Proposal for Diversion of 121.58 ha Forest Land for Opencast Mining of Durgapur Deep Extension Opencast Project of M/S. Western Coalfields Limited, Chandrapur Area, Maharashtra

Assessment Report

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

June, 2014

Assessment Report on Proposal for Diversion of 121.58 ha Forest Land for Opencast Mining of Durgapur Deep Extension Opencast Project of M/S. Western Coalfields Limited, Chandrapur Area, Maharashtra

A. Background:

Western Coal Fields Limited (WCL), Chandrapur has submitted a proposal for diversion of 121.58 ha forest land under FCA-1980 for opencast mining of Durgapur Deep Extension Opencast Project. The proposed area includes 118.40 ha for mining and 3.18 ha as safety zone. The proposed forest land is from Reserve Forest Compartment Nos. 400, 401, 402 of Chandrapur Forest Division and '*zudpi jungle*' S. no. 262/1 of village Sinhal, Chandrapur. The proposed project is extension of the ongoing project having capacity of producing coal to the extent of 2.0 million tonnes of coal per annum. The project is linked to Chandrapur Super Thermal Power Station of Maharashtra State Electricity Board (MSEB). The extension is proposed to enhance coal production to 3.0 MTPA. The brief introduction of WCL Chandrapur is given in **(Annexure 1**).

The project is located at 12.25 km from the core area and 1.25 km from the buffer area of Tadoba Andhari Tiger Reserve (TATR) in Maharashtra. The Chief Conservator of Forests (Territorial), Chandrapur has noted in his site inspection report that "The area has rich presence of endangered species such as Tiger/Leopard and the area is sensitive as it is good habitat for tiger and leopard and other wild animals". The area is adjoining to the notified buffer zone of Tadoba-Andhari Tiger Reserve and very near to Chandrapur town. The man animal conflict in general has increased in many areas in the last 4 – 5 years. It is necessary to undertake studies by institution, such as Wildlife Institute of India and incorporate recommendations to mitigate man animal conflict as the land in question has presence of Schedule 1 species i.e., Tiger, before giving approval under Section – 2 of Forest (Conservation) Act, 1980.

Chief Wildlife Warden, Govt. of Maharashtra, based on remarks of the Filed Director, TATR and Addl. Principal Chief Conservator of Forests (WL), East Nagpur offered his comments regarding this proposal. In brief, the remarks of Chief Wildlife Warden are as follows:

1) The proposed area is at crow fly distance of 12 km from the core of TATR and 1.25 km crow fly distance from buffer zone of TATR.

2) The proposed area is a habitat of Tiger, Leopard and other herbivores.

3) There were 3 cases of human death and 16 cases of people injured in man-wildlife conflict in this area during the period of 2008-09 to 2011 -12. This also confirms the presence of Tiger and Panther in the proposed area.

4) The proposed area is in the wildlife corridor.

5) The proposed area is not included in the buffer zone of TATR, but it is habitat of Tiger and Leopard.

6) It is recommended to undertake studies by institutions such as Wildlife Institute of India, Dehradun and incorporate its recommendations before giving clearance to the project.

Subsequently Wildlife Institute of India received a letter No. FLD 3613/CR 251/F-10, dated 5 August, 2013 from the Joint Secretary, Revenue and Forest Department, Govt. of Maharashtra with a request to carry out wildlife impact assessment study with reference to whether the proposed project by M/S Western Coalfields Limited would cause any damage to the wildlife habitat and also whether it will give rise to the conflict between human beings and wild animals **(Annexure 2)**. The said letter from the Joint Secretary, Revenue and Forest Department, Govt. of Maharashtra mentioned about diversion of just 34.135 ha of forest land for Durgapur Opencast Mine of Western Coalfields Limited (WCL), Nagpur.

In response to above request letter from the Joint Secretary, Govt. of Maharashtra, the Wildlife Institute of India (WII), deputed Dr. Bilal Habib, Scientist-D, for site reconnaissance. Dr. Bilal Habib visited field site from 27 to 30 November, 2013.

B. Objectives:

The reconnaissance of the proposed project site was conducted with the following objectives:

a) To assess the use of area under consideration for proposed forest diversion by wildlife species.

b) To assess whether the land after proposed diversion of forest land will result into enhanced human and wildlife conflict.

C. Field Observations:

a) Incongruity in the Letter received from Joint Secretary, Revenue and Forest Department, Govt. of Maharashtra:

The letter received by Director Wildlife Institute of India from Joint Secretary, Revenue and Forest Department, Govt. of Maharashtra (Letter No. FLD 3613/CR 251/F-10, dated 5 August, 2013) mentioned proposed diversion of 34.135 ha of land whereas during the reconnaissance visit of the Wildlife Team it was found that the actual land requested for diversion was 121.58 ha. The team however continued reconnaissance visit, but requested WCL authorities to send appropriate amendment letter.

b) Amended Letter:

Later Director, WII, received second letter (Letter No. FLD 3613/CR 251/F-10, dated 6 January 2014) **(Annexure 3)** informing that the forest land to be diverted was inadvertently mentioned as 34.125 ha in previous letter. However, the user agency (WCL) has proposed for diversion of 121.58 of forest land. After receipt of this amended letter, WII team again visited the field site from 2 to 5 June, 2014.

c) Site Visits and Methodology:

The reconnaissance of the proposed project site was undertaken by Dr. Bilal Habib, Scientist WII, from 27 - 30 November, 2013 and 2 - 5 June, 2014 to validate and add to the secondary information that was collected and perused. This involved field observations to assess the present status of land considered for diversion with specific reference to its habitat value for Schedule - 1 wild animal species under the Wildlife (Protection) Act, 1972. The information was also supplemented by consultations with key stakeholders **(Appendix 4)**.

During the field visit, a 3 km long trail through the 121.58 ha area was searched for occurrence of animal signs (pugmarks, scats etc.), direct sightings and also to assess vegetation diversity and condition along the trail. During the field visit existing mining areas and compensatory afforestation areas of M/S WCL were also visited by the team. During the reconnaissance, it was observed that reclaimed sites have been planted using *Prosopis* as a major species and this species has proliferated extensively. In view of this it was decided to carry out an assessment on temporal changes in vegetation due to such activities.

d) Field Observations:

The land proposed for diversion (121.58 ha) has been demarcated by WCL authorities with boundary markings (GPS location of boundary markings provided in **Annexure 5**) and is contiguous to existing Durgapur Opencast Mine. The proposed diversion area is characterized by Southern Dry Deciduous Forest Type dominated by Bamboo, Lagerstroemia *spp.*, Butea *spp.*, etc. The location of the proposed area with respect to TATR Core, Buffer and TATR South Corridor connecting TATR to Chaprala WLS is shown in Figure 1, 2 and 3. The area proposed by user agency is an ideal habitat for the endangered species such as Tiger and its associated co-predators and prey species. This is in accordance with the remarks made by Chief Wildlife Warden, Maharashtra (Please see para 3). Further, as remarked by him, the area has witnessed three (03) cases of human death and 16 cases of human injury during the period of 2008 - 09 to 2011 -12. The area is thus, prone to human wildlife conflict. As per the Forest Clearance approval all the mining agencies need to go for compensatory afforestation over the degraded forest land double in the extent to the area being diverted and these area are to be maintained at the project cost. WCL has so far used prominently *Prosopis spp.,* an exotic species for compensatory afforestation. *Prosopis* suppresses the diversity of native vegetation thereby reducing the forage availability and provides suitable cover to the wild animal species (e.g., Leopard and Wild boar) which can exploit human-interface and result into enhanced human-wildlife conflict.

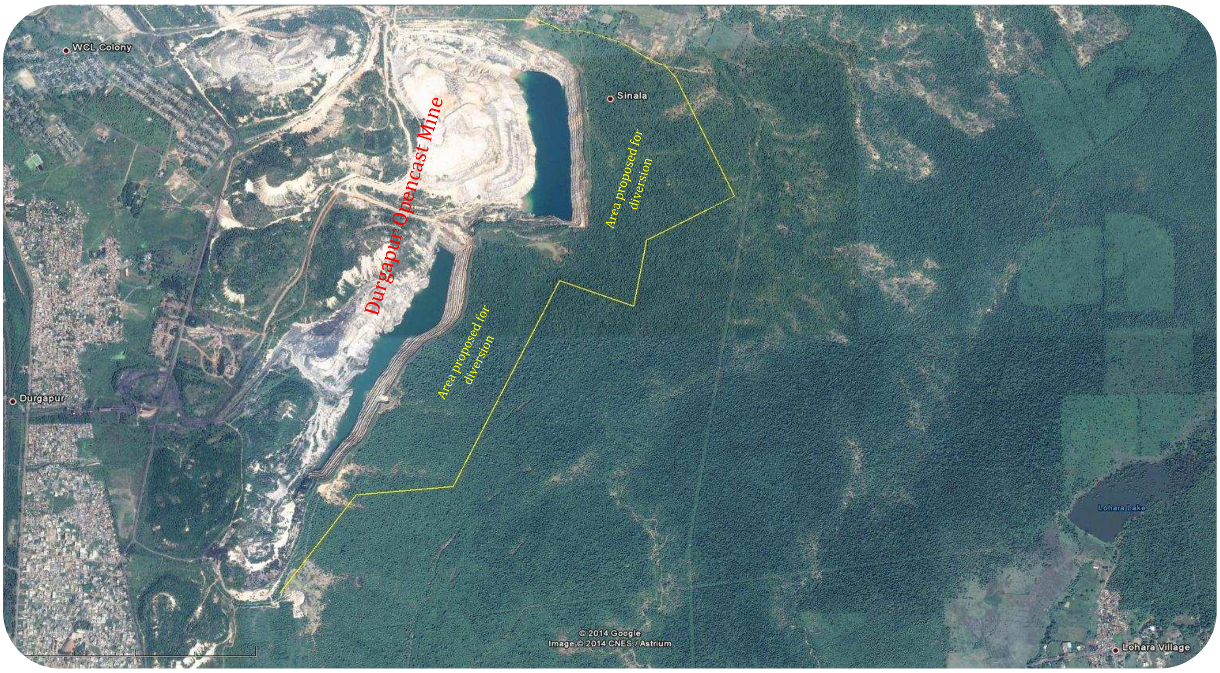

Fig 1: Location of existing Durgapur Opencast Mine with respect to surrounding forest land proposed for diversion.

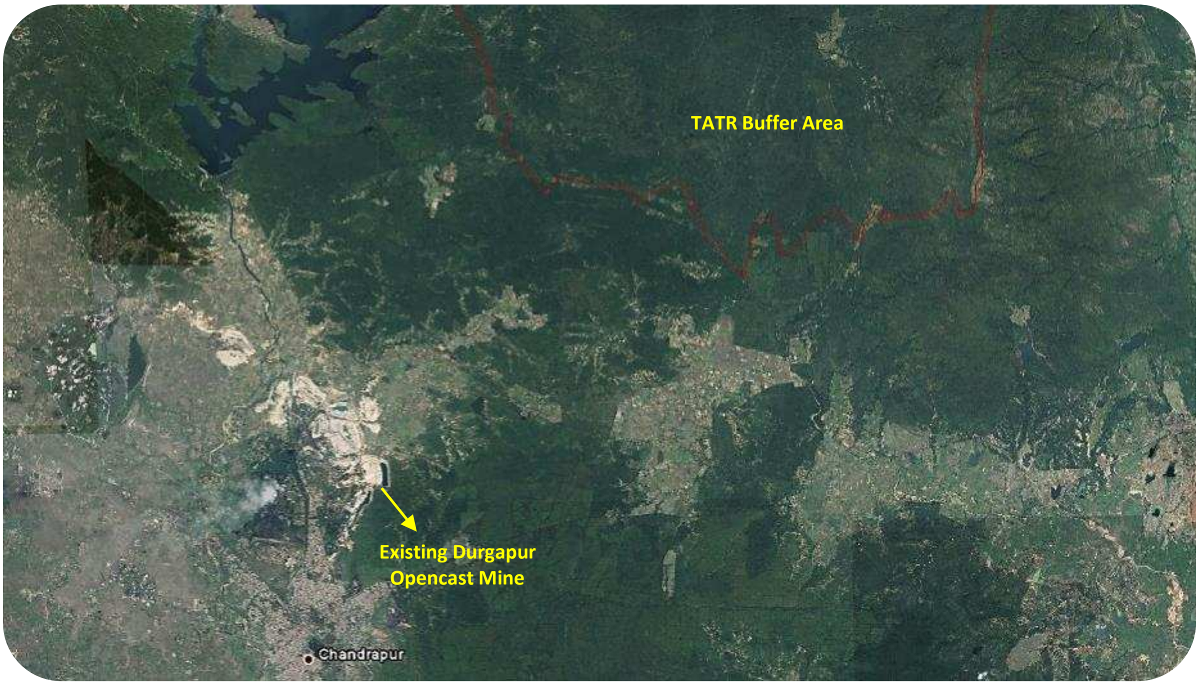

Fig 2: Location of existing Durgapur Opencast Mine with respect to Buffer Boundary of Tadoba-Andhari Tiger Reserve

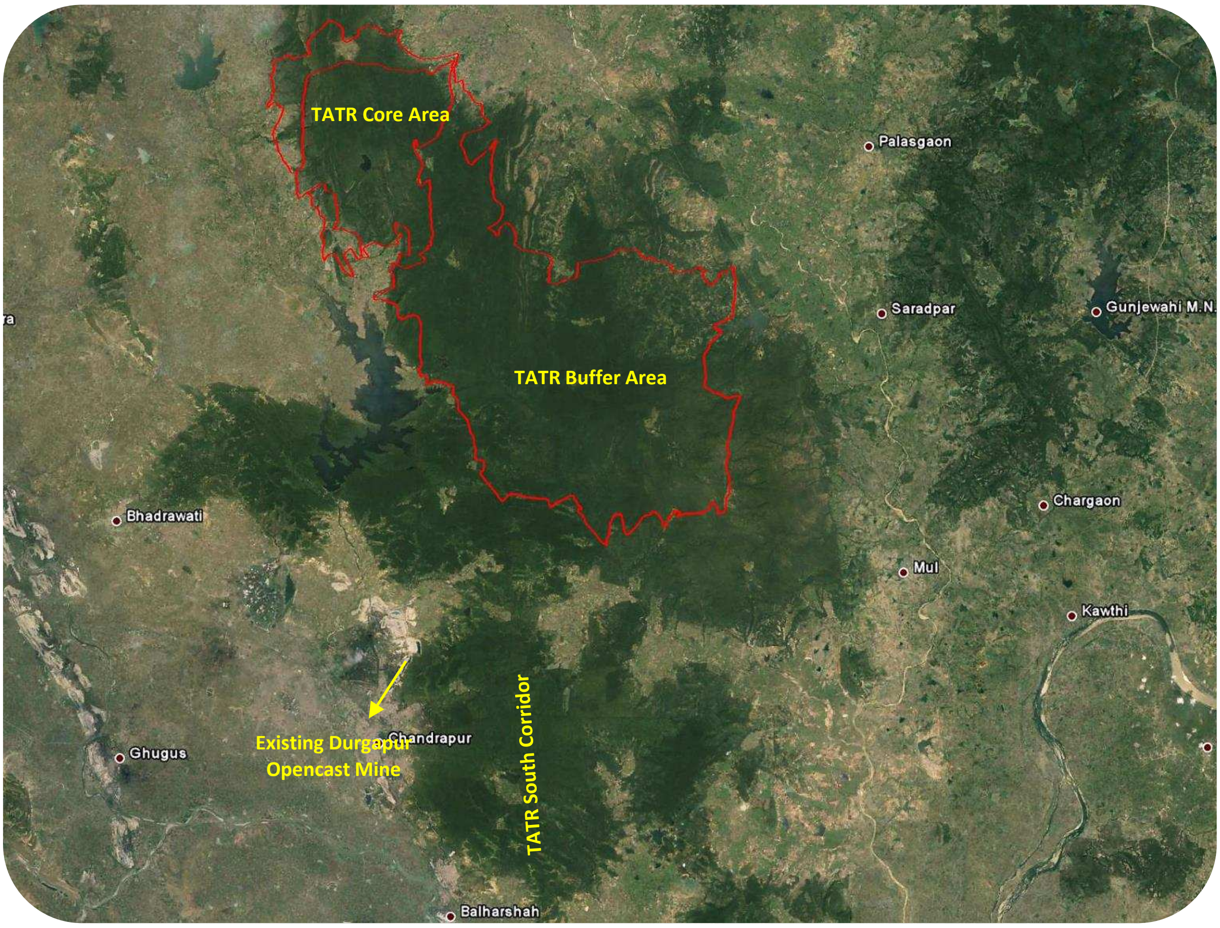

Fig 3: Location of existing Durgapur Opencast Mine with respect to Core and Buffer of Tadoba-Andhari Tiger Reserve and Corridor Area between TATR and Chaprala WLS

During the reconnaissance visit the team also reported occurrence of 16 tree and shrub species from the area proposed for diversion with Bamboo as dominant species. The overall forest cover ranges from 60 – 80 per cent in the reserved forest area proposed for diversion. The list of dominant species reported is given in Table 1 below:

Table 1: Tree and shrub species reordered from the reserved forest proposed for diversion to WCL

S. No.	Tree/Shrub Species
01	*Lagerstroemia parviflora*
02	*Lagerstroemia speciosa*
03	*Dendrocalamus strictus*
04	*Butea monosperma*
05	*Lannea coromandelica*
06	*Madhuca indica*
07	*Chloroxylon swietenia*
08	*Diospyros melanoxylon*
09	*Wrightia tinctoria*
10	*Bambusa spp*
11	*Buchanania lanzan*
12	*Holarrhena antidysenterica*
13	*Cassia fistula*
14	*Dalbergia paniculata*
15	*Terminalia tomentosa*
16	*Holoptelea integrifolia*

During the site visit the team recorded 10 signs of Leopard (Scats and pugmarks), 3 signs of sloth bear and also sighted Blacknaped hare and Russell's viper from the area proposed for diversion. The occurrence of signs and sightings indicate an active use of area by wildlife species proposed for diversion. Occurrence of large predators indicate the health of the system and therefore the area proposed for diversion is the potential habitat of the large carnivore species and is actively being used by them. This observation conforms the remarks of CWLW, Maharashtra.

e) Vegetation around mining and dumping sites:

During the field visit, the team also visited various mining and dumping sites and evaluated the vegetation around those sites. The most dominant tree used for slope stabilization at dumping sites and for restoration of degraded areas was *Prosopis spp.* an invasive species to India. *Prosopis* was first introduced to India in 1877 where it has become invasive. Aggarwal *et al.,* (1976) found that the canopies of the invasive *Prosopis* had far fewer understory species. *Prosopis* is at least in part a "driver" of decreased diversity rather than a "passenger" responding to other factors that also decrease diversity (MacDougall, A. S and Turkington, R., 2005). Strong negative impacts of *Prosopis* on the richness, evenness and densities of other plant species have also been reported in many countries where it is also invasive (El-Keblawy A., and Al-Rawai, A., 2007). The observed effects of *Prosopis* canopies on species richness are same in higher and lower stand densities.

f) *Prosopis – an invasive species responsible for increasing human-wildlife conflict:*

With its proven negative effect on the diversity of native plant species, *Prosopis* is responsible for enhancing the occurrence of human-wildlife conflicts in the vicinity of Chandrapur. The species provides good cover for leopard and wild boar in the area. As mentioned above, the understory of palatable species for herbivores is almost negligible below the stands of *Prosopis* which make this habitat unsuitable for deer and other potential prey species of Tiger and Leopard but makes this area as a potential habitat for species which depend on cover to exploit the anthropocene such as Wild boar and leopard. The occurrence of these species in the vicinity of human habitations result in enhanced human-wildlife conflict in the area. Most of the mining agencies in the area use *Prosopis* as species for vegetation /ecological restoration because of higher survival rate, less maintenance cost and its invasive nature to green more area while spending less money and time. This practice has lead an enhanced human-wildlife conflict in the area.

g) Increase in *Prosopis* as a cover during last decade:

We also estimated the percent change in *Prosopis* cover across mining and dumping sites within the Chandrapur area using time series analysis. We analyzed satellite imageries from 2004 to 2013 to estimate per cent changes in *Prosopis* across dumping and mining sites. We sampled six (06) grids (200m x 200 m) across the landscape and estimated the change or spread of *Prosopis* as a cover. *Prosopis* spread was estimated to be 8.33% in 2004 and this expanded to 65.83% in 2013 which means almost 60% increase in an area covered with *Prosopis* than what was there in 2004. The time series imageries from 2004 to 2013 are given in Figures 4 – 8 (Imageries are representative of smaller area for visualization purpose). The details of vegetation change are provided in Table 2. The time series analysis provides insights into the spread of *Prosopis* across the mining and dumping sites in Chandrapur area. The present condition of vegetation as on June, 2014 in sampling plots (200m x 200m grids) was actually sampled during the field visit for ground truthing purpose and to evaluate the composition of vegetation at sampling locations. One circular plot of 20 m radius within each 200m x 200m grid was used for validation of current vegetation situation. The details of species occurrence and cover at sampling locations as on June 2014 is given in detail in Table 3.

Fig 4: Satellite Imagery of Mining area showing the extent of *Prosopis juliflora* during the year 2004 **(15.04.2004).** The coverage under *Prosopis* was just 8.33%

Fig 5: Satellite Imagery of Mining area showing the extent of *Prosopis juliflora* during the year 2006 **(26.01.2006).** Extent of *Prosopis* coverage increased to 18.33% in just a brief period of 2 years.

Fig 6: Satellite Imagery of Mining area showing the extent of *Prosopis juliflora* during the year 2010 **(02.12.2010).** Coverage of *Prosopis* in 2010 enhanced to 32.5% from baseline extent of 8% in 2004.

Fig 7: Satellite Imagery of Mining area showing the extent of *Prosopis juliflora* during the year 2012 **(24.09.2012).** The coverage of *Prosopis* enhanced by almost 49% in comparison to base year of 2004 i.e., just 8 years

Fig 8: Satellite Imagery of Mining area showing the extent of *Prosopis juliflora* during the year 2013 **(01.11.2013).** The *Prosopis* coverage got further enhanced and cumulative increase from base year was about 57%.

Table 1: Temporal changes in *Prosopis* cover (per cent) across different years at mining and dumping sites in Chandrapur area

Sampling Locations	Percent *Prosopis* Cover at different Sampling Location (Year and date of Satellite Imagery)				
	2004 15.04.2004	**2006 26.01.2006**	**2010 02.12.2010**	**2012 24.09.2012**	**2013 01.11.2013**
A	20	45	75	85	90
B	0	0	50	60	70
C	05	10	15	20	25
D	0	25	50	70	80
E	25	30	35	40	50
F	0	0	20	70	80
Total	**8.33**	**18.33**	**40.83**	**57.5**	**65.83**

Table 3: Results of vegetation sampling across time series plot during June, 2014

Sampling Locations	Species recorded at sampling Locations	% Cover by each species
A	*Prosopis juliflora*	90
	Cassia siamea	5
B	*Prosopis juliflora*	70
	Cassia siamea	10
	Dalbergia sissoo	10
	Azadirachta indica	5
C	*Acacia arabica*	40
	Prosopis juliflora	25
	Cassia siamea	10
	Dalbergia sissoo	5
D	*Prosopis juliflora*	80
E	*Acacia spp.*	30
	Prosopis juliflora	50
	Acacia arabica	10
	Dalbergia sissoo	5
	Azadirachta indica	5
F	*Prosopis juliflora*	80

h) Location of proposed area for diversion with respect to TATR South Corridor:

The proposed forest diversion area is at the western side of the Tadoba Southern corridor. Tadoba is connected to Chaprala WLS in Maharashtra and Indravati Tiger Reserve in Chhattisgarh by TATR southern corridor. The proposed forest area for diversion is adjacent to existing Durgapur open cast mine. This diversion may not have much effect on movement of the animals through this corridor, but subsequent diversion if any may adversely affect the animal movement corridor. The locations of Durgapur mine and area proposed for diversion with respect to TATR south corridor is shown in Figure 9.

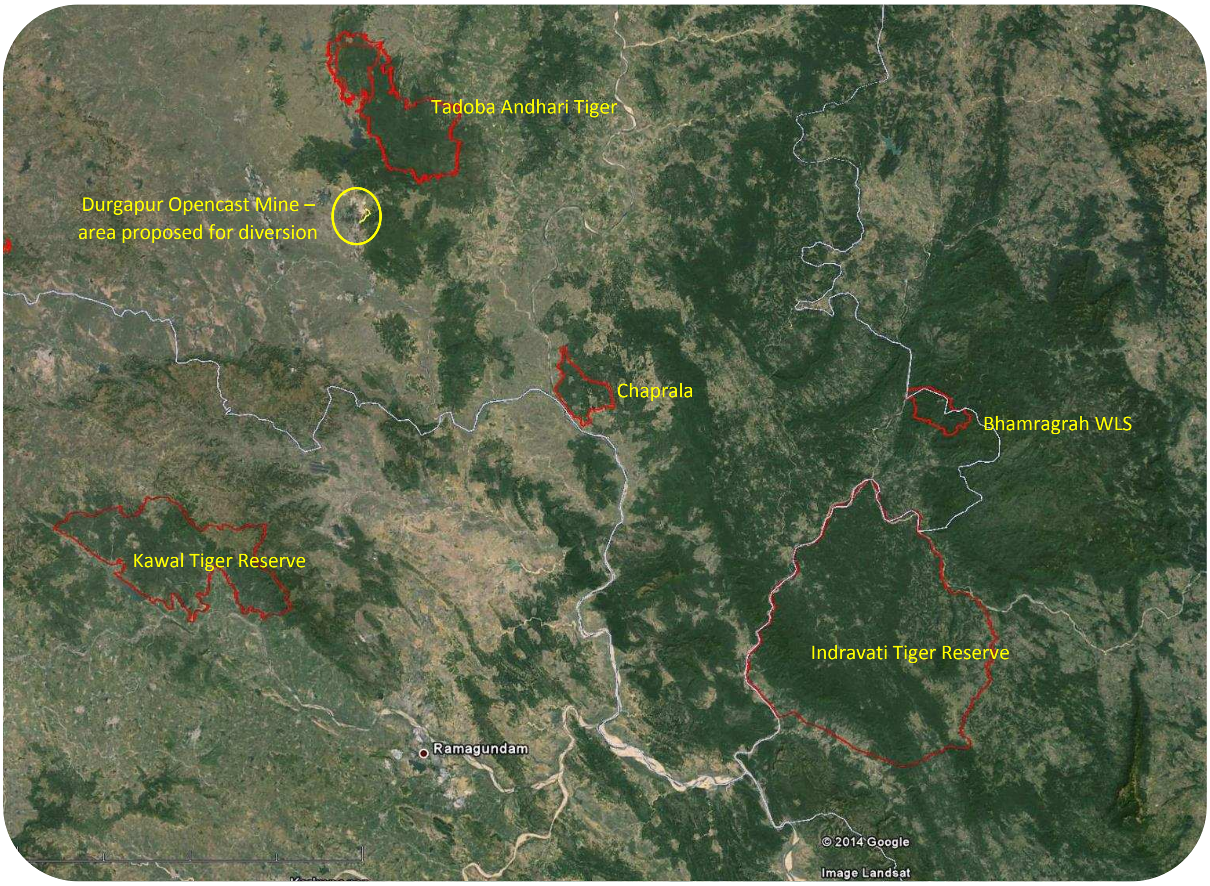

Fig 9: Location of various protected areas connected to Tadoba Andhari Tiger Reserve via TATR South Corridor with respect to forest area proposed for diversion

D. Recommendations:

1. The proposed forest diversion is at the western end of TATR south corridor which connects TATR to Chaprala WLS down south and further to Indravati Tiger Reserve, Chhattisgarh. The proposed forest diversion is expected to have less impact on the movement of animals using this corridor but any subsequent/additional forest diversion may impair the functionality of the corridor under consideration.

2. The WCL should take the responsibility of making existing plantation areas (WCL) within Chandrapur *Prosopis* free in a phased manner by replacing with native species, which will greatly help in reducing the human-wildlife conflicts in the area. As is evident from time series analysis, from 2004 till 2013 the *Prosopis* spread was estimated to be from 8.33% in 2004 to 65.83% in 2013 which means almost 60% of an area is covered with *Prosopis* than what was in 2004.

3. WCL should seek expert guidance for exploring options for better slope stabilization mechanisms at dumping sites. Native grass species and occasional trees interspersed in between should be the strategy for compensatory restoration instead of invasive *Prosopis spp.*

4. Continued monitoring by a competent agency of use of existing corridor by wildlife is vital along with maintenance of corridor functionality.

In view of above assessment, proposed forest (121.58 ha) can be considered for diversion subject to stipulation of phased removal of *Prosopis* in adjacent reclaimed sites and maintenance of functional corridor.

References:

Aggarwal RK, Gupta JP, Saxena SK, Muthana KD (1976) Studies on soil physico-chemical and ecological changes under twelve years old desert tree species of Western Rajasthan. Indian For 102: 863–872.

El-Keblawy A, Al-Rawai A (2007) Impacts of the invasive exotic *Prosopis juliflora* (Sw.) D.C. on the native flora and soils of the UAE. Plant Ecol 190: 23–35. doi: 10.1007/s11258-006-9188-2

MacDougall AS, Turkington R (2005) Are invasive species the drivers or passengers of change in degraded ecosystems? Ecology 86: 42–55. doi: 10.1890/04-0669

ANNEXIRE 1

Brief Introduction of WCL - Chandrapur

Western Coalfields Limited Chandrapur Area is operating ten coal mines in & around Chandrapur City of Maharashtra State of which six mines are underground & four mines are opencast. A total workforce of 8471 persons is being deployed to produce around 6.0 Million Tonnes of Coal/Annum. Most of the coal produced is supplied to CSTPS-Chandrapur as well as other power plants in Maharashtra & the rest of the country. Some coal is also being supplied to Cement & other allied industries in & around Chandrapur. WCL-Chandrapur Area has acquired approx. 4000 Ha. Land & provided employment to about 800 land oustees directly & supports about 1000 persons indirectly as contractor's labour. Mining activity has also created work opportunities for sand/coal transporters, material suppliers, service providers like taxi operators, Garages etc. The details of forest land acquired till March 2014 along with production details are given below:

A) SURFACE FOREST LAND ACQUIRED UPTO 31.3.2014 (As per Notifications)

S. No.	Mine	Forest land (Ha.)	Remarks
1.	Hindusthan Lalpeth Colliery	44.30	Underground mine for surface work.
2.	Chanda Rayatwari Colliery	5.42	-do-
3.	Durgapur Rayatwari Colliery	2.57	-do-
4.	Hindusthan Lalpeth Opencast	29.92	Opencast mining purpose
5.	Durgapur Opencast Mine	460.43	Including 121.58 ha forest land for mining purpose.
6.	Padmapur Opencast Mine	64.20	For opencast mining purpose
7.	Bhatadi Opencast	0.20	-do-
Total		**607.04**	

B) Year-wise Coal Production for last five year is as follows (In Million Tonnes)

Year	By Opencast	By Underground	Total
2009-10	5.80	1.08	**6.89**
2010-11	5.57	0.85	**6.42**
2011-12	5.98	0.77	**6.75**
2012-13	4.71	0.73	**5.45**
2013-14	**4.68**	**0.65**	**5.34**

ANNEXIRE 2

GOVERNMENT OF MAHARASHTRA

No. FLD 3613/CR 251/F-10
Room no. 456/ 461 Annex,
Revenue and Forest Department,
Madam Kama Road, Hutatma Rajguru
Chowk, Mantralaya, Mumbai – 400 032.
Dated: 5th August, 2013.

To
The Director,
Wildlife Institute of India,
Government of India,
Post Box no. 18, Chandrabani,
Deharadun 248001. Uttarakhand.

Subject : Forest Land- Chandrapur District
Diversion of 34.135 ha. of forest land for Durgapur Open Cast Mines of Western Coalfields Ltd., Nagpur.

Sir,

Western Coal Field Ltd, Nagpur, a Public Undertaking of Government of India, has submitted a proposal for diversion of 34.135 ha. forest land under section 2 of Forest (Conservation) Act, 1980. The proposed forest land is from village Sinhal in Chandrapur District. The project is located at a distance of 12.25 km from the core area of Tadoba Andhari Tiger Reserve and at 1.25 km from the buffer area of TATR. As reported by the Chief Conservator (Territorial), Chandrapur, the area has rich presence of endangered species such as Tiger/Leopard and the area is sensitive as it is a good habitat for Tiger, Leopard and other wild animals. The proposed area has presence of endangered Schedule -I species such as Tiger and Leopard. The area is adjoining to the notified buffer zone of TATR and very near to Chandrapur Town. The incidents of conflict between human beings and animals have been reported on the increased level in last 4-5 years.

In view of this, the State Government is of the opinion that, it is necessary to carry out the wildlife study in this area before taking any decision to recommend the proposal to Government of India.

Hence, it is requested to carry out Wildlife Impact Assessment Study with reference to whether this proposal would cause any damage to the wildlife habitat and also whether it will give rise to the conflicts between human beings and animals.

The project authority and concerned forest officers are being informed to extend all the necessary co-operation and assistance to you in this regard.

Yours faithfully,

(Sanjeev Gaur)
Joint secretary

P.T.O.

E:\F-10\English Letters to GOI.doc

E-Mail:

GOVERNMENT OF MAHARASHTRA

Copy for necessary action to:-

1. Secretary, Ministry of Environment & Forest, Government of India, New Delhi with a request to direct the Institute to take up the wildlife study as mentioned above.
2. Principal Chief Conservator of Forests (Wild Life), Maharashtra State, Nagpur.
3. Addl. Principal Chief Conservator of Forests and Nodal Officer, Maharashtra State, Nagpur.
4. Chief Conservator of Forests (Territorial), Chandrapur with a request to extend the necessary assistance to the Institute to carry out the above mentioned Wildlife Impact Assessment Study in the proposed area.
5. Chief Manger, WCL. Nagpur is requested to follow up the matter with concerned authorities.

ANNEXIRE 3

Government of Maharashtra

No. FLD 3613/CR 251/F-10
Room no. 456/ 461 Annex,
Revenue and Forest Department,
Madam Kama Road, Hutatma Rajguru
Chowk, Mantralaya, Mumbai – 400 032.
Dated: 6 January, 2014.

To
The Director,
Wildlife Institute of India,
Government of India,
Post Box no. 18, Chandrabani,
Deharadun 248001. Uttarakhand.

Subject : Forest Land- Chandrapur District
Diversion of 121.58 ha. of forest land for Durgapur Open Cast Mines of Western Coalfields Ltd., Nagpur.
Ref: This Govt.'s letter of even no. dated 5th August, 2013.

Sir,

Please refer the above mentioned letter from Government of Maharashtra.

2. The area of the forest land to be diverted was inadvertently mentioned as 34.135 ha. in the above letter. However, it should be 121.58 ha. as proposed by the user agency. A copy of proposal letter from Principal Chief Conservator of Forest (Head of Forest Force), Maharashtra State, Nagpur is enclosed for your kind perusal.

3. It is therefore requested to consider the correct area as 121.58 ha. for carrying out wildlife study in the area as the project is located at a distance of 12.25 km from the core area of Tadoba Andhari Tiger Reserve and at 1.25 km from the buffer area of TATR. As reported by the Chief Conservator (Territorial), Chandrapur, the area has rich presence of endangered species such as Tiger/Leopard and the area is sensitive as it is a good habitat for Tiger, Leopard and other wild animals. The proposed area has presence of endangered Schedule –I species such as Tiger and Leopard. The area is adjoining to the notified buffer zone of TATR and very near to Chandrapur Town. The incidents of conflict between human beings and animals have been reported on the increased level in last 4-5 years.

4. In view of this, the State Government is of the opinion that, it is necessary to carry out the wildlife study in this area before taking any decision to recommend the proposal to Government of India.

5. Hence, it is requested to carry out Wildlife Impact Assessment Study with reference to whether this proposal would cause any damage to the wildlife habitat and also whether it will give rise to the conflicts between human beings and animals.

P. T. O.

6. The project authority and concerned forest officers are being informed to extend all the necessary co-operation and assistance to you in this regard.

Encl: As above.

Yours faithfully,

(Sanjeev Garg)
Joint secretary

Copy for necessary action to:-

1. Secretary, Ministry of Environment & Forest, Government of India, New Delhi with a request to direct the Institute to take up the wildlife study as mentioned above.
2. Principal Chief Conservator of Forests (Wild Life), Maharashtra State, Nagpur.
3. Addl. Principal Chief Conservator of Forests and Nodal Officer, Maharashtra State, Nagpur.
4. Chief Conservator of Forests (Territorial), Chandrapur with a request to extend the necessary assistance to the Insitute to carry out the above mentioned Wildlife Impact Assessment Study in the proposed area.
5. Chief Manger, WCL. Nagpur is requested to follow up the matter with concerned authorities.

ANNEXURE 4

List of persons met during Reconnaissance Visit

S. No.	Name and Designation	Contact Details
01.	Shri. Virendra Tiwari Ex. Field Director TATR	09422177456 virendra_t@hotmail.com
02.	Shri. G. P. Garad Field Director TATR	09423774202 ccf_fdtatr@rediffmail.com
03.	Shri. G. P. Narwane DFO Buffer TATR	09405465327 gajendranarwane@gmail.com
04.	Shri. N. D. Choudhari DFO, Chandrapur	09422303039 dfochandrapur@gmail.com
05.	Shri. R.K. Mishra Area General Manager, Chandrapur Area	09422114943
06.	Shri. S. De Dy. G .M/Sub-Area Manager Durgapur OC Sub Area	09225336369 sdday75@gmail.com
07.	Shri. R. S. Gupta Staff Officer (P&P) Chandrapur Area	09225336388 geeteshgupta05@gmail.com
08.	Shri. S. D. Dhote Sr. Survey Officer Durgapur OC Sub Area	9405155273

ANNEXURE 5

The GPS locations of proposed forest land (Boundary)

S. No.	Boundary Pillar No.	LONGITUTE	LATITUDE
1.	BP – 1	79 19 28.47	20 02 30.55
2.	BP – 2	79 19 46.58	20 02 17.59
3.	BP - 3	79 19 34.25	20 01 12.00
4	BP – 4	79 19 58.09	20 01 02.27
5	BP – 5	79 19 58.80	20 00 31.61
6	BP – 6	79 19 57.00	20 00 34.21
7	BP – 7	79 19 07.19	19 59 41.78
8	BP – 8	70 18 28.38	19 59 24.19
9	BP – 9	79 18 42.80	20 00 36.51
10	BP – 10	79 18 16.64	20 00 26.85
11	BP – 11	79 18 07.19	20 01 19.17
12	BP – 12	79 18 33.40	20 01 19.28
13	BP – 13	79 18 43.00	20 02 06.00
14	BP - 14	79 19 27.00	20 01 55.23
15	BP – 15	79 19 57.49	20 02 23.62
16	BP – 16	79 20 32.70	20 02 02.39
17	BP – 17	79 20 47.66	20 01 39.00
18	BP – 18	79 20 22.80	20 01 13.78
19	BP – 19	79 20 09.77	20 01 03.20
20	BP – 20	79 20 21.19	20 00 40.13
21	BP – 21	79 20 01.47	20 00 18.64
22	BP – 22	79 19 26.16	19 59 43.40