3-6)/3</td></tr><tr><td>1</td><td>CHP</td><td>9.30</td><td>5.52</td><td>14.82</td><td>4.45</td><td>3.41</td><td>7.86</td><td>- 52 %</td></tr><tr><td>2</td><td>Infrastructure (Field Workshop, Substation etc)</td><td>13.94</td><td>2.30</td><td>16.24</td><td>0.00</td><td>11.56</td><td>11.56</td><td>- 100 %</td></tr><tr><td>3</td><td>Road, bridge, culvert</td><td>4.38</td><td>14.20</td><td>18.58</td><td>4.38</td><td>14.20</td><td>18.58</td><td>0</td></tr><tr><td></td><td>Total</td><td>27.62</td><td>22.02</td><td>49.64</td><td>8.83</td><td>29.17</td><td>38.00</td><td>-68 %</td></tr></table> <div>The Land Use plan is enclosed as Annexure IX.</div>	Earlier Land-Use for Infrastructure					Revised Land-Use for infrastructure			% Change in Forest Land	SN	Component	Forest Land	Non-Forest Land	Total Area (in Ha)	Forest Land	Non-Forest Land	Total Area (in Ha)	1	2	3	4	5	6	7	8	(3-6)/3	1	CHP	9.30	5.52	14.82	4.45	3.41	7.86	- 52 %	2	Infrastructure (Field Workshop, Substation etc)	13.94	2.30	16.24	0.00	11.56	11.56	- 100 %	3	Road, bridge, culvert	4.38	14.20	18.58	4.38	14.20	18.58	0		Total	27.62	22.02	49.64	8.83	29.17	38.00	-68 %
Earlier Land-Use for Infrastructure					Revised Land-Use for infrastructure			% Change in Forest Land																																																								
SN	Component	Forest Land	Non-Forest Land	Total Area (in Ha)	Forest Land	Non-Forest Land	Total Area (in Ha)																																																									
1	2	3	4	5	6	7	8	(3-6)/3																																																								
1	CHP	9.30	5.52	14.82	4.45	3.41	7.86	- 52 %																																																								
2	Infrastructure (Field Workshop, Substation etc)	13.94	2.30	16.24	0.00	11.56	11.56	- 100 %																																																								
3	Road, bridge, culvert	4.38	14.20	18.58	4.38	14.20	18.58	0																																																								
	Total	27.62	22.02	49.64	8.83	29.17	38.00	-68 %																																																								
c)	A total forest land of 36.82 ha of forest land has been proposed for Green belt which is in addition to 2.9 ha of forest land earmarked for safety zone. Rationalize for including green belt area in the project which could otherwise be excluded from the project and be managed by the Forest Department. Considered view of the State Government in this regard needs to be furnished	<div>1) The location map of the project shows that the proposed project is bounded by Mining (existing as well as proposed) projects on all the four sides.</div> <div>2) It may be noted that in the EC approval, there is a generic condition which states that green belt of width not less than 7.5 mtrs shall be developed all along the mine lease area. This apart, the statutory barriers against surface features like river, nallah, public road etc are to be maintained as per Coal Mines Regulation 2017. As a best practice measure, the area left as barriers is developed and maintained as Green belt with a view to enhance the plantation cover and decrease the carbon footprint. Such green belts also function as wind breaks.</div>																																																														


PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT

		<p>3) It is also required to maintain mine boundary in continuity and to divert entire forest land falling within the project boundary.</p> <p>4) As part of mitigation measures for dust suppression green belt has been proposed.</p> <p>It is evident from above that it may not be prudent for State Forest department to manage the intervening parcels of forest land bounded by mining activities and statutory restrictions against surface features. In view of this, it is proposed to maintain these parcels of land as green belt aggregating to 55.61 Ha (which includes 36.82 ha green belt proposed earlier plus 18.79 Ha forest land now made available due to shifting of infrastructural activities to non-forest land) as green belt as shown in the revised land use. The forest area earmarked as green belt will be kept and maintained as such, and no non-forest activity will be undertaken therein.</p>
d)	Details of area proposed for dumping of overburden is not available in the purpose-wise breakup. Comments in this regard may be provided by the State Government.	<p>1) Chandragupta OCP mine has been planned in a sustainable manner and >95% of OB will be dumped internally so as to minimize the land degradation to the minimum extent possible .</p> <p>2) Total volume of overburden expected to be generated in Chandragupta OCP is 995.34 Mn cum. Out of this, 946.96 Mn cum (=95%) is proposed as internal dump without affecting any external surface area other than the quarry itself.</p> <p>3) Only 48.38 Mn cum is proposed to be dumped externally in the nearest adjoining operational mine of Central Coalfields Limited i.e., Amrapali OCP.</p>


PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT
AMRAPALI-CHANDRAGUPT AREA, CCL




Integrated Dump plan of Amrapali OCP incorporating 48.38 Mn m³ of Chandragupt OCP is enclosed as **Annexure X**

Copy of Dumping Strategy as per the approved PR of Chandragupt Project and Amrapali project has been enclosed as **Annexure XI**

vii Analysis of the area proposed for diversion and area proposed for CA area using DSS analysis revealed the following which needs clarification:

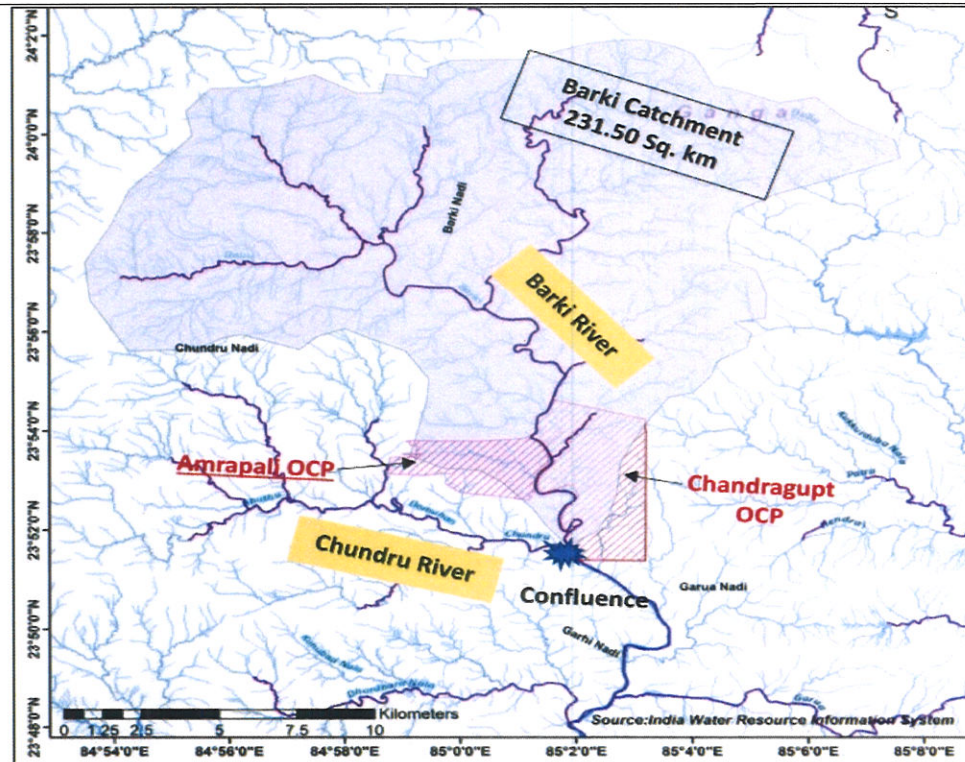

PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT

a)	Google imagery shows the presence of Settlements, Roads and Agriculture land etc. within the proposed forest land for diversion	<p>The roads passing through the Forest area within the coal block will be diverted from outside the Coal block boundary along with shifting of village habitat and encroachers at the time of commencement of mining operations. In this regard a request to Road Construction Department (RCD), Govt of Jharkhand was submitted on 15.12.2022 for diversion of the existing road within the project boundary. Subsequently, RCD carried out site inspection of the said road and Executive Engineer RCD requested Chief Engineer RCD for the preparation of DPR for diversion. (Correspondence letters enclosed as Annexure XII).</p> <p>At the time of handing over of forest land for mining activities necessary support will be extended to forest department to make forest area encumbrance free land within coal block.</p>
b)	As per Google imagery, Tandwa Barrage has been constructed after the year 2016 over the Garhi Nadi (River) and part of barrage project is falling in the forest patch which has been proposed for diversion.	<p>On physical verification it was found that barrage is not falling in the forest patch proposed for diversion. The barrage structure is approximately 140 mtrs away from the project boundary. However, a small part of stone pitched embankment is touching the South-Western boundary of the project at an approximate distance of 20 mtrs only.</p> <p>However, it is to mention that in the PR of Chandragupt OCP, a barrier of 100 mtr to be left against the embankment has already been provisioned.</p> <p>Further, as per the approved Project Report of Chandragupt OCP: “The Southern Boundary has been fixed leaving a barrier of 100 mtr from the southern geological block boundary of Pachra South block.”</p> <p>As such, the quarry edge will be 100 mtrs away from the embankment. (Barrage Location Plan is enclosed in the form of CD & Hard copy as Annexure XIII)</p>
c)	Google imagery shows the encroachment of Agriculture land, plantation activities and presence of settlement in CA patches.	<p>To be replied by State Government</p> <p>(enclosed KML,DGPS Plans &Topo location Map and additional areas attached in the form of CD & Hard Copies as Annexure XIV)</p>
d)	An earthen pond created recently in the CA patch namely Mahuari and New Road has been constructed in the CA patch namely Village – Kendua.	<p>To be replied by State Government</p> <p>(enclosed KML,DGPS Plans &Topo location Map and additional areas attached in the form of CD & Hard Copies as Annexure XIV)</p>
e)	Out of total 1400 ha (DSS Calculated) forest land proposed for CA, 31 ha of land is characterized with Moderately Dense Forest.	


PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT
 CHANDRAGUPT AREA, COI

		To be replied by State Government (enclosed KML,DGPS Plans &Topo location Map and additional areas attached in the form of CD & Hard Copies as Annexure XIV)
viii)	Quantitative details of deaths of human and elephants in last five years may be furnished by the State along with details of existing and proposed elephant corridors in the landscape.	To be replied by State Government (Enclosed as Annexure XV)
ix)	External dump is being proposed in 86.16 ha of land in Amrapali OCP, which is not given in the proposal but included in Mining Plan. Therefore compliance status of Amrapali OCP shall be submitted.	The external dump of Chandragupta OCP is proposed in an area of 89.16 Ha of land in Amrapali OCP. The approval of Project report enclosed in the form of CD of Amrapali OCP along with approved dumping strategy plan is attached as Annexure XVI for quick perusal. The compliance status of already diverted forest proposal of 531.64 Ha in respect of Amrapali OCP is enclosed Compliance report of Amrapali as Annexure XVII)
x)	In case Amrapali OCP is not of the UA then an NOC from the UA of Amrapali OCP shall be submitted.	Both Amrapali OCP and Chandragupta OCP are the projects of Central Coalfields Limited under the administrative control of 'Amrapali & Chandragupt Area'. As such, no NOC is required for Chandragupta OCP from Amrapali OCP.
xi)	Amrapali OCP boundary is in the west side of the Barki river, the impact of having mining on both the sides of river will require deep understanding of the impact of hydrology of the river, so comments of the State shall be submitted in this regard.	CMPDIL, Ranchi has prepared a Report on the anticipated impacts of proposed mining on either side of Barki River and its management plan. (Report of CMPDIL is attached as Annexure-XVIII). Following are the key findings of the report: 1) There shall not be any obstruction to the flow of Barki River. Mining is proposed by leaving approx. 100 m on Amrapali side and 60 m on Chandragupt side from the HFL of the River. 2) This safety zone will act as a buffer between the natural stream and active mining area, thereby safeguarding the banks of Barki River from erosion, keeping the catchment area for stream assisted by natural channel slope, sustaining the stream flow, and preserving the riverine eco-system. 3) During heavy rainfall conditions, the active mine sumps will act as surge ponds and effectively reduce the peak flow rates in Barki River. Thus, Barki River will not experience any flooding-related problems during heavy rainfall. Additionally, as part of the study on diversion of Chutki nalla, IIT Roorkee has conducted a study on Barki river also. The study states that Barki has a catchment of 231.50 sqkm.


PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT
AMRAPALI-CHANDRAGUPT AREA CCL



The Barki watershed and the corresponding locations of the Amrapali and Chandragupt mines are depicted in the above figure. It can be observed that both Amrapali and Chandragupt mines are located in the southernmost portion of the Barki watershed, at its confluence with Chundru stream.

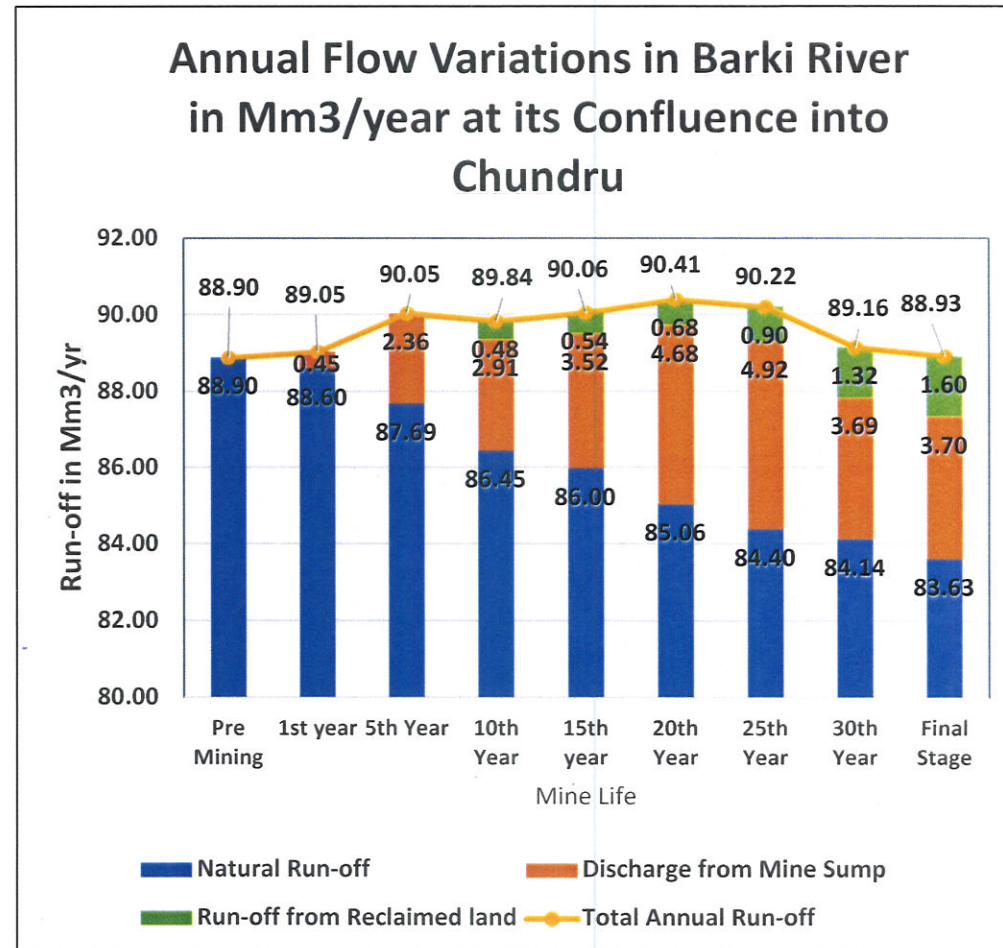
Of the entire Barki catchment area of 231.50 sq. km, only 6.40% (=14.94 sq. km) is designated for mining under both Amrapali and Chandragupt. It is to note that annual run-off from Barki River catchment is 88.90 Mm³, majority of which is contributed by belly portion falling in North and North-East part which remains unaltered by mining.

In the IIT-Roorkee study, peak flow of Barki River near the proposed mining area was modelled for 50-year return period using HEC-RAS software. Key aspects are as under:

- As per the said study, the predicted HFL of peak flow of Barki is found to be lower than the corresponding river banks, suggesting no risk of flooding on the surrounding landscape.
- Whereas, due to proposed mining activities, a slight draw-down in the discharge of Barki is expected during the lean period. However, ample amount of excess mine seepage will be pumped from the mine voids of both Amrapali and Chandragupt to Barki River after proper treatment to maintain the lean flow.



PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT
CHANDRAGUPT AREA CO

- c) The amount of extra mine water projected to be available in Chandragupt OCP mine sump to recharge the Barki River during the non-monsoon period is approximately 3200 m³/day.
- d) Change in the Flow of Barki River:
- Natural run-off in Barki catchment will reduce from 88.90 Mm³/year (pre-mining) to 83.63 Mm³/year= 5.90% reduction
 - Discharge from Mine Sump= Excess Mine Seepage+ Rainwater Accumulated (=0 to 4.92 Mm³/yr)
 - Run-off from Reclaimed mine area: 0 to 1.60 Mm³/yr



Thus, any deficit in natural run-off will be compensated by mine discharge and run-off from reclaimed land and hence there will not be any variation in the flow of Barki river.


 PROJECT OFFICER
 CHANDRAGUPT OPEN CAST PROJECT

		<p>Therefore, it can be ascertained that there will not be any direct impact of proposed mining on the surface hydrology of Barki River.</p> <p>Furthermore, coal and over burden of the study area does not contain pyritic materials. Hence Acidic mine drainage will not be produced due to proposed mining activities.</p> <p>Control measures like toe wall, garland drain, check dams and siltation ponds to arrest siltation, and ETP with oil and grease removal mechanism to treat workshop effluents, will be in place.</p> <p><i>(The DPR from IIT,ROORKEE is enclosed in the form of CD as Annexure VII)</i></p>
xii)	A high level bridge over Barki river needs to be constructed to connect the proposed OCP, the location of the bridge and its connectivity should be shown through KML for further DSS analysis.	A high-level bridge over Barki river and its connectivity with the Chandragupt OCP is proposed. The KML file is attached <i>in the form of CD as Annexure XIX)</i>
xiii)	Chotki river falling in the proposed site has to be diverted as per the proposal but the site inspection report or the comments of the State is silent on it, specially about its impact on the water security and hydrological cycle downstream.	<ul style="list-style-type: none"> Chhotki Stream is a second-order rain-fed stream originating outside of the mining area having catchment of 7 sq. km (against the catchment area of 231 sq km of Barki river). The stream passes through northern part of the mining area and joins Barki River from left side. <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Chhotki Stream Upstream of the Project</p> </div> <div style="text-align: center;">  <p>Chhotki Stream at the Entry into Project Boundary</p> </div> </div>


PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT
AMRAPALI-CHANDRAGUPT AREA CCL



**Chhotki Stream at Confluence
into Barki River**

The above figures indicate that Chhotki Stream remains almost dry during non-monsoon.

- Annual run-off from Chhotki catchment is 2.52 Mm³ (against the annual run-off of 88.90 Mm³ from Barki River catchment).
- A minor diversion of Chhotki stream along N-W boundary of project has been proposed to protect the stream from the mining operations and for safe working of mine.
- In this regard, a detailed study report of Chhotki stream diversion has been prepared by IIT Roorkee. The report has been submitted to Water Resources Department (WRD), Jharkhand for competent approval for diversion.
- As per the study, computed water surface profile of Barki stream under the existing condition compares well with the water surface profile computed with diversion of the Chhotki stream, suggesting that the effect of diversion on the surface hydrology of Barki River is negligible.
- Sub Divisional Officer, Waterways Subdivision, Hazaribagh of Govt of Jharkhand has carried out site inspection of Chhotki river and submitted to Executive Engineer, Water Resource Department with the following recommendation:

“उक्त नदियों का diversion एवं straightening से नदियाँ के बहाव में कोई प्रतिकूल प्रभाव नहीं पड़ेगा”

The diversion proposal has further been recommended by Chief Engineer (Water Resources Department), Jal Bhawan, Ranchi for issuance of NoC. The recommendation is enclosed as **Annexure V**.

- Chhotki diversion channel is designed for a discharge of 50-year return period. The channel has been simulated using HEC-RAS ID software and found that all flow parameters are within safe limits.

 **PROJECT OFFICER**
CHANDRAGUPT OPEN CAST PROJECT


		<ul style="list-style-type: none"> Protection Measures for Chhotki Diversion recommended in IIT-Roorkee report which will be implemented: <ol style="list-style-type: none"> Protection works at confluence of Chhotki-Barki: Earthen embankment at confluence point. Top width 4.5m, side slope 1V:2H. Layer of loose boulders 30cm or gabion mattress 20cm over 200mm sand-gravel filter on side slope. Protection works to divert Chhotki river to Barki river: Earthen embankment at diversion point of Chhotki. Top width 3m, side slope 1V:2H. Layer of loose boulders 30cm or gabion mattress 20cm over 200mm sand-gravel filter on side slope. <p>Green belt adjoining diverted channel of Chhotki Stream</p>
xiv)	Since the area has elephant therefore the cases of the Human Elephant conflicts in the district needs to be looked into, for which deaths of human and elephants in the Chatra and Hazaribagh district in last five years to be provided. Loss of property and crop damage and compensation given and pending should also be provided.	<p>To be replied by State Government</p> <p>(enclosed as Annexure XV)</p>
xv)	Recommendation of the CWLW will be needed specially regarding need of wildlife management and mitigation of conflict plan.	The CWLW has given comments regarding need of wildlife Management and mitigation of Man and animal conflict. (Copy enclosed as Annexure I)

You are hereby requested to kindly accept the compliance and to take the needful at your earliest convenience for which we will be highly obliged.

Your kind help and consideration in this regard will get Forest Clearance and to make the project operational in the earliest timeline and the coal produced will contribute to add to energy demand for the nation.

With best of regards,

Yours Faithfully


 21/12/23
 Project Officer
 Chandragupt Project
 Amrapali-Chandragupt Area, CCL
PROJECT OFFICER
CHANDRAGUPT OPEN CAST PROJECT
AMRAPALI-CHANDRAGUPT AREA, CCL